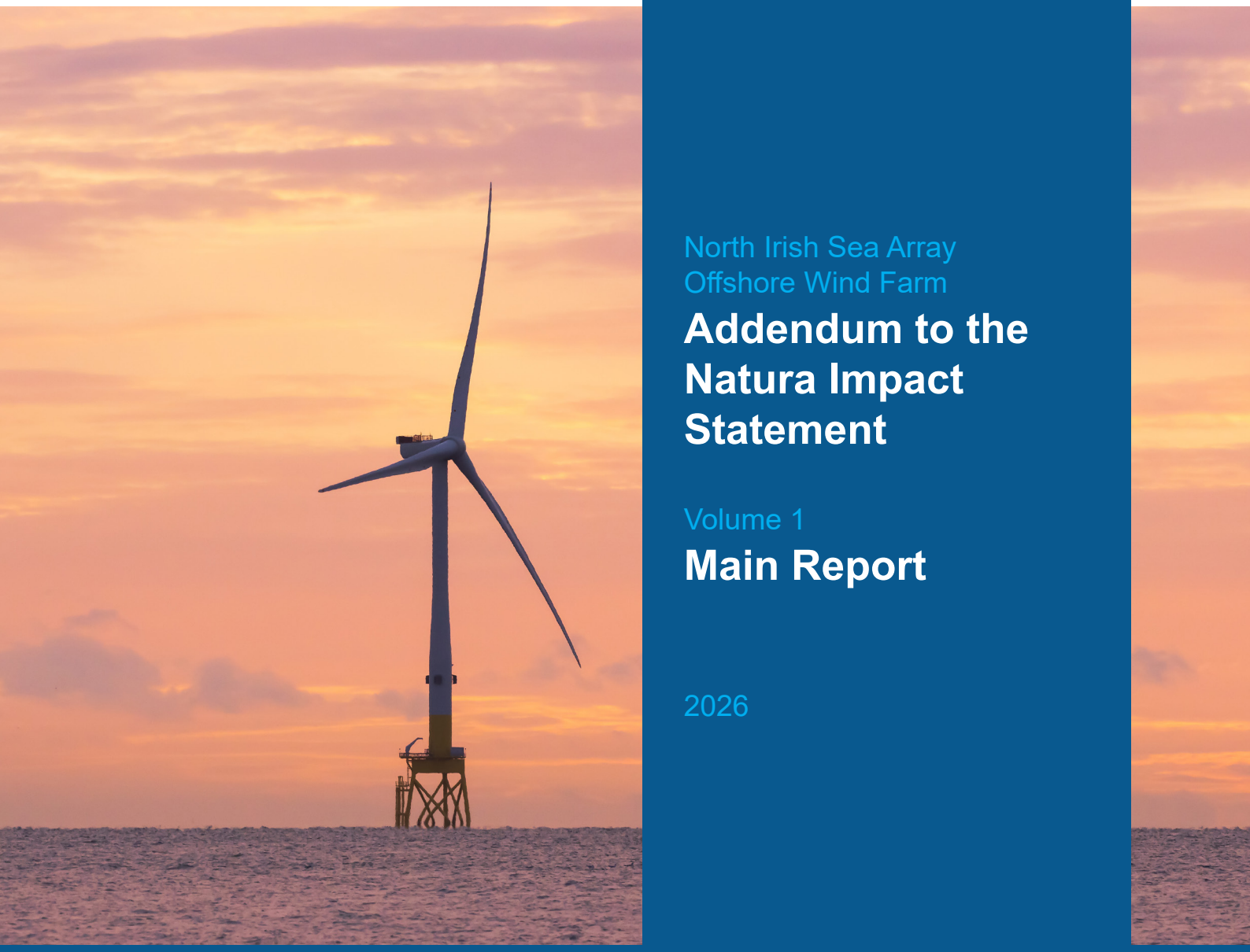
NISA

North Irish Sea Array



North Irish Sea Array
Offshore Wind Farm

Addendum to the Natura Impact Statement

Volume 1

Main Report

2026

Statkraft

CIP
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ARUP

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Abbreviations

Term, Abbreviation or Acronym	Description
AA	Appropriate Assessment
ADD	Acoustic Deterrent Device
AEoI	Adverse Effect on Integrity
AHV	Anchor Handling Vessel
AON	Apparently Occupied Nest
BDMPS	Biologically Defined Minimum Population Scale
BTO	British Trust for Ornithology
BWI	Bird Watch Ireland
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CEMP	Construction Environmental Management Plan
CIV	Cable Installation Vessel
CO	Conservation Objective
CGR	Counterfactual Population Growth Rate
CPS	Counterfactual Population Size
CRM	Collision Risk Modelling
cSAC	Candidate Special Area of Conservation
cSPA	Candidate Special Protection Area
CSIP	Cetacean Strandings Investigation Programme
CTV	Crew Transfer Vessel
CV	Coefficient of Variance
DAHG	Department of Arts, Heritage and Gaeltacht
DAS	Digital Aerial Survey
dB	Decibel
DBT	Dibutylin
DCC	Dublin City Council
DDV	Drop-down Video
DEB	Dynamic Energy Budget
DCEE	Department of Climate, Energy and the Environment
DEHLG	Department of Environment, Heritage and Local Government

Term, Abbreviation or Acronym	Description
DTAG	Digital Acoustic Recording Tag
EC	European Commission
ECC	Export Cable Corridor
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIAR	Environmental Impact Assessment Report
EMF	Electro-magnetic fields
EMP	Environmental Management Plan
EOD	Explosive Ordnance
ESAS	European Seabirds at Sea
FCC	Fingal County Council
FCS	Favourable Conservation Status
FPV	Fall Pipe Vessel
HDD	Horizontal Directional Drilling
HF	High Frequency
HLV	Heavy Lift Vessel
HVAC	High Voltage Alternating Current
HWM	High Water Mark
Hz	Hertz
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
JUV	Jack Up Vessel
LAT	Lowest Astronomical Tide
LCI	Lower Confidence Interval
LSE	Likely Significant Effect
LWM	Low Mean Water
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MarESA	Marine Evidence based Sensitivity Assessment
MarLIN	Marine Life Information Network
MERP	Marine Ecosystems Research Programme

Term, Abbreviation or Acronym	Description
MMF	Mean Maximum Foraging range
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MPCP	Marine Pollution Contingency Plan
MU	Celtic and Irish Seas Management Unit
NAF	Nocturnal Activity Factor
NBHF	Narrow-Band High Frequency
NIS	Natura Impact Statement
NISA	North Irish Sea Array
NOAA	National Oceanic and Atmospheric Administration
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
NWIS	North West Irish Sea
O&M	Operation and Maintenance
OMF	O&M Facility
OREDP	Offshore Renewable Energy Development Plan
ORESS	Offshore Renewable Energy Support Scheme
OSP	Offshore Substation Platform
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic (The Oslo Paris Convention)
OSV	Offshore Supply Vessel
OWEZ	Offshore Wind Farm Egmond aan Zee
OWF	Offshore Wind Farm
Pa	Pascal
PAH	Polycyclic Aromatic Hydrocarbons
PCOD	Population Consequences of Disturbance
PSA	Particle Size Analysis
PTS	Permanent Threshold Shift
QI	Qualifying Interest
RAMS	Risk Assessment and Method Statement
RIAA	Report to Inform Screening for Appropriate Assessment

Term, Abbreviation or Acronym	Description
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SCI	Special Conservation Interest
sCRM	Stochastic Collision Risk Model
SD	Standard Deviation
SEA	Strategic Environmental Assessment
SEL	Sound Exposure Level
SISAA	Supporting Information for Screening for Appropriate Assessment
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Body
SOV	Service Operational Vehicle
SPA	Special Protection Area
SPL	Sound Pressure Level
SPM	Suspended Particulate Matter
SSC	Suspended Sediment Concentration
TBT	Tributyltin
THC	Total Hydrocarbon Concentration
TJB	Transition Joint Bay
TOC	Total Organic Carbon
TTS	Temporary Threshold Shift
UCI	Upper Confidence Interval
UK	United Kingdom
UXO	Unexploded Ordinance
VHF	Very High Frequency
WFD	Water Framework Directive
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Glossary

Term	Glossary
2024 NIS	The Nature Impact Statement submitted to the competent authority in 2024 by the Developer.
An Bord Pleanála (ABP)	The competent authority under the Planning Acts to determine the planning application and carry out the AA of the proposed development. From 18th June 2025 ABP officially changed its name to An Coimisiún Pleanála (ACP) pursuant to section 495(1) of the Planning and Development Act 2024. Referenced in this SISAA to ABP should read as ACP but for ease of the reader this is not stated explicitly every time the original SISAA mentioned ABP.
Annex I Species	Annex I of the Birds Directive (Directive 2009/147/EC) lists 193 bird species and sub-species which are: i) in danger of extinction, ii) vulnerable to specific changes in their habitat, iii) considered rare because of small populations or restricted local distribution and / or iv) require particular attention for reasons of the specific nature of habitat.
Annex I Habitats	Habitat types, listed in Annex 1of the Habitats Directive (Directive 92/43/EEC), whose conservation requires the designation of Special Areas of Conservation. Priority habitats, which are in danger of disappearing within the EU territory, are highlighted with an asterisk in Annex I.
Annex II Species	Animal and plant species, listed in Annex II of the Habitats Directive, whose conservation requires the designation of Special Areas of Conservation.
Annex IV species	Animal and plant species listed in Annex IV of the Habitats Directive that are in need of strict protection from killing, disturbance or destruction of them or their habitat.
Appropriate Assessment (AA)	The statutory process as set out in Article 6 of the Habitats Directive
Array area	The area within the offshore development area within which the WTGs, the OSP and inter-array cable(s) will be located
Belcamp substation	The existing operational substation where the 220kV underground onshore cable will connect to the national high voltage electricity transmission system
Birds Directive	The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) is a European Union directive adopted in 2009. It aims to protect all European wild birds and the habitats of listed species, in particular through the requirement for member states to designate of Special Protection Areas.
Bremore Substation	The new 220 kV substation to be constructed as part of the proposed development located adjacent to the compensation substation. Bremore substation will be connected to the compensation 220kV substation and the Belcamp substation by means of the onshore cables.
Cable Duct	The cable ducts will be durable plastic conduits into which the cables will be installed.
Clupeid	Any species of the family Clupeidae (such as herring and sprat).
Compensation substation	The compensation substation is situated within the grid facility and will be connected to the Bremore substation by means of a 220 kV underground cable.
Conservation Objective (CO)	The specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status. The National Parks and Wildlife Service (NPWS) produce the Conservation Objectives for all European sites in the Republic of Ireland.
Construction Phase	The processes and activities on or off site that contribute or are instrumental to the construction of the Proposed Development towards, and finally to, the Operational Phase
Design Flexibility Opinion (DF Opinion)	The Developer sought an opinion from An Bord Pleanála on design flexibility under section 287A of the Planning Acts. In 2024, An Bord Pleanála issued its opinion on design flexibility, (the "DF

Term	Glossary
	Opinion"). Full detail regarding the DF Opinion and how this is reflected in the EIAR is provided in Sections 2.7 and 2.8 of Chapter 2 (EIA and Methodology for the preparation of an EIAR).
Designated Sites	Selected sites designated with the aim to conserve habitats and species of conservation concern.
Developer	North Irish Sea Array Windfarm Limited (Ltd). The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
Proposed development boundary	The area within which the proposed development will be located (includes onshore and offshore aspects) and is defined by the planning boundary (shown as "red line" on planning drawings) and the infrastructure boundary for offshore aspects.
EirGrid Group	Transmission system operator on the Island of Ireland and transmission asset owner for offshore electrical infrastructure at transmission voltage levels in Ireland. Referred to as EirGrid.
Environmental Impact Assessment Report (EIAR)	A report of the effects if any, which the proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.
European site	European sites are defined in the Habitats Directive as Special Area of Conservation (SAC), candidate SAC (cSAC), Special Protection Area (SPA), candidate SPA (cSPA) and Site of Community Importance (SCI). 'European site' is also deemed to include possible SACs and potential SPAs.
Export Cable Corridor	Offshore export cable corridor which is the area within which the offshore export cables will travel from the offshore substation platform (OSP) to the landfall.
Favourable Conservation Condition	Favourable Conservation Condition is determined if data indicate that the conservation feature is maintaining itself on a long-term basis as a viable component of its natural habitats / species range and will continue to be maintained on a long-term basis / for the foreseeable future.
Grid Connection Point	The point where the onshore 220kV underground cable connects to the existing transmission system – at the existing Belcamp substation and the consented Belcamp extension project (F23A/0040)
Grid Facility	The grid facility comprises of the compensation substation and the Bremore substation together with ancillary infrastructure.
Habitats Directive	EU Directive on the conservation of natural habitats, wild fauna and flora (92/43/EEC), commonly known as "the Habitats Directive", was adopted in 1992, came into force in 1994 and was transposed into Irish law in 1997.
HWM	High water mark as shown on the Ordnance Survey Ireland Historic 1888 -1913 25-inch mapping
Inter-array cables	Th These are the subsea electrical cables that will link the wind turbine generators to each other and link the wind turbine generators to the offshore substation platform.
Invasive Non Native Species (INNS)	An invasive species is a plant, fungus, or animal species that is not native to a specific location.
Joint Bay	A joint bay is an underground chamber which facilitates the pulling-through of pre-installed cable ducts. These chambers will "joint" consecutive lengths of cables into one continuous overall circuit within a controlled environment.
Landfall site	The landfall site includes all infrastructure from where the offshore export cable comes onshore to where it connects to the compensation substation. This includes the area from where the offshore export cables are brought onshore, the relevant construction compound(s), TJB, HDD under the Irish Rail line, and where the onshore export cable connects to the compensation substation.
Likely Significant Effect (LSE)	Any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or project.

Term	Glossary
Marine Area Consent (MAC)	Maritime Area Consent, the right to occupy a part of the maritime area, conditional on securing other necessary approvals
Maritime Area Consent Boundary	The MAC boundary is the boundary of the offshore area which the holder of the MAC has the right to occupy
Migropath	A modelling tool developed to estimate the numbers of migratory birds passing through offshore wind farm areas during migration.
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service has responsibility for the protection and conservation of Ireland's natural heritage and biodiversity at national government level.
Natura 2000 sites or European sites	Sites designated under the Habitats and Birds Directives (includes SACs and SPAs)
Natura Impact Statement (NIS)	A statement for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.
North Irish Sea Array (NISA) Offshore Wind Farm	The North Irish Sea Array (NISA) Offshore Wind Farm refers to the construction of the offshore wind farm and its connection into the existing substation at Belcamp.
North Irish Sea Array Windfarm Limited (Ltd)	North Irish Sea Array Windfarm Limited (Ltd) is the Developer. The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
Offshore export cable corridor	The specific corridor of seabed (seaward of high water mark) from the array area to the landfall site, in which the offshore export cable route will be located. Referred to as the ECC.
Offshore export cable(s)	Comprises of 2 No. subsea 220kV HVAC cables linking the offshore substation platform to the transition joint bay (TJB) within the landfall site.
Offshore infrastructure	This relates to the aspects of the proposed development located seaward of the HWM
Offshore development area	That area within the proposed development boundary located seaward of the HWM,
Offshore substation platform (OSP)	The OSP is the offshore electrical structure which contains the equipment needed to connect the WTGs to the offshore export cables.
Onshore cable route	This is the route taken by the onshore cable(s) which links the Bremore 220kV substation to the existing Belcamp 220kV substation.
Onshore cable(s)	The onshore underground 220kV HVAC cables will connect Bremore substation to the existing Belcamp substation. This will comprise of up to 6 No. power cables and 2 No. fibre optic cables.
Onshore export cable(s)	Comprises onshore underground 220kV HVAC cables which will be routed from the transition joint bay at the landfall site connecting to the grid facility.
Onshore development area	That area within the proposed development boundary located landward of the HWM
Onshore infrastructure	This relates to the aspects of the proposed development located landward of the HWM
Operation and Maintenance Facility (OMF)	The location from where the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to operate and maintain the proposed development will be performed during its lifetime.
Operational Phase	This phase refers to the processes and activities implemented following the Construction Phase

Term	Glossary
ORESS 1	ORESS 1 Offshore Renewable Energy Support Scheme - the first Offshore Auction run under the Government of Ireland's Renewable Electricity Support Scheme and is a pivotal component of the Programme for Government and the Climate Action Plan 2024.
Qualifying Interest (QI)	Species and /or habitat types for which a European site is designated, and which are considered during the assessments under Article 6(3) and, if required, Article 6(4) of the Habitats Directive.
Planning Acts	Planning and Development Act 2000, as amended
Project Option 1	Project Option 1 consists of 49 WTGs with 250m rotor diameter
Project Option 2	Project Option 2 consists of 35 WTGs with 276 rotor diameter
Proposed development	This refers to the overall Offshore Wind Farm project, which is the subject of the planning application, and which includes all offshore and onshore infrastructure
Salmonid	Any species of the family (Salmonidae) of elongate bony fishes (such as a salmon or trout) that have the last three vertebrae upturned (i.e. ray-finned fish).
Screening for Appropriate Assessment (SISAA)	Assessment to determine whether the proposed development is likely to have a significant effect (either alone or in combination with other plans or projects) on the European site(s).
SELcum	Cumulative sound exposure level
SPLpeak	Peak sound pressure level
Zone of Influence (ZoI)	An area within which environmental impact arising from a certain activity may occur.

1. Introduction

North Irish Sea Array Windfarm Ltd (NISA, hereafter referred to as 'the Developer') has been considering the Request for Further Information (RFI) issued by An Bord Pleanála (now An Coimisiún Pleanála) as well as the third-party submissions received following public consultation. At An Coimisiún Pleanála's behest, the Developer has also continued to consult with stakeholders in respect of the 2024 planning application throughout 2024-2026. The Developer has refined elements of the design to respond to the third party submissions, the continued public and stakeholder consultation and the RFI. Amendments are therefore required to the Natura Impact Statement (NIS) submitted as part of the 2024 application, which is the purpose of this document. Full details of consultation undertaken can be found in Appendix A2 Addendum to the of the SISAA.

For the purposes of clarity, this document shall be read in conjunction with the 2024 NIS.

Any cross reference to a chapter, section, table, image, figure or appendix within this document is to another location within the Addendum to the NIS unless explicitly stated otherwise. Any cross reference to anything included in the 2024 NIS has been clearly labelled as such.

Text in bold is only used throughout this document to indicate where changes are required, and what is subsequently driving them. Text in italics is text from a section of the 2024 NIS which is deleted, or quotations from other documents (as explicitly stated). Replacement text is in normal font.

Tables and figures which have been updated from the 2024 NIS, or entirely new tables and figures, have been included in the Addendum to the NIS. These tables and figures can be identified by the "A" prefix in the caption. Any changes within updated tables, in comparison to tables within the 2024 NIS, are indicated by grey shading in the relevant cell, column or row, as necessary.

The RFI Sections relevant to the NIS are presented in full in Table A1 below, with accompanying text provided to explain their relevance and to cross-reference where each matter is addressed within the NIS.

In some instances, potential effects and/or Qualifying Interests (QIs) have been screened in in response to specific RFI points. This has been undertaken on a precautionary basis to ensure full and transparent engagement with the RFI.

Where an RFI is not relevant to the NIS, this is explicitly stated.

RFI Section	RFI	Response to RFI and relevance to NIS.
1 (a)	In providing its response to the matters raised in this request for Further Information, the applicant is requested to clearly annotate any proposed amendments to the EIAR, NIS and other documentation submitted and cross reference clearly revised/new information across the submitted documentation as appropriate. It is requested that all changes are clearly identified.	In response to the RFI the Developer has adopted an Addendum style presentation to clearly distinguish additional, or replacement information and amendments provided as part of the response to the RFI. Text in bold is used throughout the documents to indicate where changes are required, and what is subsequently driving them. Text in italics is text from a section of the 2024 submission which is deleted, or quotations from other documents (as explicitly stated). Replacement text is in normal font. Replacement tables, figures and Appendices are prefixed with the letter A.
1 (b)	The scientific information provided as part of the planning application documentation should be based on up-to-date survey reports and data. Accordingly, the applicant is requested to confirm/provide justification/verification that the information submitted in support of the planning application remains relevant and appropriate at the point of submitting further information or to update same as required.	The timeframes associated with the RFI have necessitated a review of the datasets and documents previously used in the 2024 NIS to ensure any necessary updates to the baseline environment are captured. The updates were provided to these reports to ensure the data, on which the reports rely, is up to date, represents the best available scientific evidence and is, relevant and appropriate at the point of submitting this response. This includes both survey data and updates to the relevant plans, policy and guidance. During this review updates to the Conservation Objectives of European sites have also been incorporated into the NIS and used in the assessment accordingly. A review of the baseline resources (data sources and site-specific survey data) has been undertaken to comply with RFI 1 (b). Section 1.9 (Data Collection) of the NIS has been updated to provide additional information on surveys undertaken since the 2024 NIS.
1 (c)	The applicant is requested to confirm whether any on-going or additional surveying has been carried out since the application was lodged and, if so, the applicant is invited to submit any further survey data results and analysis and update the planning application documentation, as appropriate.	The NIS has been updated to take into consideration the following updated surveys: The nearshore and intertidal geophysical environment was surveyed in September to October 2024 by Ramform Vanguard. UHR3D seismic data was acquired simultaneously with multibeam echosounder (MBES), Sub-bottom Profiler (SBP), Side Scan Sonar (SSS) and Magnetometer (MAG) data over the entire survey area. SEP Hydrographic (2024). North Irish Sea Array (NISA). Nearshore and Intertidal Geophysical Survey. Operations & Results Report. Ref; 2023-031 (see Section 1.9.1); The Developer has undertaken an additional 12-month programme of DAS across the NWIS cSPA. between September 2024 and August 2025. The results of this survey are captured within Appendix A14: Offshore and Intertidal Ornithology and Technical Baseline.

RFI Section	RFI	Response to RFI and relevance to NIS.
		A benthic subtidal ecology survey covering the array area and ECC corridor to validate the baseline assumptions presented in the EIAR was undertaken in 2024 (AQUAFACT, 2025). A total of 23 sampling stations were selected in the vicinity of the array area and ECC, of which 13 sites were within the array area and 10 within the ECC. At each station sediment was collected for physiochemical analyses (PSA, TOC, chemistry) and a single 0.1m2 Day Grab sample was taken for faunal analysis. DDV samples were also collected from all 23 sampling stations. The results of which are presented in Fenton, A., Dunleavy, D., Paul, T., McMahon, C., Reid, A. and McCormack, E. (2025). NISA, Benthic Ecology Survey Report 2025. Aquafact report to North Irish Sea Array Windfarm Ltd. Appendix A4: Benthic Ecology Survey Report 2025; The proposed development has undertaken seal vantage point (VP) surveys at the landfall site at Balbriggan, County (Co.) Dublin in November 2024 and between June 2025 and May 2026, using VPs within the landfall site and a surrounding 500 metre (m) survey buffer, and following guidance from the following source: NPWS and Department of Communications Climate Action and Environment (NPWS, 2010; DCCAE, 2018). GoBe Consultants, 2026. Seal Vantage Point Survey Report. North Irish Sea Array. The Developer undertook a migratory bird survey programme which comprised of a combination of boat-based surveys, onshore and offshore diurnal Vantage Point surveys, as well as bioacoustics data capture from two (one onshore and one offshore) nocturnal Passive Acoustic Monitoring (PAM) units. The survey data was captured during November 2024 and between mid-September and mid-December 2025, covering the 2024 and 2025 post-breeding (autumn) migratory bird seasons. GoBe Consultants, 2026, Migratory Bird Survey Report 2026. North Irish Sea Array. Section 1.9 (Data Collection) of the NIS has been updated accordingly.
2 (a)	The Irish Coast Guard (IRCG), through the Department of Transport, has raised concerns in relation to the layout of the proposed development with respect to search-and-rescue (SAR) access. The applicant is requested to consult with the IRCG, in addressing these concerns, and provide further information and clarification on such matters	The Developer has undertaken continued consultation with the IRCG since the submission of the 2024 NIS and the layouts have been revised in liaison with the IRCG in response to RFI Section 2 (a). These layouts include a single line of orientation (SLoO) with a linear configuration which is accompanied by a safety justification in line with the requirements of Marine Guidance Note (MGN) 654.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Further information on this consultation is included in Appendix A2 of the SISAA. Section 2 Description of the Development has been updated in the NIS to reflect the revised layout. As a result of the above changes the Potential Impacts identified in Section 4 and the alone and in-combination assessments have been updated in Sections 4-6 as applicable. Further details associated with the refined layouts are included in Appendix A7: Design Refinements.
5	The applicant is advised that guidance exists in the UK, namely Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK, September 2024 (NSIP, 2024). The applicant is requested to revise the submitted cumulative assessment in line with NSIP (2024) and submit a standalone document to clearly demonstrate the CEA conclusions' and 'In accordance with NSIP (2024) tiered approach, it is requested that the subject proposal and each of the Irish Sea Phase 1 ORE projects be classified under Tier 1 ("Other existing and, or approved development submitted applications under the Planning Acts or other regimes but not yet determined")	The 2024 NIS has been updated to conform with the Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment - GOV.UK, September 2024 (NSIP, 2024). During the preparation of the revised CEA, the Developer consulted with the other Irish Sea Phase 1 ORE projects. The information provided in the planning applications submitted by these ORE projects was incorporated into the revised CEA and Phase 1 ORE Projects were classified under Tier 1. All other relevant projects in the International Council for the Exploration of the Sea (ICES) Celtic Sea and Greater North Sea ecoregions, regardless of project type, were also included in the CEA. Section 1.13 of the NIS has been updated to provide the new tiering system as described in the NSIP guidance. Section 6 (In-combination Assessment) of the NIS has been updated to ensure all projects are categorised into the correct tiers and also the list of projects has been updated. The long list of projects/plans has been updated and provided in Appendix A3 (Long List).
6	A number of observations have raised concerns in relation to the assessment of site alternatives and suitability of the site for development having regard to the location of the site within the recently designated North-west Irish Sea (NWIS) cSPA. Having regard to: the recent designation of the North-west Irish Sea cSPA, with the proposed development site located within the NWIS cSPA site area, the criteria that avoidance of designated sites is typically an important parameter in a site selection process, as highlighted in Chapter 5 of the EIAR The proximity of Rockabill SPA (c.150m) from array), in addition to 10 SPAs and 9 SACs in the wider area, which are all within the envelope of the NWIS cSPA and/or are ecologically connected.	The Developer has carried out design refinements having regard to: The recent designation of the North-west Irish Sea candidate Special Protection Areas (cSPA), with the proposed development site located within the NWIS cSPA site area; The criteria that avoidance of designated sites is typically an important parameter in a site selection process, as highlighted in Appendix A7:Design Refinements; and The proximity of Rockabill SPA, in addition to 10 SPAs and 9 SACs in the wider area, which are all within the envelope of the NWIS cSPA and/or are ecologically connected.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The applicant is requested to review Chapter 5 in relation to site selection and the rationale for choosing this site for development and provide further justification and rationale regarding the suitability of the site for the proposed development, in light of the above.	The site was selected having regard to 13 environmental and technical criteria, including the avoidance of designated sites. While the designation of the NWIS cSPA in 2023 altered the position in respect of one of those criteria, the remaining site selection considerations were unchanged. The subsequent designation of a European site does not, in and of itself, render a site unsuitable for development or preclude the grant of consent; rather, the question for assessment is whether the proposed development can be shown, on the basis of the available scientific evidence and appropriate assessment, to avoid adverse effects on the integrity of the site. By that stage, the Developer had compiled a substantial body of ecological and environmental survey data, which informed the NIS and supported the conclusion that the proposed development would not adversely affect the integrity of the NWIS cSPA or any other European site, either alone or in combination with other plans or projects. In addition, following the RFI and engagement with NPWS, the WTG layouts for Project Option 1 and Project Option 2 were refined to reduce the spatial extent of overlap within the NWIS cSPA (Figure A2.2 of the NIS). Further, the permanent footprint of infrastructure for the proposed development takes up only 0.02%, of the NWIS cSPA. Accordingly, the Developer maintains that the site remains suitable for the proposed development. Further rationale and justification for site selection is provided, to respond to this RFI, in Appendix A7:Design Refinements.
7 (a),	Methodology Chapter 10 of the EIAR addresses Marine Geology, Oceanography and Physical Processes and is supported by Appendix 10.2 Marine Process Modelling Report. The Board notes that statistical and timeseries calibration plots for the hydrodynamic modelling (water levels and currents) undertaken has been provided in the submitted EIAR, however, this has not been provided for wave modelling. The applicant is requested to provide statistical and timeseries calibration plots for the wave modelling, in addition to the submitted statistical (scatter) plots. The applicant is requested to specify the % variance between model and recorded current speeds for spring and neap tidal cycles.	RFI Sections 7(a) to 7(q) were addressed through the Environmental Impact Assessment Report (EIAR) further information process. While these RFI relate primarily to the assessment presented in te EIAR the outputs of the updated modelling are also of relevance to this NIS. For the purposes of the NIS, the key relevance of RFI Sections 7(a) to 7(q) is that the additional and refined modelling undertaken has informed the assessment of impact pathways of potential relevance to European sites. The information requested under these RFI sections is addressed in full within the appendices to the NIS, as follows: Appendix A11: Marine Physical Processes Numerical Modelling Report Appendix A12: Supporting Assessment Sensitivity Studies See the response to RFI 7(r) for details of how this revised marine physical processes numerical modelling has been applied within this NIS.
7 (b)	The labels on the directional plots on Figures 4.11 and 4.13 within Chapter 10 of the EIAR are incorrect. The applicant is requested to address this issue.	
7 (c)	The applicant is requested to submit time series plots comparing simulated wave events relative to recorded wave buoy data including direction, period and wave height or water surface elevation (WSE).	

RFI Section	RFI	Response to RFI and relevance to NIS.
7 (d)	Model Set-up and Approach The modelling undertaken in support of Chapter 10 of the EIAR does not demonstrate spatial variation of bed friction or bed shear stress values across the model domain. The applicant is requested to address this issue in a review of the modelling undertaken.	
7 (e)	The applicant is requested to characterise the existing environment in terms of the sediment transport regime in the form of coupled wave, wind, hydrodynamic and sediment transport modelling. As indicated in Appendix 10.2, the SWAN model was utilised for the assessment of waves and the MIKE21FM (Flexible Mesh) 2D modelling package was utilised for hydrodynamic modelling. The separation of the wave, hydrodynamics and wind influences does not allow for a comprehensive assessment of the impact of the proposed development on marine processes. The applicant is requested to submit a coupled model in order to demonstrate the interaction between waves, hydrodynamics and wind influences. The applicant is also requested to undertake a greater range of sensitivity runs to examine the coupled model performance. Model scenarios should include an assessment of extreme events e.g. 10%, 5%, 2%, 1%, 0.5%, 0.2% annual exceedance probability (AEP) events and joint probability occurrences of tidal, surge and wave conditions. The applicant is requested to assess these probabilities in modelling scenarios and provide for climate change.	
7 (f)	In Appendix 10.2, Marine Processes Review of Project Options, the applicant has selected a plume height release of 3m above seabed in the trenching simulation. The applicant is requested to justify the release height of 3m based on the dredging technique/equipment proposed.	
7 (g)	There are two extrusion pits proposed as part of the development. It is stated in Chapter 8 of the EIAR (construction strategy) that 'the drilling of both bores may be carried out simultaneously to accelerate the works programme'. Only one is modelled in terms of potential impacts. It is requested that the drilling of both extrusion pits be assessed and in a concurrent scenario.	
7 (h)	The location of the extrusion pits related to the export cables are indicated to be within the surf zone (section 6.2.1 of Appendix 10.2). The applicant is requested to include an assessment of the impact of the extrusion pits at this location within the surf zone on coastal processes and also include an assessment of the impact of the proposed temporary mounds at these locations on coastal processes.	
7 (i)	The modelling domain appears to be of insufficient extent to address potential impacts to the hydrodynamics of the Western Irish Sea Gyre and the cumulative impact with other projects, including Irish Sea Phase 1 ORE projects. The applicant is requested to extend the modelling domain to address this issue.	

RFI Section	RFI	Response to RFI and relevance to NIS.
7 (j)	Blockage Modelling The applicant is requested to include the impact of wind blocking on coastal processes. It is requested that this be addressed through site specific wake and wind field modelling, considering the entire windfarm layout.	
7 (k)	The applicant is requested to use coupled modelling of the leeward environments between the proposed array and the coastal zone to assess the combined impact of tidal, wind and wave blockage.	
7 (l)	Dredge Modelling Scenarios It is unclear if the particle tracking modelling accounted for the flocculation of finer particles. The applicant is requested to address this issue.	
7(m)	The applicant is requested to expand upon the dredge modelling information submitted by providing for a range of modelled scenarios representing different timelines and configurations of dredging activity. The applicant is requested to include assessment of sediment disturbance for all activities proposed, including the pre lay grapnel runs proposed for the entire dredge campaign. This is requested to allow for a simulation of entire campaigns and not just select locations as submitted in the EIAR, and to enable an assessment of the cumulative impact on sediment transport, waves processes, and tidal currents.	
7(n)	The applicant is requested to assess the longer-term impact of the dredge dispersal modelling on the seabed morphology.	
7(o)	Appendix 10.3 provides an assessment of spoil mounds which are expected to develop when a trailer suction-hopper dredger (TSHD) discharges sediment at various locations across the array area. The impact of dredging with a backhoe and barge is not captured in the modelling. The applicant is requested to address this issue.	
7(p)	In relation to all sediment disturbance modelled, the applicant is requested to provide the following: Statistical maximum for sediment deposition depths (cm) and suspended sediment concentration (mg/l) across the model domain for the entire construction campaign presented in the form of heatmaps. This should include heatmaps of predicted percentage change relative to the baseline across the relevant key temporal periods. The applicant should confirm that the modelling used reflects the baseline conditions	

RFI Section	RFI	Response to RFI and relevance to NIS.
7 (q)	The longer term morphodynamic impact of the development including cable armouring, scour protections and wind turbine foundations is not assessed. This requires coupled wind, wave, hydrodynamic, and sediment transport modelling. The applicant is requested to submit modelling of the morphodynamic response of the coastline to the proposed development. Morphodynamic Modelling should be extended over a series of longer time horizons, operational plus decommissioning, ie 40+ years, and compared with the non-developed scenario for the same time period.	
7 (r)	Any additional modelling in relation to physical processes, which increase the existing significance of effect in that chapter and in interrelated chapters, 'Chapter 10 Marine Geology, Oceanography and Physical Processes', and / or 'Chapter 11 Marine Water & Sediment Quality' to 'Significant' or greater, will also require revised consideration as part of any updates in assessments associated with 'Chapter 12 Benthic Subtidal and intertidal Ecology', 'Chapter 13 Fish and Shellfish Ecology', 'Chapter 14 Marine Mammal Ecology', 'Chapter 15 Offshore Ornithology', and also the NIS (chapters 14 and 15 should only be considered for any revised assessment in relation to "habitat supporting prey species" and "provision / maintenance of prey species").	RFI Sections 7(a) to 7(q) were addressed through the Environmental Impact Assessment Report (EIAR) further information process. While these RFI sections relate primarily to the assessment presented in the EIAR (Chapter 10: Marine Geology, Oceanography and Physical Processes), the outputs of the updated modelling are also of relevance to the NIS. For the purposes of the NIS, the key relevance of RFI Sections 7(a) to 7(q) is that the additional and refined modelling undertaken has informed the assessment of impact pathways of potential relevance to European sites. The information requested under these RFI sections is addressed in full within the appendices to the NIS, as follows: Appendix A11: Marine Physical Processes Numerical Modelling Report Appendix A12: Supporting Assessment Sensitivity Studies The updated modelling reports have been used to inform the NIS assessment in particular in relation to: Suspended sediment concentrations and associated deposition, as an impact pathway relevant to Coastal and Marine QIs (see Section 5.1 of the NIS) and supporting habitats for mobile species (e.g. Migratory Fish) (see Section 5.2 of the NIS); and Changes to hydrodynamic and coastal processes, including currents and wave climate, as relevant to the conservation objectives of Coastal and Marine QIs (see Section 5.1 of the NIS). The Developer confirms that the matters raised are addressed in Section 4 (Morphodynamic and Coupled Modelling), Section 5 (Climate Change) and Section 6 (Interdependency Between Marine Processes) of Appendix A12 Supporting Assessment Sensitivity Studies, which provides the technical basis supporting the conclusions set out in the NIS. Of note is that the range of sensitivity tests undertaken follow the approach discussed with An Coimisiún Pleanála on the 6th November 2025.

RFI Section	RFI	Response to RFI and relevance to NIS.
		A one-way coupled wind wake and SWAN (Simulating WAves Nearshore) model was used in an assessment of wind influence in a series of sensitivity tests presented in Section 3 (Wind Blockage) of Appendix A12. The sensitivity tests included the shortest distance to the coastline with winds and waves from 068 °N, and (b) the most frequent wave direction with winds and waves from south-south-west (centred on 156 °N). The combined wind and wave events included an annual 50th percentile, and less frequent 1 year, 10 year and 50 year return period events (n.b. equivalent to 100%, 10% and 2% AEP). Whilst wind-wake blockage has a theoretical influence on leeward wave conditions, the results of the sensitivity tests show that the scale of this effect is secondary to wave-blockage related effects and not at a scale that changes the assessment presented within Sections 5.1 and 6.1 of the NIS. Coupled hydrodynamic and wave modelling was undertaken for both baseline (without the proposed development) and scheme (with the proposed development) conditions across four scenarios combining 1-in-50-year wave events, two wave approach directions (068° and 156° N), and contrasting high northerly and southerly flow conditions. The modelling first evaluates the influence of (hydrodynamics) currents on waves (Section 6.1) and then the influence of waves on (hydrodynamics) currents (Section 6.2), allowing the interdependency of these processes to be assessed in full. The results indicate that the presence of the proposed development does not produce any significant changes in wave or current conditions under any scenario, whether or not a coupled model set up is used. The negligible difference indicates no sensitivity to coupled processes and the existing approach (based on independent consideration of waves and tides) and assessments presented within Section 5.1 and 6.1 of the NIS and Appendix A11: Marine Process Numerical Modelling Report, remains valid. The above modelling reports have been incorporated into the assessment presented in the NIS, including the evaluation of potential effects on habitat structure, sediment dynamics, and supporting ecological processes. For clarity, no additional modelling undertaken in response to RFI Sections 7(a) to 7(q), has resulted in any change to the conclusions of the NIS. It is concluded, beyond reasonable scientific doubt, that the proposed development, for either Project Option 1 or Project Option 2, alone or in combination with other plans or projects, will not adversely affect the integrity of any European site.
8 (a) (i)	Roseate Tern: Perrow et al. (2019) studied the at-sea foraging distribution of the Rockabill colony over one breeding season (2018), showing the species uses the nearby proposed array area. The EIAR discusses tracking data from Perrow et al. (2019) in the Technical Baseline (Appendix 15.1),	The Developer notes An Bord Pleanála's comments regarding (1) the inclusion of a figure showing the Perrow et al. (2019) roseate tern tracking data , and (2) the consideration of the data to inform assessment.

RFI Section	RFI	Response to RFI and relevance to NIS.
	however, unlike the accounts of other species, the relevant section of the EIAR appendix does not provide a summary figure of the Roseate Tern tracking data. Considering the importance of the area to Roseate Tern, available data should be considered in further detail and used to inform the assessment. The applicant is requested to present the information provided by Perrow et al. (2019) in the technical baseline and to consider the tracking data when assessing potential impacts to Roseate Tern.	(1) A figure reproducing the Perrow et al. (2019) tracking data was not included in the Technical Baseline because the underlying raw tracking dataset was not publicly available to the Developer for independent analysis or reproduction at the time of preparation of the document. Accordingly, the Developer could not generate a project figure consistent with those presented for other species. In the absence of those permissions and source data, the Appendix A14: Technical Baseline explains why a figure has not been included. (2) The Developer confirms that Perrow et al. (2019) was reviewed in detail and cited in the Technical Baseline (Appendix A14, Paragraph 2.15.60) due to its relevance to roseate tern use of waters within and around Rockabill Island and the proposed development. The assessment therefore took account of the published findings, including spatial distribution, insofar as these inform understanding of receptor presence and behaviour. An additional 12 months of Digital Aerial Survey (DAS) data was collected across the North West Irish Sea (NWIS) cSPA during 2024-2025. This survey recorded a higher proportion of roseate terns than the 29 months DAS collected across the MAC area. Accordingly, the assessment was updated using the full 41 months of DAS data, providing a more robust basis for the collision risk analysis. In light of this strengthened empirical dataset, further interrogation of the tracking data was not required for the quantitative assessment. Nonetheless, the Perrow et al. (2019) tracking data were used qualitatively to provide contextual understanding of movements when considering potential barrier effects for Rockabill SPA and the NWIS cSPA. In short, whilst the raw data were not available to generate a project figure consistent with those presented for other species, the assessment relied on the best available evidence base as a whole, including Perrow et al. (2019). The study's findings were reviewed and considered in the assessment of potential impacts to Roseate Tern.
8 (a) (ii)	Red-throated Diver: The desktop review summarised in Table 15.3 of Chapter 15 of the EIAR does not appear to include the results generated from a series of Digital Aerial Surveys (DAS) undertaken over marine waters off Gormanstown (HiDef, 2019) that was commissioned by the Marine Institute and referenced in the National Parks and Wildlife Service (NPWS) Conservation Objective document for the NWIS cSPA. This survey data indicates a high density of Red-throated Diver Gavia stellata in the area of the coast west of the array and overlapping with the proposed cable route. Densities were notably larger than those densities that informed the applicant's assessment of mortality caused by displacement-disturbance effects for this proposed development (i.e. 3.26 individuals km-2 on 29/12/2018; 1.35 individuals km-2 on 16/01/19; 3.45 individuals km-2 on 04/02/19; 2.99 individuals km-2 on 23/03/19).	The Developer notes the request to include the HiDef (2019) DAS data, which covers waters off Gormanstown, within the assessment. These data have been considered alongside more recent survey datasets to assess their suitability (this is presented in Section 2.11 of the Offshore Intertidal Ornithology Baseline, A14 of the NIS). Since submission of the application, however, the Developer has undertaken an additional 12-month programme of DAS across the NWIS cSPA between September 2024 and August 2025. Following consultation with NPWS during 2025 and 2026, the Developer adopted the NWIS DAS dataset as the primary baseline for assessment on the basis that it represents the most spatially comprehensive and high-resolution dataset currently available for the NWIS cSPA and is directly focused on the area most relevant to the proposed development.

RFI Section	RFI	Response to RFI and relevance to NIS.
	As well as being important for assessment of Red-throated Diver, the HiDef/Gormanstown 2019 surveys are also likely to be relevant for the assessment of other species that the applicant is requested to reconsider (e.g. Great Northern Diver Gavia immer, Common Scoter). As such, the applicant is requested to include the HiDef/Gormanstown 2019 survey data in the assessment of impacts on the marine birds of the NWIS cSPA in relation to this proposed development, including in the assessment associated with the cable route. The applicant is requested to review the EIAR and NIS accordingly.	The programme achieved >16% spatial coverage of the SPA and >18% coverage within both the red-throated Diver (RTD) Projected Footprint of Infrastructure1 (PFI) +10 km displacement assessment buffer and the ECC +2 km buffer. The same is true for the common scoter and great northern diver Zone of Influence (ZoI) of the PFI +4 km displacement assessment buffer and the ECC +2 km buffer. While the HiDef (2019) dataset provides contextual information, it offers limited spatial coverage of the key ZoIs used within the assessment (e.g. PFI +10km buffer and the full ECC +2km buffer) and is based on data that are now superseded by the targeted, site-specific NWIS DAS programme. The NWIS DAS recorded consistently low diver and seaduck usage within and around the proposed array area and ECC during 2024 and 2025. In light of the NWIS DAS, the assessments have been reviewed and updated for all species (including red-throated diver, common scoter and great northern diver) to ensure that the baseline characterisation and subsequent impact assessments reflect this evidence. Cross-references to these updates are provided within Section 5.4 and 6.4 of the NIS, where the NWIS DAS has informed both the quantitative analysis and the overall conclusions. 1 The PFI represents a defined ornithology study sub-area within the overall array area, where all permanent offshore array infrastructure will be located. The PFI has been developed following design refinements to minimise spatial overlap with sensitive receptors and occupies just 57.7 km², representing 2.5% of the NWIS cSPA. These updates are reflected in the Addendum to the SISAA (Section 1.9) and NIS ornithology assessment (see Section 5.1.2, including red-throated diver assessment at Section 5.1.2.19) and are supported by detailed survey information in the Technical Baseline (Appendix A14 of the NIS).
8 (a) (iii)	Red-throated Diver is a species known to be highly sensitive to offshore wind farm developments due to displacement effects. A 4km displacement buffer is applied in the application documentation. The Board note that for Red— throated Diver best available evidence as presented in the UK Joint SNCB 'Interim Advice On The Treatment Of Displacement For Red-Throated Diver' (SNCB, 2022) states that: "For non-breeding red-throated diver, a pragmatic displacement buffer of at least 10km is recommended for use in site characterization, impact assessments and post-consent monitoring where a plan or project is within 10km of a Special Protection Area (SPA) designated for non-breeding redthroated diver. Where a plan or project is further than 10km from a SPA designated for non-breeding red-throated diver, a standard displacement buffer of 4km should continue to be used".	The Developer notes An Bord Pleanála's comments regarding potential displacement of RTD beyond a 4 km buffer. Since submission of the application, the Developer has completed an additional 12-month programme of DAS across the NWIS cSPA between September 2024 and August 2025, which has now been adopted as the primary baseline dataset for assessment as it fully addresses the data gaps identified within the ECC to the west of the array area. Given the extent, recency and relevance of the NWIS DAS coverage, the Developer considers this dataset sufficient to robustly characterise baseline distribution and abundance of RTD, common scoter and great- northern diver. The NWIS DAS effectively constitutes 'further targeted winter surveys' over a far larger spatial area (albeit one survey per month, instead of two, was carried out during Jan – Mar) addressing the concerns over the gaps in spatial survey coverage.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The DAU in their observation identifies the following papers which further indicate displacement impacts of greater than 4 km for Red-throated Diver: Heinänen et al. (2016); Žydelis et al. (2016); Webb et al. (2017); Mendel et al. (2019); Heinänen et al. (2020); Vilela et al. (2020); and APEM (2021). The Board notes that the proposed development is located entirely within the NWIS cSPA, for which Red-throated Diver is a SCI, and given the evidence sources available, the Board requests that the applicant reconsiders screening out displacement effects on Red-throated Diver associated with the array area. The information available from HiDef (2019) surveys indicates the known extent of Red-throated Diver and their densities and shows the species concentrating in shallower coastal areas. This therefore provides an evidence base for waters of 5-20m; however, the species can also use water depths up to 30m (Natural England, 2012). There appears to be a data gap between the HiDef survey boundary and the array area boundary. The applicant is requested to overlay the application survey maps with the HiDef survey maps and, where there is a data gap, the applicant is requested to undertake additional survey work to address the data gap. The survey should provide sufficient coverage to reliably characterise the distribution and abundance of Red-throated Diver from the proposed array area western boundary to a distance of 10 km towards the coast (west). The applicant is requested to assess displacement of Red-throated Diver to a distance of at least 10 km from the proposed array area due to project infrastructure, having regard to recent best available evidence as presented in the UK Joint SNCB Interim Displacement Advice Note (SNCB, 2022), and update the EIAR and NIS accordingly. Note: Due to the water depth within the array area and low numbers of Red-throated Diver observed in the existing DAS (May 2020 to October 2022), two full winter seasons may not be required to be surveyed to address any data gap, where it is detected. It is requested that the applicant considers undertaking targeted surveys covering one winter period, with two surveys per month undertaken in critical months for wintering Red-throated Diver. This would comprise one survey per month to be undertaken in November and December; two surveys per month in each of January, February, and March, and one survey to be undertaken in April. These updates are reflected in updates to the SISAA (Section 1.9 and Sections 3.4 and 3.5) and throughout the ornithology assessment of the NIS (see Section 5.1.2, including red-throated diver assessment at Section 5.1.2.19) and are supported by detailed survey information in the Technical Baseline (Appendix A15.1 of the NIS).	Although one survey per month was undertaken in January, February and March, the Developer is confident that the surveys provide the relevant information in defining the baseline of red-throated diver in the NWIS cSPA, and provide data that is representative of how the site is used over the winter period. Moreover, for the area of highest potential displacement (the array area plus 4km buffer), previous annual surveys were undertaken that area and used to define the baseline. Overall, the surveys allow for the estimation of abundance and densities estimates, as well as highlighting distribution, which have been used is the assessment of potential disturbance/displacement. In this context, the additional data provide a comprehensive and proportionate evidence base, and no further targeted surveys are considered necessary. Full details of the survey design, coverage and results are provided in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline. The NWIS DAS recorded consistently low usage of RTD within and around the proposed array area across the full survey period. Given the extent, recency and applicability of this coverage, the Developer considers the dataset sufficient to robustly characterise baseline RTD distribution across the PFI + 10 km buffer, without the need for additional targeted winter surveys. On this basis and informed by a review of the best available displacement evidence, the assessment of potential displacement effects on RTD has been updated to consider effects extending up to 10 km from the PFI, with findings reported in the NIS. Full details of the survey design, coverage and results are provided in the Appendix A14: Offshore and Intertidal Ornithology Technical Baseline. Displacement Assumptions The Developer has reviewed the available evidence on RTD disturbance, including that cited in the NPWS recommendation, and has adopted the following operational-phase displacement rates: PFI+ 4 km buffer: 100% displacement 4 km to 10 km buffer: 52% displacement (Garthe et al., 2023) These rates are considered precautionary and represent the upper end of displacement responses reported in the literature. A number of empirical studies report lower displacement within both distance bands (e.g. Percival, 2010; Heinänen et al., 2016; Zydelis et al., 2016; Webb et al., 2017; Mendel et al., 2019; Heinänen et al., 2020; Vilela et al., 2020; APEM, 2021; Garthe et al., 2023); however, the adopted values provide a conservative estimate of potential effects.

RFI Section	RFI	Response to RFI and relevance to NIS.
		The approach of using empirical studies to inform displacement rates is in line with the UK Joint SNCB Interim Displacement Advice Note, which states “The SNCBs have previously accepted an estimate of red-throated diver displacement at 100% up to 4km, an approach that recognises that displacement may occur up to and beyond 10km but is not 100%. Where a plan or project is within 10km of a SPA designated for non-breeding red-throated diver however, it is necessary to make a more detailed assessment, considering the details of displacement up to, and potentially beyond, 10km with an appropriate gradient agreed with the relevant SNCB which must take account of any local evidence supporting a known displacement rate” and "Displacement will not be 100% throughout the distance over which the effect occurs but there will likely be a gradation, with decreasing effects at increased distance from an OWF. That is to say that red-throated diver densities might be expected to increase at increasing distances from an OWF. While displacement within the OWF footprint may be close to 100%, the rate of change in displacement up to and beyond 4km appears to vary, perhaps between regions and survey platforms" These updates are reflected in updates to the SISAA (Section 1.9 and Sections 3.4 and 3.5) and throughout the ornithology assessment of the NIS (see Section 5.1.2, including red-throated diver assessment at Section 5.1.2.19) and are supported by detailed survey information in the Technical Baseline (Appendix A14 of the NIS).
8 (a) (iv)	Migratory Waterbirds: Chapter 15 of the EIAR, and NIS Appendix 19 Offshore and Intertidal Ornithology Migration Collision, address migratory waterbird species. The DAU notes that a significant number of migratory waterbirds (in terms of species and absolute numbers) migrate to and from Ireland across the Irish Sea. The DAU observation raises concerns in relation to the lack of sufficient collection of spatially relevant field data at key migration times (i.e. spring and autumn) in the EIAR, combined with the acknowledged low confidence levels applied in relation to avoidance rates in the migratory Collision Risk Modelling (mCRM) Tool. The DAU states the information submitted is insufficient to assess the migratory movements of birds through the development area. The DAU has concerns that the proposed development has the potential to have significant impacts upon migratory waterbirds and the Conservation Objectives of the SPAs for which they are listed. The DAU recommends that the applicant develops and implements more appropriate survey methodologies to detect and robustly characterise and assess the level of bird migration through the proposed development area, working collectively with the other Irish Sea ORE applicants. The Board notes the Vantage Point survey results submitted by the applicant have spatial limitations in terms of robustness and have not been used in quantifiable assessments. There is also limited information on flux or passage of birds through the proposed array area itself during migration (east-west and north-south).	The Developer acknowledges the DAU and Board observations regarding migratory waterbirds and has reviewed the assessment in light of these comments. Collision risk was assessed using the most up-to-date Marine Directorate migratory Collision Risk Modelling (mCRM) tool, applied as a cumulative, Irish Sea–specific model covering all Irish East Coast Phase One projects. The assessment considered all migratory qualifying interests of SPAs with potential migration pathways through the array area and was informed by Vantage Point (VP) surveys, published literature, telemetry data, and established species-specific parameters. The in-combination assessment identified no adverse effect on integrity on any migratory waterbird species (Section 6.4 of the NIS). In relation to An Bord Pleanála’s observation on flux and passage through the array area, the assessment does not rely solely on spatially constrained VP data. Passage rates were quantified within the mCRM using spatial modelling, with VP data used to inform species presence, flight directions and behaviours where available. A GIS-based approach was applied to define potential migration pathways, combined with species-specific parameters (including flight height distributions, biometrics and avoidance rates) to estimate the proportion of migratory populations passing through the array area. This approach reflects standard offshore practice, recognising that migration across the Irish Sea is diffuse and cannot be robustly characterised through fixed-point observation alone.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The data query is only partially filled by the applicant's approach to assessing collision risk, where GIS and straight-lines have been applied to identify potential migration pathways/flight routes to assess the proportion of flights (as a proxy for population) which may pass through the proposed array area. Having reviewed all the information presented, the Board requests that further assessment is carried out regarding impacts to migratory species. The applicant is requested to address the purported data gap relating to migratory birds to enable the assessment of potential impacts of the proposed development. Radar (horizontal and vertical surveys) (or similar) at the array area during peak migration periods should be utilised to provide site-specific data, which could be used to support the applicant's current assessment and provide quantitative information on passage of birds to feed into collision modelling. Should radar not be conducted and an alternative survey methodology utilised, comprehensive justification for the alternative should be provided. Peak migration periods during which data are to be collected can be further informed through review of existing data and published literature relevant to the project area and region. Whilst the DAU makes reference to the key migration times being spring and autumn, the Board considers that migration information during the winter months would also be of assistance to the assessment (e.g. irruptive cold weather movements from the continent and UK). The applicant is invited to consider this aspect for inclusion also. The applicant should note reliance on literature to fill knowledge gaps, while useful, does not provide adequate data to ensure a comprehensive assessment of potential effects on birds.	To address potential data gaps, additional VP surveys and passive acoustic monitoring (PAM) were undertaken on the mainland and at Rockabill Island (the closest landfall to the array area) (Appendix A24: Migratory Bird Survey Report). These surveys did not identify any unexpected migratory movements or behaviour and were consistent with the assumptions applied in the mCRM. Observations indicated that the majority of migratory movements (e.g. geese) were coastal, with substantially lower numbers recorded offshore. Notably, the proximity of the Rockabill surveys to the array area significantly reduces any spatial limitations in survey coverage. Radar was considered but not utilised due to technical as well as logistical constraints, including licensing limitations and operational constraints due to proximity to airport-controlled airspace associated with Dublin Airport Authority. While radar can provide general movement information, they do not reliably identify birds to species level or provide the species-specific parameters required for quantitative CRM. Given the dispersed nature of migration across the Irish Sea and the modelling approach adopted, radar surveys would be unlikely to meaningfully reduce uncertainty or alter the assessment conclusions. The survey and assessment approach adopted is consistent with current best practice for offshore ornithology, combining site-specific survey data with recognised modelling techniques. This aligns with UK and Irish guidance, which recognises that radar and similar techniques are not routinely relied upon for quantitative assessment of collision risk for migratory species. The resulting evidence base is therefore robust and proportionate. The Developer confirms that the surveys and data utilised for the purposes of the assessment are comprehensive, robust, in line with best practice and constitute the best available scientific knowledge in the field. The Developer concludes beyond reasonable scientific doubt that the proposed development will not result in adverse effects on the integrity of any relevant SPAs, having regard to their conservation objectives for migratory waterbirds.
8 (a) (v)	Terrestrial Bird Species: The DAU considers there to be deficiencies in the assessment of land-based avifauna, with CRM data based on general assumptions. The DAU recommends additional data and consideration of survey/monitoring options such as targeted deployment of passive acoustic devices at headlands and offshore nocturnal boat transects; review of available ringing/tracking data for migratory species and/or species which are known/likely to conduct staging/dispersal movement; and thermal imaging devices (hand-held/drone) surveys targeted at likely peak periods of passage. The Board requests that further assessment is carried out regarding impacts on terrestrial bird species.	The Developer acknowledges the DAU and Board comments regarding the assessment of terrestrial bird species and the request for further consideration of potential data gaps. Terrestrial and migratory bird species have been assessed using a precautionary, industry-standard approach, and analysed in the context of updated PAM/VP survey data collected in 2025. The Developer considers this to provide a robust and proportionate basis for the conclusions reached. All migratory qualifying interest species from relevant SPAs within 100 km of the proposed development were considered within the SISAA screening exercise. In

RFI Section	RFI	Response to RFI and relevance to NIS.
	The applicant is requested, having regard to the above comments to address the purported data gap and potential impacts of the proposed development on terrestrial birds.	total, 43 migratory species were initially identified as potentially exposed to collision risk during migration. A further quantitative screening exercise was undertaken using the Marine Scotland mCRM tool to estimate the number of individuals of each species predicted to pass through the array area annually. Species were screened out where predicted passage was equivalent to less than 1% of the Irish population, resulting in a worst-case impact magnitude of negligible and an imperceptible significance (irrespective of receptor sensitivity), which is not significant in EIA terms. This approach is consistent with established UK offshore wind farm assessment practice. The full list of species screened in is provided in Table A4.4 of the SISAA Species not included within the mCRM tool (e.g. sand martin, chough and grey heron) are not considered vulnerable to offshore collision risk. All screened-in species were assessed using the most up-to-date guidance and parameters, including Natural England interim advice (2022) and NatureScot Guidance Note 7 (2023). The mCRM tool represents a highly precautionary method, incorporating conservative assumptions on flight paths, array interaction and avoidance behaviour, with migration pathways generated using 10,000 bootstrapped flight lines for movements to and from Ireland and the UK. The approach assumes species may pass through the array even if not directly recorded, removing reliance on presence–absence data. Default avoidance rates embedded within the model align with current NatureScot guidance and have been reviewed by an ornithological expert (Cook, pers. comms). Baseline data collection was undertaken in line with recognised industry practice and was supplemented by additional land-based VP surveys and PAM during the autumn of 2025 to improve understanding of nocturnal and migratory movements and address potential data gaps (Appendix A24). These additional surveys did not identify any unexpected behaviour or levels of activity and were consistent with the assumptions applied in the collision risk modelling. In addition, available published evidence, including ringing and tracking studies for relevant migratory and staging species, was reviewed and used to inform movement patterns, flight behaviour and model parameters within the assessment. The Developer has considered the range of additional survey and monitoring approaches identified by the DAU, including targeted deployment of PAM at headlands, offshore nocturnal boat-based transects, and thermal imaging surveys (hand-held or drone-based). While these techniques can provide supplementary qualitative information on movement patterns, they do not reliably generate the species-specific flight heights, population flux estimates or behavioural parameters required to refine quantitative collision risk modelling inputs.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Furthermore, in the context of a highly diffuse migratory system such as the Irish Sea, such surveys are unlikely to provide spatially representative or materially different data to that already obtained through the existing evidence base. Given the very low predicted levels of impact, further targeted surveys (e.g. thermal imaging, radar or offshore nocturnal transects) would not materially change model inputs or outcomes. Pre-construction monitoring cannot refine avoidance rates, and deriving species-specific offshore avoidance parameters for terrestrial birds would require extensive monitoring that is not justified, particularly as most terrestrial species spend little time offshore and that the NIS comprehensively concludes no adverse effect on integrity for migratory receptors. As such, the existing combination of empirical survey data, literature review and precautionary modelling is considered robust, proportionate and sufficient to support the assessment conclusions. Notwithstanding this, additional species were considered to address consultation comments. Hen harrier, merlin and corncrake were included in the mCRM analysis using parameters from Woodward et al. (2023), with predicted collision mortality of 0.01, 0.17 and 0.01 birds per annum, respectively. Short-eared owl was also assessed, with minimal predicted mortality (0.16 birds per annum). Species not included in the mCRM tool were assessed through targeted literature review. Overall, terrestrial and migratory bird species have been comprehensively assessed using accepted, precautionary methods and the most up-to-date guidance, and there are no data gaps in the assessment of potential impacts. On this basis, and considering the additional VP and PAM data already collected, further survey effort to assess potential impacts on terrestrial birds is not necessary.
8 (a) (vi)	Baseline Data Vintage: The Board queries the age and relevance of the submitted aerial and boat-based survey data used in the application, in particular considering the 2022 Highly Pathogenic Avian Influenza (HPAI) season, which had significant negative impacts on a range of seabird species. The applicant is requested to provide justification that the original digital aerial surveys and boat-based data remains relevant and appropriate at the point of submitting additional information to support the proposed development.	The Developer notes An Bord Pleanála's query regarding the age and continued relevance of the submitted DAS and boat-based survey data, particularly in light of the 2022 HPAI event and its effects on seabird populations. The baseline assessment for offshore ornithology is informed by a robust and extensive evidence base, comprising 29 months of DAS within the MAC boundary +4 km buffer, which was supplemented by an additional 12 months of DAS across the NWIS cSPA in 2024/25 (see Appendix 14: Technical Baseline). Importantly, both datasets demonstrate consistent spatial and temporal patterns, notably relatively low usage of the PFI during the core breeding season and substantially higher numbers during the post-breeding dispersal period. These consistent patterns indicate that the datasets reliably characterise bird use of the site irrespective of inter-annual variability.

RFI Section	RFI	Response to RFI and relevance to NIS.
		In this context, there is no scientific justification to exclude the original 29-month dataset, as doing so would unnecessarily remove spatially and temporally relevant information. While HPAI has resulted in reduced breeding success and mortality at some colonies, it does not alter the relative spatial distribution, flight behaviour, or seasonal use of offshore areas that underpin collision risk and displacement assessments. As such, the DAS data remain appropriate for characterising offshore use, particularly when considered alongside demographic information. To ensure the most comprehensive and up-to-date baseline possible, the Developer has combined the data from the original 29 months of DAS (MAC DAS) and additional 12 months of DAS across the NWIS cSPA (NWIS DAS) and re-assessed baseline conditions on this expanded dataset, providing increased confidence and robustness in the assessment conclusions. In this context, the assessment has been informed by recent colony monitoring data (2024-2025) from BirdWatch Ireland (BWI), which provides up-to-date population estimates for key SPAs and ensures that reference populations reflect the most current information available. In addition, since receipt of the RFI, the Developer has undertaken additional land-based VP surveys and PAM to support the assessment of migratory movements (see Section 1.9 of the NIS). These data corroborate the patterns identified in the DAS datasets and did not identify any unexpected levels of activity or behaviour that would undermine the baseline conclusions. Taken together, the combined DAS datasets, recent colony monitoring information, and supplementary VP and PAM surveys demonstrate that the baseline ornithological data remain relevant, representative and appropriate at the point of resubmission. The offshore ornithology assessment within the NIS continues to reflect current conditions and provides a sound and precautionary basis for evaluating the potential effects of the proposed development.
8 (a) (vii)	Regional Breeding Population: The robustness of population calculations used within Chapter 15 Ornithology, and associated appendices, is important in assessing the potential effects of the proposed development. The Board notes that the EIAR (Chapter 15, Table 15.17 and Appendix 15.1, Table 2.12) presents two methods for estimating regional breeding season populations against which impacts are assessed in the EIAR. Method 1 (applied in the EIAR and used to inform assessment conclusions) involves the number of breeding adults in the breeding season plus the number of immatures in the previous non-breeding season. Method 2 (presented in the EIAR but not used to inform assessment conclusions) applies the ratio of adults to immature birds in the population to the number of breeding adults in the breeding season. The applicant is requested to provide evidence-based justification for applying its chosen method.	The Developer confirms that the concerns raised in relation to the estimation of regional breeding season populations have been addressed through adoption of Method 2 for all species assessed within the NIS, and that this approach has now been used to inform the updated assessment conclusions, including within the in-combination assessment. The derived adult: immature ratios were taken directly from Horswill & Robinson (2015), and the colonies and sites comprising the reference population for each species were derived from the Apportioning process. For full details see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline. The Developer notes, however, that while Method 2 is considered more precautionary overall, it may not be appropriate in all circumstances.

RFI Section	RFI	Response to RFI and relevance to NIS.
	Method 2 is considered to be the more appropriate and precautionary method to apply for estimating regional breeding season populations and the applicant is requested to use this methodology to inform assessment conclusions. The applicant is requested to clearly present the values and equations used to derive the population estimates, including their sources (e.g. a list of colonies or sites included within the reference populations), to allow validation of the methodology. The applicant is requested to also address this issue in the Cumulative Effects Assessment (CEA) chapter. Regional Reference Populations: The applicant has used the Ireland-wide populations of Black-headed Gull Ichthyaetus ridibundus and Common (Mew) Gull Larus canus, resulting in an overestimation of the reference population which may be affected by the project and, therefore, underestimation of potential impacts. The applicant is requested to apply more appropriate regional population estimates to these species and revise the baseline and assessment accordingly.	In particular, for some species or regions where the estimated breeding population is particularly low, using this method is likely to under-represent immature birds. This limitation is acknowledged in the assessment, and has been considered when interpreting the magnitude and significance of effects. The Developer provides an updated assessment in the SISAA, using Method 2 for the regional breeding population (for all species except Manx shearwater). In the SISAA (Section 3) the Developer notes that Method 2 may not be appropriate in all circumstances such as for species or regions where the estimated breeding population is low.
8 (a) (ix)	Breeding Season of Common Guillemot: The Board does not agree with the applicant's determination that the Irish east coast Common Guillemot Uria aalge breeding season ends at the end of June. The evidence presented by the applicant is based on a study conducted at a colony in Scotland (Dunn, 2020, 2022) and suggests that the breeding season 'ends' around 10 July, although the July DAS were flown on 18 July 2020, 05 July 2021, and 04 July 2022. There are consequences to regarding the July period as non-breeding which results in the breeding mean peak count bio season for the proposed array area plus 2 km, to be 1,813 (95% Cis 1,258 – 2,385) individuals as opposed to 13,703 (95% Cis 8,940 – 18,414) individuals (see Table 3-1 of Appendix 15 of the EIAR / Appendix 17 of the NIS, Offshore and Intertidal Ornithology Displacement Analysis). This has consequences when apportioning estimated mortality figures arising from displacement impacts to Common Guillemot populations breeding at Lambay Island SPA, Ireland's Eye SPA and others. The applicant is requested to apply the UK seasons (Furness, 2015) for Common Guillemot (breeding season: March to July; non-breeding season: August to February), aligning with the approach taken for other species assessed.	Since submission of the original NIS, the Developer has completed an additional 12-month programme of DAS covering the NWIS cSPA (September 2024 to August 2025). This data has been combined with the original 29-month MAC DAS dataset (2020–2022) to form a 41-month, site-specific dataset, which is presented in to Appendix A14. Further, the Developer has attended two meetings with NPWS to discuss and justify the breeding season assumptions applied to guillemot as outlined in Appendix A2 (Summary of Consultation) of the SISAA. This combined DAS dataset provides the most up-to-date and spatially comprehensive evidence base for the NWIS cSPA and its qualifying interests, including common guillemot. Analysis of the combined MAC and NWIS DAS demonstrates a consistent and marked change in guillemot abundance and spatial distribution in July, both within the proposed development area and across the wider NWIS cSPA. Specifically: Mean and peak abundances in July increase by an order of magnitude relative to April–June, including across large areas of the NWIS cSPA. July distributions are spatially extensive and diffuse, rather than concentrated around colonies, and are inconsistent with central-place foraging behaviour by breeding adults. Observed July patterns are characteristic of the onset of post-breeding dispersal, involving colony mixing by adults and the presence of fledged juveniles and non-breeding immatures. These findings are consistent across years and are supported by published literature on guillemot breeding phenology and post-breeding dispersal behaviour.

RFI Section	RFI	Response to RFI and relevance to NIS.
		While generic bio-season definitions (e.g. Furness, 2015) are presented for context, the Technical Baseline (Appendix A14) demonstrates the strong, site-specific evidence that exists to refine bio-season boundaries for this species, consistent with established SNCB and regulatory practice were supported by empirical evidence. On this basis, and as set out in Appendix A14, the Developer has defined the core breeding bio-season for guillemot as April–June, with July treated as post-breeding for the purposes of abundance analysis, impact assessment and apportionment. This approach: Reflects the actual ecological behaviour of the species within the NWIS cSPA, as evidenced by the expanded DAS dataset; Avoids double-counting post-breeding birds as breeding adults; Prevents systematic over-attribution of July abundance to nearby SPAs, including Lambay Island SPA, Ireland's Eye SPA and the NWIS cSPA itself. The final point is particularly important, as applying the NatureScot apportioning methodology would lead to unrealistic outcomes. For example, 93.8% of birds within the NISA PFI are predicted to be apportioned to Lambay Island. However, we know that in July, during NWIS DAS surveys, approximately 300,000 guillemots were estimated to be present within the NWIS cSPA. Apportioning such a large proportion of these birds to Lambay Island would imply a population far exceeding the size of the Lambay Island population itself, which is neither logical nor feasible, and inappropriate for assessment purposes. The Developer's alternative approach, as laid out in Appendix A14, is biologically realistic, evidence-led and precautionary, and grounded in the most robust dataset currently available for the NWIS cSPA. The updated bio-season definitions and their implications for apportionment and impact assessment are fully described and justified in Appendix A14 and have been applied consistently throughout the updated NIS and termed the 'site-specific approach'.
8 (a) (x)	The DAU notes there appear to be miscalculations or typographical errors with the display of the survey data and its analyses in relation to Common Guillemot. Table 2.40 of Appendix 12 Offshore and Intertidal Ornithology Technical Baseline presents a zero count of Common Guillemot for the November 2020 survey. This is at odds with the non-zero density Common Guillemot heat map for November 2020 (page 84), and it does not correspond to the estimate of density and abundance for Common Guillemot for November 2020.	The Developer acknowledges the DAU's query regarding possible miscalculations or typographical errors in the guillemot survey data and confirms that none are present. The zero values reported in Table 2.40 of Appendix 12 represent raw, species-level counts of guillemot recorded within the proposed development array area during each survey. In November 2020, no guillemots were identified to species level within the array area, and this is correctly shown as a zero raw count.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The Common Guillemot Density Heat map (dated February 2021, page 85) indicates that no Common Guillemots were present during that particular survey, which corresponds to the zero count in Table 2.40 but which appears to be at odds with the non-zero estimates of abundance and density for Common Guillemot for February 2021. The applicant is requested to address the issues raised.	Where birds could not be identified to species level (e.g. guillemot versus razorbill), observations were recorded as guillemot/razorbill. In November 2020, 120 such records were collected despite the absence of positive guillemot identifications. In accordance with the methodology set out in paragraph 2.7.3 of Appendix 12, these records were apportioned to species using the ratio of confirmed identifications across the wider dataset. This apportionment resulted in an estimated guillemot abundance of 445 individuals, which underpins the non-zero density shown on the November 2020 guillemot heat map. In February 2021, no guillemots or guillemot/razorbill records were recorded within the array area. Accordingly, both Table 2.40 and the corresponding density map correctly show an absence of guillemots. In summary, Table 2.40 of Appendix A 12 reports raw species-level counts only, while abundance estimates and density maps incorporate apportioned guillemot/razorbill records. This discrepancy has been amended within the Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.
8 (b) (i)	Sensitivities and Screening The applicant has concluded that several wader species have a low sensitivity to displacement effects citing a study which only looks at seabirds and does not mention these species (Bradbury et al., 2014, 2017). The applicant is requested to provide and cite an appropriate source providing justification for determining waders as having a low sensitivity to disturbance, which should be cited in the submitted documentation or amend the relevant documentation accordingly.	The Developer acknowledges that Bradbury et al. (2014, 2017) focus primarily on seabird species and do not provide an appropriate evidence base for assessing disturbance or displacement sensitivity in wader species. The assessment has therefore been reviewed and updated accordingly. In relation to wader species, disturbance sensitivity has now been informed by NatureScot guidance, specifically “Disturbance distances in selected Scottish bird species” (NatureScot, last updated July 2022), which summarises recommended disturbance distances derived from an updated review of empirical studies (Goodship & Furness, 2022). This guidance demonstrates that wader species typically exhibit comparatively short disturbance distances when compared to other bird groups such as divers, seaduck, raptors and some terns. Shorter recommended disturbance distances indicate greater tolerance to anthropogenic activity at closer ranges and therefore lower sensitivity to disturbance effects. Accordingly, the Developer considers the classification of relevant wader species as having low sensitivity to displacement to be appropriate and evidence-led (Section 5.4.1 of the NIS). The submitted documentation has been updated to cite Goodship & Furness (2022) in place of Bradbury et al. (2014, 2017), and the assessment conclusions remain unchanged.
8 (b) (ii)	The applicant is requested to provide further justification in relation to the screening out of European Shag Gulosus aristotelis and Great Cormorant Phalacrocorax carbo for several SPAs (NWIS cSPA, Skerries Islands SPA, Ireland’s Eye SPA, and Lambay Island SPA).	The Developer does not consider the statement in Section 5.4.2 to be contradictory but acknowledges that clarification is required and has reviewed and amended the wording in Section 5.4.2 of the NIS to add clarity.

RFI Section	RFI	Response to RFI and relevance to NIS.
	A contradictory statement is included in Section 5.4.2 of the submitted NIS: "all species were screened in with the exception of cormorant and shag, which are not considered at risk of offshore impacts of collision effects (based on flight height data) or displacement impacts (with evidence of birds even being attracted to OWFs and roosting on the structures) (Bradbury et al., 2014, Dierschke et al., 2016)". The applicant is requested to review this and amend their documentation accordingly to address this issue.	European Shag (Gulosus aristotelis) and Great Cormorant (Phalacrocorax carbo) were screened out for the relevant SPAs on the basis of there being no plausible impact pathways with respect to both collision risk and displacement effects. Available evidence indicates that both species predominantly undertake low-altitude flight, below the rotor-swept zone of offshore wind turbines, such that collision risk is considered negligible (Johnston et al., 2014). In addition, both species are strong divers and benthic foragers with behaviour that is not typically associated with sustained flight at heights relevant to collision impacts. Now presented in Section 3.4.3 of the SISAA. In relation to displacement, published evidence indicates that neither species show consistent avoidance of offshore wind farms (Bradbury et al., 2014). On the contrary, observations of individuals using wind farm areas and, in some cases, roosting on turbine structures suggest a tolerance of, or neutral response to, offshore wind developments (Dierschke & Garthe, 2016). This behaviour is not interpreted as indicating impact; rather, it supports the conclusion that displacement effects are unlikely to occur at a scale relevant to the conservation objectives of the SPAs concerned. Accordingly, while both species were considered at the screening stage, they were screened out of further assessment because there is no impact pathway for either species in respect of: collision risk (due to low flight heights); and displacement or barrier effects (demonstrated by the best available evidence base). The documentation has been amended to more clearly distinguish between screening-in for consideration and screening-out following impact pathway evaluation, thereby avoiding any ambiguity. The conclusion that European shag and great cormorant do not require Appropriate Assessment for the identified SPAs remains unchanged. Justification for this position is now also found in Section 3.4.3 of the SISAA.
8 (c) (i)	Displacement Methodology: The Board is satisfied that the applicant has used the industry standard Displacement Matrix approach. However, the Board notes that the applicant has based conclusions in relation to displacement on its preferred rates for displacement and mortality of auks and Northern Gannet (50% displacement and 1% mortality for auks, 70% displacement and 1% mortality for Northern Gannet Morus bassanus) instead of on industry recommended rates, and has taken these rates forward to Population Viability Analysis (PVA).	The Developer notes An Bord Pleanála's comment regarding the displacement and mortality rates applied for auks and gannet and acknowledges the request to consider the recommended rates set out in NatureScot (2023). The Developer maintains that the displacement and mortality rates originally applied (50% displacement and 1% mortality for auks; 70% displacement and 1% mortality for gannet) are appropriate and proportionate, having regard to the available empirical evidence, site-specific survey data and the characteristics of the proposed development.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The Board queries the applicant's use of preferred rates in relation to auks, due to NISA's close proximity to the coast and to breeding Common Guillemot and Razorbill Alca torda colonies (NWIS cSPA, Lambay Island SPA, and Ireland's Eye SPA). The applicant is requested to review the EIAR and NIS to apply rates more appropriate to the location and scale of the development, and in line with industry recommendations (60% displacement and 1-5% mortality for auks; and 70% displacement and 1-3% mortality for Northern Gannet; NatureScot, 2023), to inform assessment and enable comprehensive conclusions. Where impacts with these rates result in a >1% increase in baseline mortality rate, the mortality estimates should be taken forward to PVA.	A full, evidence-based justification for the Developer's preferred rates is provided in Appendix A17 Offshore Ornithology Displacement Analysis. Notwithstanding this position, and in recognition of An Bord Pleanála's request, the Developer has also applied the NatureScot (2023) precautionary rates (60% displacement and 1–5% mortality for auks; 70% displacement and 1–3% mortality for gannet) alongside the Developer's preferred rates within the NIS. N.B. Where application of the NatureScot (2023) rates results in a greater than 1% increase in baseline mortality for any species, the resulting mortality estimates have been taken forward to PVA, in line with industry practice and guidance (Parker et al., 2025c). Accordingly, the assessment provides a transparent, robust and precautionary evaluation of displacement effects, while clearly setting out and justifying why the Developer's approach represents the best available evidence.
8 (c) (ii)	Black-legged Kittiwake Displacement: Appendices 15.7, 15.8 and 15.9 document a proposed method statement for ornithology for the Irish Sea Phase 1 ORE projects, which was responded to by the NPWS, with a further response by the applicant to the NPWS response. The issue of Black-legged Kittiwake Rissa tridactyla displacement has been set out in the EIAR and within the appendices referenced. The Board notes that the species is a SCI for the NWIS cSPA, as well as Lambay Island SPA and Ireland's Eye SPA within foraging range of the proposed array area. Black-legged Kittiwake has variable responses to OWFs, ranging from up to 45% displacement effects to mild attraction effects, varying at different latitudes, distances from colonies, and seasons (e.g. Peschko et al., 2020; Pollock et al., 2024). Having reviewed the information presented, the Board disagrees with the screening out of Black-legged Kittiwake for displacement for reasons related to the proximity of the proposed development to the coast and to breeding colonies. The applicant is requested to use the displacement matrix approach, as for other species. Here, a 30% displacement rate should be applied, and mortality rates should be based on best available evidence, but with a range of rates presented, from 1% to 3%, as advised by NatureScot (2023). The applicant, based on the revised findings, is requested to re-analyse the displacement impacts on the regional population of Black-legged Kittiwake in the EIAR and against the Conservation Objectives of the relevant SPAs and cSPA in the NIS to ensure comprehensiveness of appropriate assessment conclusions.	Without prejudice to its position that the best available evidence indicates that black-legged kittiwake are not prone to displacement from operational offshore wind farms, the Developer has included an assessment of kittiwake displacement within Section 5.4 of the NIS. The assessment follows the UK Joint SNCB Interim Displacement Advice Note prepared by MIG Birds (SNCBs, 2022), within which kittiwake are not identified as a priority species for displacement assessment. Consistent with this guidance, the NIS Section 5.4 classifies kittiwake as having low vulnerability to displacement. The NIS assessed all qualifying interests of the NWIS cSPA, including kittiwake, with consideration of spatial distribution and disturbance in line with the site conservation objectives. As set out in Section 5.4.2.4 of the NIS, no adverse effect on integrity is predicted for kittiwake, reflecting the species' extensive foraging range (mean maximum + 1 SD: 300.6 km; Woodward et al., 2019) and low sensitivity to disturbance and displacement. Updated conservation objectives published in November 2024 for Ireland's Eye SPA, Howth Head SPA and Lambay Island SPA have been reviewed, and incorporated in the NIS. Both displacement and collision impacts have been assessed in the NIS for all relevant SPAs. Overall, displacement effects were lower than collision risks. Neither impact pathway gave rise to AEoI in view of the sites' conservation objectives, either alone or in combination (as concluded in the Section 5.4 and 6.4 of the NIS). These conclusions are considered robust, as they are based on precautionary assumptions, up-to-date survey data, and established assessment methodologies applied consistently across all relevant SPAs.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Whilst the assessment of kittiwake displacement has been included in response to this RFI, the developer position is that the use of the NatureScot (2023) approach is likely to overestimate effect. NatureScot (2023) advises the application of a precautionary displacement rate of 30% with 1–3% mortality for kittiwake; however, these rates are not derived from robust published empirical studies, but instead reflect a highly precautionary interpretation informed by a small number of studies. The wider peer-reviewed evidence base, together with the Joint SNCB advice, is less consistent and does not demonstrate clear or systematic evidence of displacement effects for kittiwake at operational offshore wind farms; studies instead report variable responses, including negligible effects or a balance of attraction and avoidance behaviours across sites (e.g. Dierschke et al., 2016; Leopold et al., 2013; Vanermen et al., 2014; Petersen et al., 2006; Mendel et al., 2014; APEM, 2017; Percival & Ford, 2017; Trinder et al., 2024; Pollock et al., 2023; Johnston et al., 2024; Lamb et al., 2024). The joint SNCB guidance bases screening on disturbance susceptibility and habitat specialisation scores (Furness et al., 2013; Bradbury et al., 2014), with species typically taken forward where either score exceeds 2 (out of 5). Kittiwake score 2 for both metrics. The guidance further notes that gull species generally do not require routine displacement assessment, reflecting evidence of neutral responses or attraction to offshore wind farms. Post-construction monitoring provides further support for this approach. For example, studies at Westermost Rough (APEM, 2017) and Beatrice (Trinder et al., 2024) found no evidence of kittiwake displacement or turbine avoidance. Likewise, tagging data indicate continued use of operational wind farm footprints during the breeding season, including within the Buchan Ness to Collieston Coast SPA (O'Hanlon et al., 2024). One study reporting reduced kittiwake density (Peschko et al., 2020) identified a 45% reduction within an array and a 3 km buffer in the German North Sea; however, transferability of these findings to the proposed development is uncertain. Effects were limited to a narrow breeding-season window (mid-May to mid-July), confidence intervals were wide, and survey effort was uneven between impact and control areas, meaning alternative explanatory factors cannot be ruled out. Most recently, tracking data from Whinnyfold, Scotland (Pollock et al., 2024) showed macro-scale attraction of kittiwake to within 1 km of an offshore wind farm, alongside meso-scale avoidance of individual turbines. While the study notes that aggregation could theoretically reflect redistribution within the array, one offshore wind farm was visited by 95% of tagged individuals, indicating that significant displacement is unlikely. In this context, there is limited empirical support for applying standardised displacement rates, and the precautionary approach adopted by NatureScot is likely to overestimate effects.

RFI Section	RFI	Response to RFI and relevance to NIS.
8 (c) (iii)	Red-throated Diver Displacement: The Board requests that the applicant reconsiders screening out displacement effects on Red-throated Diver associated with the array area. As noted in point a(iii) above, Red-throated Diver is highly sensitive to displacement effects associated with OWFs and vessel traffic (e.g. Furness et al., 2013; Bradbury et al., 2014a-b, Fliessbach et al., 2019). As described in point a(iii) and the references therein, Red-throated Diver can be displaced by OWFs up to 10 km. The species is a SCI of the NWIS cSPA and the region supports an important wintering population (HiDef, 2019). The applicant is requested to use appropriate data (as discussed in points a(ii) and (iii) above) to assess potential displacement impacts to the regional and the cSPA Red-throated Diver populations in the EIAR and the NIS. The applicant should consider displacement effects up to 10 km from the proposed array area during operation.	See Developer response to RFI 8(a) (iii) above.
8 (c) (iv)	Collision Risk Modelling: It is noted that Roseate Tern flight height data and its analysis were not presented in the Johnston et al. (2014a-b) paper referenced in Appendix 18. The DAU in their observation recommends that clarification be sought as to the sources of the precise parameters for Roseate Tern flight behaviour used in the CRM as well as a statement regarding the robustness of such data. The applicant is requested to address this issue.	Additional NWIS DAS data were collected in 2024 and 2025, and the CRM has been fully updated based on these surveys (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling). Higher numbers of terns were recorded during the late breeding season; however, as with previous surveys, the sample size and reliability of flight height estimates derived from DAS and vessel-based methods was not considered sufficient for direct use in CRM. Accordingly, the Developer has continued to use published flight height distributions from the literature, which provide the most reliable and widely accepted basis for assessment (JNCC, 2024). Common tern flight height distribution from Johnston et al. (2014) has been used as a proxy for roseate tern. This approach was adopted as common tern most closely reflects the flight ecology and behaviour of roseate tern and is the most precautionary of the small tern species considered (common and Arctic), due to its higher flight height distribution. Johnston et al. (2014) is derived from an extensive, multi-site dataset and is recognised as the most comprehensive and robust source currently available. It is widely used across England, Wales and Scotland and is recommended by both Natural England and NatureScot for CRM assessments over site-specific flight height data derived from boat-based surveys or DAS estimates. In addition, the Developer has committed to increasing the minimum lower turbine tip height to 40 m LAT, where possible (with the exception of the aviation restriction zone associated with Project Option 2, where a minimum tip height of 35 m applies to eight turbines). This substantially reduces collision risk for low-flying species such as terns. Based on Johnston et al. (2014), increasing lower tip height from 22 m to 40 m reduces the proportion of common and Arctic terns flying within the rotor-swept zone by over 90%, leaving only 0.47% (common tern) and 0.22% (Arctic tern) of flights within the risk envelope. This measure provides a significant further reduction in potential collision risk to roseate tern.

RFI Section	RFI	Response to RFI and relevance to NIS.
8 (c) (v)	The Board notes that Natural England have accepted a 70% reduction in Northern Gannet collision mortality estimates to account for macro-avoidance for other offshore wind farm developments, such as Hornsea 4. However, given the proximity of the proposed development to the coast and to the nearest breeding colony at Ireland's Eye (c. 15km away), a more precautionary approach is recommended. The applicant is requested to revise the approach taken in relation to Northern Gannet collision estimates so they are not reduced by 70% to account for macro-avoidance.	The Developer considers this level of precaution to provide over-inflated, unrealistic results. Given the evidenced avoidance of operational wind farms by gannet (~70%), collision risk is expected to be reduced by approximately the equivalent value when assessing CRM based on pre-construction densities within the proposed development. Parameters such as distance to coast or nearest breeding colony are also variables that are not considered when conducting CRM. Nevertheless, the Developer has presented CRM outputs both with and without the application of macro-avoidance throughout the NIS.
8 (c) (vi)	Any potential specific mitigation measures to minimise the effects of the project on birds, such as painting of turbine blades, the use of curtailment systems in particular conditions or at particular times etc, if considered appropriate, should also be included and addressed in the application documentation.	The Developer has already committed to substantial and effective mitigation measures that directly address the key risk pathways. A full list of the mitigation measures to minimise impacts to birds is outlined in Section 4.16 of the NIS. Outlined below is an overview of the measures the Developer has committed to, using terns as an example. Blade Tip Clearance and Flight Height Evidence Seabirds, in general, are low-flying species spending the majority of their time on or close to the sea-surface. Modelled seabird flight heights, for 25 species, demonstrate that the majority of flights occur within 20 m of the sea surface (Johnston et al., 2014). Recognising this, the proposed development has committed to increasing the turbine air draft (minimum blade tip clearance above sea level) to 40 m LAT, where possible (see details under point 'iv' above). Based on the flight-height distributions presented in Johnston et al. (2014), increasing the air draft from 22 m to 40 m reduces the proportion of common and Arctic terns flying within the rotor swept zone by over 90%. At a 40 m air draft, the probability of a bird occurring within the rotor swept zone is just 0.22% for Arctic tern and 0.47% for common tern, with comparable reductions for roseate tern. As a result, the predicted number of collisions for all tern species is extremely small. Similar benefits can be seen for other key collision risk species (e.g. kittiwake, and other gulls). This increase in blade tip clearance represents the single most effective mitigation measure available for collision risk reduction for low-flying seabirds and far outweighs the potential benefits of secondary or experimental measures, such as painting of turbine blades and the use of curtailment systems. Blade Painting as a Mitigation Measure The Developer is aware of studies investigating turbine blade painting as a collision mitigation measure, including May et al. (2020), which reported a reduction in bird collisions following the painting of one blade black at the Smøla onshore wind farm in Norway.

RFI Section	RFI	Response to RFI and relevance to NIS.
		While this study demonstrated that visual contrast may influence collision rates for some species under specific conditions, it is context-specific, onshore in nature, and centred on large raptors. Its applicability to offshore wind farms and to seabird species such as terns remains unproven. More recently, Klop et al. (2023) assessed the effectiveness of blade painting across multiple sites and species groups. While a reduction in collision rates was observed following blade painting, the effect was described as "fairly weak" and not statistically significant. The authors further noted substantial variability in collision rates and concluded that the current evidence base is insufficient to draw robust conclusions regarding effectiveness, particularly across different species groups and environments. Given the limited, inconclusive, and largely onshore-derived evidence, and the absence of clear offshore seabird-specific validation, the scientific evidence does not currently support the widespread implementation of blade painting as an effective mitigation measure offshore. Accordingly, the Developer does not propose to implement this measure at this time. Empirical Evidence from Post-Construction Monitoring Evidence from offshore post-construction monitoring further supports the effectiveness of increased blade tip clearance and inherent avoidance behaviour. Post-construction collision risk monitoring at the Aberdeen Bay Offshore Wind Farm used radar and camera systems over a two-year period to assess bird behaviour within and around the wind farm (Vattenfall, 2023). The study found that birds consistently altered flight paths to avoid turbines, and no bird collisions were recorded during the monitoring period. This provides strong empirical support that the assessment parameters, such as avoidance rates, are precautionary and that further monitoring or additional mitigation (in terms of blade colours) may have limited benefit. Turbine Curtailment During Bird Migration While turbine curtailment during bird migration has been considered as mitigation, current evidence indicates that broad, period-based curtailment during peak migration is unlikely to be effective or proportionate. Empirical evidence from the VolZug project, using multi-season radar and AI-assisted monitoring, shows extremely high avoidance rates by migratory birds (>99.8%) and no correlation between migration intensity and collision risk (Liedtke et al., 2025). Instead, collision risk is more strongly associated with specific weather conditions, such as reduced visibility, undermining the rationale for generic curtailment linked solely to migration peaks.

RFI Section	RFI	Response to RFI and relevance to NIS.
		This evidence is reflected in UK policy, with National Policy Statement EN-3 noting that shutdowns during estimated peak migration periods are currently unlikely to offer suitable mitigation. Accordingly, curtailment should be viewed as a potential future, highly targeted measure triggered by defined risk conditions, rather than a standard or precautionary mitigation approach at this stage. Displacement Mitigation for the NWIS cSPA In addition to collision risk mitigation, the Developer has undertaken pre-application design refinements to mitigate potential displacement impacts on the NWIS cSPA, particularly for species sensitive to habitat loss and disturbance. There has been a considerable reduction in the size of the array area from the original Maritime Area Consent (MAC) boundary. This process considered hotpots of auks, the most abundant species within the survey area, using species heatmaps from raw observations and a modelled approach using MRSea (MRSea Modelling Report). When displacement is considered relative to turbine spatial extent (PFI) rather than the array boundary, the affected area of the SPA reduces further. Consequently, any displacement effects on auks and other sensitive species are geographically limited and have been substantially reduced through the design and impact assessment process. Conclusion The Developer has implemented robust, evidence-led mitigation through turbine design, WTG layout refinement and reduction in the array area. Increasing blade tip clearance to 35/40 m LAT (see details under point 'iv' above) is demonstrably the most effective measure for reducing collision risk to terns and other low-flying species, supported by published flight-height data and offshore post-construction monitoring evidence. In contrast, blade painting remains experimental, with weak and inconclusive evidence in the offshore context, and therefore is not justified as a mitigation measure at this stage.
8 (c) (vii)	Impacts to Prey Species: The DAU in their observation states that the documentation submitted does not appear to include any consideration of potential indirect effects of the proposed development on the likely prey-base (i.e. Atlantic salmon Salmo salar) for resident Common Kingfisher Alcedo atthis, an Annex I species and a SCI for the River Boyne and Blackwater SPA. The DAU also state that there does not appear to be any consideration of the potential effects with respect to either the associated construction works and/or operation of the development on the Conservation Objectives of the River Boyne and River Blackwater SPA; which is connected to the River Boyne SAC, Boyne Coast and Estuary SAC, and the offshore marine waters of the Irish Sea. The applicant is requested to address the issues raised.	Further information on the screening ZoI for terrestrial ornithological SPAs has been added to Table 1.7 of the 2024 SISAA. A 15 km ZoI is used for low mobility/sedentary terrestrial ornithological qualifying interests. The Applicant has considered the River Boyne and Blackwater SPA for indirect effects and disturbance and displacement and Table 3.12 of the 2024 SISAA has been updated.

RFI Section	RFI	Response to RFI and relevance to NIS.
		This SPA is located over 15 km from the onshore and offshore development areas therefore there is no connectivity for disturbance or displacement effects for common kingfisher and other low mobility/sedentary terrestrial bird species as a result of the construction, operation and decommissioning of the onshore and offshore infrastructure. It should be noted that the qualifying bird features of the River Boyne and Blackwater SPA would not experience indirect effects via changes to prey availability caused by the proposed development through changes to water quality (e.g. through increases to suspended sediment concentrations or accidental pollution) as the ZoI of the proposed development for marine and sediment water quality has been defined using the sediment excursion distance which represents a 12km area around the array area and ECC boundaries. As the proposed development would not result in effects on fish or other prey species within the supporting habitat of the SPA due to the lack of connectivity, no indirect effects on supporting habitats or food resources are anticipated. Therefore, there is no potential for LSE in relation to all effects, either alone or in-combination. Table 3.12 in the 2024 SISAA, which provides the sites and features identified for offshore and intertidal ornithological receptors, has been updated and replaced by Table A3.5 in the SISAA. There are no updates required for the NIS. The River Boyne and Blackwater SAC has been assessed in the NIS for Atlantic salmon and river lamprey (Section 5.2 and 6.2) and no adverse effects on integrity was concluded both alone and in-combination with other plans or projects.
8 (c) (viii)	The applicant is requested to fully assess the potential impacts on Atlantic herring Clupea harengus potential spawning habitat. The applicant is requested to review the application in this regard and clarify potential effects on seabird prey populations.	The potential for impact to Atlantic herring spawning habitat, and in result indirect impacts on seabirds due to impacts on prey, has been further assessed through reference to Particle Size Analysis data collected along the ECC and within the array area in 2025 (AQUAFACT, 2025), and heatmapping in accordance with the Kyle-Henney, (2024) methodology. The impact assessment has been reviewed in light of this additional information alongside design refinements and the potential effects updated as appropriate in Section 5.2 and 6.2 of the NIS. Further information on the Mourne and Dundalk Bay herring spawning grounds has been included in Appendix A16: Fish and Shellfish Ecology Baseline Characterisation.
8 (d) (i)	Cumulative and Transboundary Effects Cumulative Effects Assessment: Impacts on birds in the CEA (Section 15.9 of Chapter 15, and Chapter 38) are presented and assessed against annual populations only.	The In-combination assessment has been updated to assess impacts on birds separately for the breeding and non-breeding seasons where the available data allow. Section 6.4 has been revised accordingly, with season-specific population estimates applied to the displacement and collision risk assessments. However, data limitations for some older operational OWFs mean that a fully comprehensive seasonal breakdown is not possible for some species at some wind farm sites.

RFI Section	RFI	Response to RFI and relevance to NIS.
	Having regard to points a(vii) Regional Breeding Population and c(i) Displacement Methodology above, the applicant is requested to revise the CEA to ensure impacts are presented and assessed against the breeding and non-breeding season populations separately.	In these situations, the annual total is therefore considered the most appropriate basis for assessment, as it avoids artificial precision, prevents double-counting or misallocation of effects between seasons, and ensures that the assessment population remains proportionate to spatial extent of projects considered cumulatively. This approach provides a robust representation of potential impacts at the population level and is consistent with established CEA practice, which does not explicitly recommend that the breeding and non-breeding season populations are assessed separately (Parker et al., 2025c).
8 (d) (ii)	Migratory Waterbird Species: Migratory birds have not been included in the Cumulative and Inter-related Effects Assessment presented in the application documentation. As stated previously (points a(iv) Migratory Birds and a(v) Terrestrial Birds), the Board has requested further assessment of the impact on migratory birds for the project, and further data to inform the assessment. The applicant is requested to assess cumulative impacts to migratory bird populations, considering effects of the Irish Sea Phase 1 ORE projects and other existing or currently proposed plans and projects that may affect the same migratory populations. The applicant is requested to update the application documentation, as required.	In response to An Bord Pleanála's request for further assessment, the Developer has undertaken a joint Phase One mCRM for the Irish Sea Phase 1 ORE projects (Appendix A23). This assessment considered cumulative collision risk to migratory bird populations using consistent methodologies, shared assumptions, and population-level metrics across projects, including existing and proposed developments affecting the same migratory flyways. The Phase One mCRM demonstrates very low levels of predicted cumulative impact for all assessed migratory species, with mortality estimates representing a negligible proportion of relevant Irish and biogeographic populations and remaining well below accepted significance thresholds. Consequently, no adverse cumulative effects on migratory waterbird populations are predicted to arise from the proposed development alone or cumulatively with other plans and projects in the Irish Sea. The findings of the joint Phase One mCRM have been used to update the application documentation, including the cumulative assessment sections relating to migratory birds, to ensure consistency with the latest evidence base and to address points 8a(iv) and 8a(v) raised by the An Bord Pleanála.
8 (e) (i)	Foraging Range Screening: Within the document 'Supporting Information for Screening for Appropriate Assessment', Section 3.4.3.1, it is stated that in Table 3.13 "For SPAs beyond 300km, only features which have breeding season connectivity were included (based on foraging ranges in Table 1.8), for example gannet and kittiwake due to their larger foraging ranges". The last table in that section is numbered 3.12 and, notwithstanding the labelling, does not include any SPAs beyond 300 km. The applicant is requested to clarify this discrepancy and present screening determinations for all SPAs within the species-specific foraging ranges, including those beyond 300 km from the proposed array area.	The intention of the assessment was to include SPAs beyond 300 km where species have demonstrated breeding-season connectivity based on species-specific foraging ranges (e.g. gannet and kittiwake). We confirm that screening determinations for all SPAs within the relevant species-specific foraging ranges, including those beyond 300 km from the proposed array area, have now been included in the Supporting Information for Screening for Appropriate Assessment (SISAA).

RFI Section	RFI	Response to RFI and relevance to NIS.
8 (e) (ii)	Gull Screening for Likely Significant Effect: The applicant is requested to provide further justification to screen out Black-legged Kittiwake and Lesser Black-backed Gull Larus fuscus for the Seas off Wexford cSPA, given that this cSPA is within the species-specific foraging ranges of the proposed development or alternatively provide further consideration of these species in the NIS.	Foraging ranges are relevant for deriving connectivity between breeding colonies (where birds act as central place foragers) and developments, with developments falling within a given foraging range from an SPA potentially impacting that SPA. The Seas of Wexford SPA, as a marine SPA, does not have any breeding seabirds (it protects seabirds breeding at other SPA colonies), and as such birds are not acting as central place foragers from this SPA. Therefore, species specific foraging ranges from this SPA are only relevant in determining which colonies may contribute to the numbers of birds within the Seas off Wexford SPA during the breeding season. However, this is not relevant as the Seas off Wexford SPA is specifically designated to protect qualifying interests breeding at three colony SPAs that abut the Seas off Wexford SPA. The qualifying interests of the Seas off Wexford SPA are contributed by four breeding colony SPAs, namely Lady's Island Lake SPA, Wexford Harbour and Slobs SPA, the Saltee Islands SPA and the Keeragh Islands SPA. All of these breeding colony SPAs abut the Seas off Wexford SPA. The proposed development is located over 118 km away from the Seas of Wexford SPA and therefore would not result in any direct effect on the designated site itself through displacement or collision. For there to be an impact pathway for proposed development for the Seas off Wexford SPA, the proposed development would need to be located within the pattern of foraging movement between Seas of Wexford SPA and the abutting SPAs. However, given that the proposed development is over 118 km from the Seas off Wexford SPA and all of its abutting contributary SPA colonies, this is considered extremely unlikely. As such, it is considered that there is no impact pathway for any birds designated at the Seas off Wexford SPA. In other words, when identifying potential impact pathways from collision or displacement, the key consideration is effects on breeding populations associated with an SPA. As Seas of Wexford does not have a breeding population for any QIs. Instead, impacts on breeding populations of birds using the Seas of Wexford SPA colony are considered through the assessment for the SPAs from which those birds originate (their breeding colony), i.e. Lady's Island Lake SPA, the Saltee Islands SPA, Wexford Harbour and Slobs SPA and the Keeragh Islands SPA. These sites have been included in the screening, and, where appropriate, screened in with impacts assessed and apportioned to these colonies. For context, current advice by NatureScot for Marine SPAs is that "For breeding seabirds within marine SPAs, the population level consequences will be addressed through consideration of connectivity from functionally linked seabird colony SPAs", and that "For all non-breeding seabird qualifying features of marine SPAs to determine LSE, impact pathways need to be considered within 15km of the marine SPA". The proposed development is thus well beyond the Zone of Influence typically considered.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Table A3.9 of the SISAA has been updated.
8 (e) (iii)	Purple Sandpiper Disturbance: The applicant has used a 300m disturbance buffer for Purple Sandpiper Calidris maritima, citing a study looking at pedestrian-related disturbance (Goodship and Furness, 2022). Justification for applying this buffer, or use of an alternative source that is more appropriate, is requested, or alternatively provide further consideration of these species in the NIS.	The developer considers the proposed buffer suitable based on the best available scientific evidence. Although this study references human disturbance, the paucity of other available literature on the disturbance of purple sandpiper means this is the most relevant study for this species considering there is a lack of disturbance studies for this species. Even though the 300m is in relation to pedestrian-related disturbance, the developer still considers this impact range to be appropriate for offshore works. The risk of disturbance to purple sandpiper is considered low, particularly as no activities are proposed within at least 3.5 km of Rockabill SPA, where the species is a qualifying interest.
8 (e) (iv)	North-west Irish Sea cSPA Conservation Objectives: The NWIS cSPA is designated for 21 bird species. It is a Conservation Objective of the NWIS cSPA to restore the favourable conservation condition of Black-legged Kittiwake, European Herring Gull Larus argentatus, Atlantic Puffin Fratercula arctica, Northern Fulmar Fulmarus glacialis, Great Cormorant, and European Shag. This 'restore' objective also applies to the same SCIs within the ecologically connected SPAs in this area. It is noted that having regard to survey data related to Atlantic Puffin and the NWIS cSPA population and applying the industry standard recommended rates (60% displacement, 1-5% mortality; NatureScot, 2023) results in >1% increase in baseline mortality, thus would constitute 'Likely Significant Effect' and require Appropriate Assessment in the NIS. This species should therefore be assessed in the NIS for the NWIS cSPA, following the industry standard displacement matrix approach using the recommended displacement and mortality rates (NatureScot, 2023). The applicant is requested to review the SCIs of the aforementioned species to ensure and to clarify that they are appropriately assessed in the NIS, with regard to the objective to restore these species.	This comment is noted by the Developer. In response to the RFI, it is clarified that the majority of the species referenced were not screened out, but were screened in and assessed within the NIS. A robust assessment of all relevant qualifying interests of the NWIS cSPA, including roseate tern, puffin and Manx shearwater, is provided in Section 5.4.2 of the NIS in view of the relevant conservation objectives. This assessment concluded that the proposed development, alone and in-combination, will not result in adverse effects on the integrity of the NWIS cSPA. The only species screened out from further assessment of offshore impact pathways was shag and cormorant. As explained in response to RFI 8(b)(ii), shag and cormorant were screened out on the basis that they are not considered vulnerable to collision risk (based on robust flight height data) and show limited evidence of displacement, with studies indicating potential attraction to offshore wind farms and use of structures for roosting (Bradbury et al., 2014; Dierschke et al., 2016). Please see response to RFI 8 (b) (ii) above, explaining why shag and cormorant were screened out of further assessment of potential impacts arising from the offshore elements of the proposed development in the SISAA.
8 (e) (v)	North-west Irish Sea cSPA Red-throated Diver: As discussed in points a(ii), a(iii), and c(iii) above (regarding Red-throated Diver and Displacement), Red-throated Diver is a SCI for the NWIS cSPA and is highly sensitive to disturbance and displacement effects. The Board queries the applicant's approach where the species is screened out of displacement effects associated with the proposed array area. The applicant is requested to use appropriate data and to screen Red-throated Diver in for displacement effects associated with the proposed array area and vessel traffic. The NIS should be updated accordingly.	The Developer acknowledges the sensitivity of red-throated diver to noise and visual presence, and therefore the risk of disturbance. Considering this, the Developer has assessed red-throated diver for disturbance within the offshore ECC + 2km buffer and within the PFI + 10km buffer for the NWIS cSPA, following the best available evidence (Chapter 15 & the NIS). The Developer has used the recent NWIS DAS data which is the most recent and comprehensive dataset to characterise the baseline environment. The Developer has assessed displacement effects on red-throated diver within the PFI plus a 10km buffer for the NWIS cSPA (addressed in Section 5.4.1.2.19).

RFI Section	RFI	Response to RFI and relevance to NIS.
8 (e) (vi)	North-west Irish Sea cSPA Common Guillemot: The DAU observation states that the proposed development would reduce the habitat suitability for Common Guillemot of an area equating to 8.5% of the NWIS cSPA, which would contravene the Conservation Objective for the SPA to maintain its favourable conservation condition. The applicant is requested to justify its interpretation of the data in relation to Common Guillemot and, where appropriate, re-evaluate the data and re-interpret the consequences for the impacts on the Conservation Objectives of the NWIS cSPA, having regard to the observation from the DAU."	The DAU observation suggests that the proposed development would reduce habitat suitability for Common Guillemot within the North-west Irish Sea (NWIS) cSPA over an area equivalent to 8.5% of the site. This conclusion appears to be based on a spatial comparison between the array area plus 2km buffer and the total SPA area, but fails to consider if and how said spatial overlap may lead to a consequence in terms of an AEoI to the species in view of the qualifying interest (QI). The data, which is an area-based metric, does not in itself represent a meaningful measure of impact on the Common Guillemot QI, as the assessment of potential AEoI must be in view of the Conservation Objectives of the relevant site, namely the NWIS cSPA. The Conservation Objectives of the site are framed in terms of maintaining the population size, distribution, structure and function of habitats supporting the qualifying species, rather than the absolute availability of habitat area. As such, the key consideration is whether predicted effects would lead to a measurable adverse consequence for the guillemot population of the cSPA, rather than whether a given proportion of the site spatially overlaps with the zone of influence of the development. Several key ecological aspects are now presented in Appendix A21: Additional Guillemot Ecological Evidence Note, which covers the following topics focusing primarily on guillemot within the NWIS cSPA: • Consequences of displacement • Effects of increased density on prey base • Capacity of the wider cSPA to absorb displaced birds • Existing natural variability and patchiness • Behavioural flexibility of seabirds • Project footprint in the context of the wider cSPA • Non-breeding season sensitivity. Some of the key points from the assessment that address this DAU observation are discussed below. For a full assessment see the NIS (Section 5.4.2). In considering this submission from the DAU, the Developer obtained a legal opinion on the interpretation of the conservation objectives, and this is provided in Appendix A22: Senior Legal Counsel Opinion on NPWS Submission. The guillemot qualifying population of the NWIS cSPA is extensive and highly mobile, with distribution across the site varying temporally in response to prey availability and oceanographic conditions.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Density surface modelling indicates that while guillemots occur within the wider offshore development area, this area does not correspond to a core area of consistently high density at the cSPA scale. Predicted effects are therefore dispersed across a large population and are not focused on a discrete sub-area of the cSPA. Furthermore, the predicted impact relates to temporary and reversible changes in habitat use associated with displacement, rather than to permanent loss or degradation of habitat. No reduction in the overall extent or ecological function of habitats supporting the guillemot population is predicted. The analysis indicates that any displacement would represent a very small proportion of the total NWIS cSPA population at any given time and would not compromise the ability of the site to support the qualifying feature in the short, medium or long term. Having regard to the DAU observation, the Developer has reviewed the data and considers that the 8.5% figure, estimated from the Planning Application, should not be interpreted as an equivalent reduction in effective habitat for the SPA population, nor as an indicator of adverse effects on population viability or site integrity. The seabed footprint of permanent infrastructure associated with the proposed offshore development Project Option 1 is estimated to be 0.53 km², or 0.02% of the cSPA. The ecological evidence demonstrates that the overlap reflects a precautionary displacement envelope rather than a functional loss of habitat, with displacement representing a behavioural response that does not inherently translate to a direct ecological impact. Its relevance to assessment arises only where redistribution leads to measurable effects on survival or productivity. When considered against the scale, variability in usage and functional capacity of the wider NWIS cSPA to support the guillemot population, including its ability to absorb redistributed birds and continue to support the qualifying population, the predicted effects are limited and not sufficient to undermine the conservation objectives or the maintenance of favourable condition of guillemot for the NWIS cSPA. Additionally, the Developer notes that since the submission of the Planning Application further design refinements have been made in response to the RFI (8(e)(vi)) to provide additional mitigation, with the overlap of the PFI plus a 2 km displacement buffer now equating to 6.9%. The Developer concludes that beyond reasonable scientific doubt, in view of the site's conservation objectives, the proposed development would not result in an adverse effect on the integrity of the North-west Irish Sea cSPA, either alone or in combination with other plans or project, in relation to the Common Guillemot qualifying feature. The full assessment can be found in the NIS and Appendix A21: Additional Guillemot Ecological Evidence.

RFI Section	RFI	Response to RFI and relevance to NIS.
8 (e) (vii)	Displacement Assessment: The Board notes that model-based assessment of displacement effects has not been included in the NIS. Such approaches are only applicable to a small number of species during the chick-rearing period, however, provide important context and can support the assessments undertaken using displacement matrices. Models such as SeabORD (Mobbs et al., 2018; Searle et al., 2018) take an individual-based approach and incorporate energetics associated with displacement into the assessment. Such approaches are standard practice. The applicant is requested to review the NIS in this regard.	Model-based displacement tools such as SeabORD (Mobbs et al., 2018; Searle et al., 2018) were developed primarily for use on the east coast of Scotland and are not routinely applied, even within that region. In practice, the model has frequently failed to converge or has produced unreliable outputs, and where it has been applied (e.g. Muir Mhòr), results have not been accepted by Scottish regulators or NatureScot (Scottish Government, 2024). Notably, in those cases modelled impacts were substantially lower than those derived using the displacement matrix approach. Given the model's novelty, lack of regulatory acceptance in Scotland, and the fact that it has never been applied in the Irish Sea, its use is not considered appropriate for this project at this time. Retention of the displacement matrix approach is considered the more precautionary approach when compared to model-based displacement tools such as SeabORD. The Developer notes that an updated version of the SeabORD model is being developed but is not yet publicly available.
9 (a) and (b)	OSPAR Habitats a) Much of the North Irish Sea Array (NISA) array area is characterised as 'Burrowing megafauna Maxmuelleria lankesteri in circalittoral mud' (SS.Smu.CfiMu.MegMax) (e.g. Chapter 12 Figure 12.5, Table 12.7). This biotope forms part of the OSPAR Threatened and / or Declining habitat of 'Sea-pen and Burrowing Megafauna Communities', (as evidenced in the Joint Nature Conservation Committee (JNCC) correlation tables; https://hub.jncc.gov.uk/assets/62a16757-e0d1-4a29-a98e-948745804aec#201801-MarineHabitatsCorrelations.xlsx). These tables identify evidenced relationships between habitats in the Marine Habitat Classification for Britain and Ireland, the marine section of the EUNIS classification, and those listed as being important for conservation under various legislative instruments (e.g. Annex I habitats, OSPAR habitats). While this biotope is extensive across the array area, and is of conservation and commercial value, the submitted EIAR does not include it in any Valued Ecological Receptor (VER) Group representative of this OSPAR habitat (see MC6216 in Table 12.11 of Section 12.3.5). The applicant is requested to provide confirmation of the presence of this biotope and provide a detailed map of where sampling has shown it to be present, including if available stills or video evidence associated with the sampling. Any additional evidence will support the assessment of potential impacts to this important OSPAR habitat.	Reference to the biotope 'Burrowing megafauna Maxmuelleria lankesteri in circalittoral mud' (MC6216)' has now been added to Section 3.3.1 Description of Receiving Environment for Coastal and Marine Habitats in the Addendum to the SISAA. This biotype is not an Annex I QI and therefore not assessed in the NIS.
9 (b)	It is noted that the applicant concludes that the 'sensitivity' of the 'Burrowing megafauna Maxmuelleria lankesteri in circalittoral mud' (SS.Smu.CfiMu.MegMax) biotope is 'high'. The Board agrees that this is appropriate for a biotope with this conservation importance. It would be expected, however, given the extent of the biotope across the array area, that 'magnitude' may be 'low' or 'medium' rather than 'negligible' noted in the EIAR. Given that a high sensitivity and a medium magnitude leads to a result of 'Significant' in EIA terms, the applicant is requested to review the justification provided for their magnitude of 'negligible', and either provide further evidence for this in the EIAR or provide a reconsideration of magnitude for this receptor.	This RFI is addressed through the EIAR further information process.

RFI Section	RFI	Response to RFI and relevance to NIS.
	If any magnitude values are changed, the applicant is requested to ensure that these feed through the impact assessment process. Following the provision of a revised assessment, the applicant should reconsider their pre-, during and post-construction benthic monitoring requirements and plans as necessary.	
9 (c)	Sublittoral Rock Habitats The intertidal survey data is unclear in relation to the potential presence of reef across the NISA landfall and nearshore shallow infralittoral ECC areas. The applicant is requested to clarify the extent of reef at this location. Depending on the location of the horizontal direction drill (HDD) exit points seaward of low water, and subsequent cable trenching, there may be a localised risk to shallow sublittoral rock, if it is present. The applicant is requested to consider this potential impact. The Marine Institute in their observation states circalittoral rock and biogenic reef and infralittoral rock and biogenic reef should be avoided.	The sublittoral rock habitats in the proposed development landfall and nearshore shallow infralittoral ECC are not within the boundary of a SAC and therefore are not relevant to the NIS. However, reefs are a designated feature of both Rockabill to Dalkey Island SAC and Lambay Island SAC and potential impacts on these features are discussed in the NIS in sections 5.1.5 and 5.1.7. For clarity, the NIS concludes beyond reasonable scientific doubt that there are no AEoI on Rockabill to Dalkey Island SAC and Lambay Island SAC for all QIs for both Project Options both alone and in-combination with other plans and projects.
9 (d)	Impact Pathways Within Section 12.5.3.1 Chapter 12 of the EIAR, it is indicated that for Project Option 1, the 'Long-term or permanent subtidal habitat loss/change from the presence of foundations, scour protection and cable protection' equates to approximately 276,296m² of the array area and ECC representing approximately 0.22% of the combined areas, while for Project Option 2 the figures are 297,510m² and 0.24%. While spatially the impact will be highly localised within the array and ECC areas, it will be long-term and / or permanent, dependent on decommissioning. Assessment of magnitude for this pressure pathway was 'negligible'. In comparison, 'low' (not 'negligible') magnitude is assigned for colonisation of hard substrate in the EIAR. The applicant is requested to justify or amend the assigned magnitude impact rating of 'negligible' for 'Long-term or permanent subtidal habitat loss/change from the presence of foundations, scour protection and cable protection'.	This impact pathway was not screened into the NIS as there is no direct physical interaction between the proposed development and any SAC designated for Annex I Habitat QIs. This RFI is addressed within the EIAR response to RFI process.
9 (e)	The impact pathways of accidental release of contaminated sediments through sediment disturbance, and accidental release of pollutants, have been assessed together as 'Reduction in water and sediment quality through release of contaminated sediments and / or accidental contamination' (Chapter 12, table 12.1; table 12.14; sections 12.5.2.4, 12.5.3.6 and 12.5.4.3; table 12.21). The applicant is requested to complete separate assessments for the two impact pathways, as different considerations are required to conclude magnitude of impact(s).	All potential pathways for accidental pollution are discussed within Section 5.1 (Alone Assessment - See Sections 5.1.2.3, 5.1.3.3, 5.1.4.3, 5.1.5.3, 5.1.6.3 and 5.1.7.3) and Section 6.1 (In-combination Assessment – See Sections 6.1.1.1, 6.1.2.1, 6.1.3.1, 6.1.4.1, 6.1.5.1, 6.1.6.1 and 6.1.7.1) of the NIS. The assessment includes all relevant pathways (contaminated sediments, accidental spillage, terrestrial sources) which, allied to the low levels of contaminants in offshore sediments (i,e, below toxicological guideline levels) and implementation of mitigation measures (updated in Offshore EMP Appendix A8 and CEMP Appendix A9), provides a full assessment of possible pollution sources. For clarity, it was concluded beyond reasonable scientific doubt that impacts from accidental pollution will not cause an AEoI on any SAC assessed for both Project Options alone or in-combination with other plans and projects.

RFI Section	RFI	Response to RFI and relevance to NIS.
9 (f)	Mitigation It is noted that development of an Offshore Environmental Plan (OEMP) was not listed as a measure under the operation phase of the project, where it had only been listed under construction and decommissioning (section 12.4.5; table 12.13). The applicant is requested to clarify if an OEMP is considered a mitigation measure under the operation phase.	In response to this RFI, the Developer has updated the Offshore EMP to include the operation phase of the proposed development, this is provided in Appendix A8: Offshore EMP.
9 (g)	The Board notes that potential impacts from EMF on benthic habitats has not been assessed. The applicant is requested to provide further analysis in this regard.	There is no direct physical interaction between the proposed development and any Annex I habitat QI. As stated in section 3.4.2.4 of the 2024 SISAA; 'Indirect disturbance of benthic species from electromagnetic fields (EMF) generated by inter-array and export cables–- EMFs are likely to increase above background levels in close proximity to the cables only. As the cable will be buried or protected across most of the array area and ECC, any behavioural responses would be further mitigated. Furthermore, monitoring at OWFs to date has not recorded any changes in invertebrate behaviour resulting from EMF exposure. Although benthic invertebrates are likely to be present within the sites designated for coastal and marine habitats, there are no QIs for benthic invertebrates specifically, only designated habitats which will not be impacted by EMF'. Therefore, there is no impact pathway, and this impact was discounted within the NIS for coastal and marine habitats.
9 (h)	The in-combination section of the NIS (Section 6.1; table 6.1) does not include Lambay Island Special Area of Conservation (SAC). The applicant is requested to include Lambay Island with regard to in-combination considerations.	The Developer can confirm that the NIS Section 6.1 has been corrected to include Lambay Island SAC in Table A6.1. It now includes Lambay Island SAC within the screening conclusion in-combination column against the relevant plan or project. In addition, Section 6.1.6 has been included in the in-combination section of the NIS which provides an in-combination assessment for Lambay Island SAC. Assessment of potential impacts from suspended sediment and accidental pollution are provided and both concluded beyond reasonable scientific doubt that suspended sediment and deposition from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Lambay Island SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2 .
10 (a)	The details that have been submitted in relation to underwater noise arising from the proposed development acknowledges the potential for impacts to arise on marine fauna from both Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) over significant areas. The Wildlife Act 1976, as amended, lists marine mammals, including all dolphin, porpoise, seal and whale species as protected, (with subsequent regulations also applying protections to all species of marine turtles and basking sharks) stating that it is an offence to hunt, injure, or wilfully interfere with/destroy the resting or breeding place of such species. The January 2014 'Guidance to Manage	On foot of the submissions received in response to the Developer's planning application, continued public consultation and the RFI issued by An Coimisiún Pleanála, the Developer has undertaken design refinements to the offshore infrastructure of the proposed development.

RFI Section	RFI	Response to RFI and relevance to NIS.
	the Risk to Marine Mammals from Man-Made Sound Sources' published by the Department of Arts, Heritage and the Gaeltacht (NPWS (2014)), notes that sound sources with the potential to induce TTS in a receiving marine mammal has the potential to cause both disturbance and injury. This guidance has a statutory basis under Regulation 71 of SI No. 477 of 2011, and refers to the "offence to injure" under the Wildlife Act, 1976, noting that TTS "may constitute such an injury". Having regard to information submitted in the EIAR, the NPWS underwater noise guidelines (NPWS, 2014), the strict protections afforded to marine mammals under the Wildlife Act 1976, as amended, in addition to observations from prescribed bodies and observers, the Board requires a comprehensive suite of noise abatement measures to be proposed and assessed in addition to the existing mitigation measures referenced in the planning application documentation. The applicant is therefore requested to submit: A comprehensive review of relevant mitigation, in addition to what is currently contained in the submitted documentation, specifically appropriate noise abatement measures, which could be applied to the proposed development to reduce/restrict the propagation of noise through the marine environment and provide realistic values for the reduction in sound level possible from these technologies. The review must consider the range of suitable abatement measures available, including consideration of, at a minimum, bubble curtains, casings, resonators, and alternative hammer/piling technologies to reduce noise emissions, and set out in detail the suitability of such measures for the construction of the proposed development at this location, including restrictions in relation to their suitability, where relevant. The applicant must also consider and draw on the best available technology and thresholds, including as applied in other EU jurisdictions (e.g. Germany; Belgium; Netherlands; Denmark), to identify and provide for suitable noise abatement to reduce the level and extent of potential noise impacts arising from the proposed development. Examples include the German 160 dB re 1 µPa²s SELss and 190 dB re 1 µPa SPLpeak thresholds that must not be exceeded at a distance of 750m from a piling site; or the frequency weighted SELcum PTS thresholds (e.g. harbour porpoise 155 dB re 1µPa2s) that must not be exceeded for a fleeing animal with a starting distance of 200m in Denmark. Revised noise modelling and mapping which provides detailed consideration of the noise abatement strategy selected in response to (i) above and include: The modelled SPLpeak and SELcum PTS and TTS contours, for each functional hearing group potentially present, emanating from the existing locations proposed in the application, which are at the periphery of the proposed development, to demonstrate the full potential spatial extent of underwater noise propagation. Modelling must also show the noise level (SPLpeak, SELss) at 750m from the locations of each of the piling activities selection.	As detailed in Appendix A7 Design Refinements, the refinement of WTG foundations installation methodology to jackets with suction buckets significantly reduces underwater noise during installation when compared to monopiles and jackets with pin piles. Suction buckets are an established jacket installation method on windfarms, having been in use since 2015 and on wind farms such as Seagreen in Scotland (1,075 MW wind farm constructed in 2023). The use of suction buckets removes the options of driven monopile and pin pile foundations for both Project Option 1 and Project Option 2, meaning no percussive piling is required for the proposed development resulting in a significant reduction in underwater noise generated. Data collected at the Seagreen offshore wind farm during the installation of suction bucket caissons indicated that the overall increase in underwater noise levels was limited, with measured rises of approximately 3–5 dB relative to the pre-installation baseline. Comparison of noise levels during suction and non-suction periods within the same construction day showed similarly small differences (Chudzinska, et al., 2026). These findings suggest that vessel traffic, mobilisation activities and other ancillary operations are major contributors to the elevated underwater noise observed on construction days. It should be noted that drilled pin piles are being considered for the OSP jacket installation for Project Options 1 and 2 and this method of installation is also associated with lower levels of underwater noise when compared with impact piling. Non-impulsive noise-making activities such as drilling are included within Appendix A13: Underwater Noise Assessment and the potential impacts of drilling of the OSP pin piles are assessed in Section 5.3 and 6.3 of the NIS. Impacts relating to piling have therefore been removed from Sections 2 and Section 3.5.1 of the SISAA and Section 5.3 and 6.3 of the NIS. In response to the point on TTS having the potential to cause both disturbance and injury, the Developer does not consider TTS to be auditory injury as stated in Section 5.3.1 of the NIS and further detail justifying this position is provided in Appendix A25: Temporary Threshold Shift Position Statement. In response to points a) i – ii on noise abatement: In proposing this design embedded mitigation measure (of WTG jackets with a suction bucket construction methodology) it negates the need for additional noise abatement or Noise Abatement Systems (NAS) as a mitigation measure for underwater noise generation in relation to WTG foundation installation. The Developer has provided further assessment and rationale for this in Section 5.3 of the NIS.

RFI Section	RFI	Response to RFI and relevance to NIS.
	The modelled SELss contours for 120-180 dB re 1µPa2s at 5 dB increments at the locations in the point above. Mapping provided must show the relevant noise contours in the context of implementing the abatement technologies/ measures identified at (1) above and should be displayed alongside the noise contours in the absence of any such noise abatement measures being implemented. Revised details showing the change in total impacted individuals of each species before and after consideration of noise abatement technologies. Modelling must be performed for monopiles and pin piles, as both are under consideration within the project design envelope. Any additional abatement and / or mitigation measures should also be considered in the context of their potential for reduction of cumulative effects with other projects in terms of underwater noise.	The Developer has committed to the use of NAS (e.g. bubble curtains or similar) in the event that low order clearance of UXO is not possible, and high order UXO clearance may be required. Further information is provided in Section 4 of the NIS and Section 7.5 of Appendix A10 Marine Mammal Mitigation Protocol. Pre-clearance ADD deployment is not necessary for low-order clearance but will be used for high-order clearance (with NAS also employed). Information about the evidence base behind the effectiveness of the ADDs is provided in Appendix E to the Appendix A10: Marine Mammal Mitigation Protocol. In response to point iii. on noise modelling and mapping: As the Developer will not be undertaking piling, and noise abatement will not be required for the installation of foundations, there is no requirement for revised modelling and mapping.
10 (b)	The applicant is invited to submit any details of monitoring/reporting available from previous experience of offshore development in other EU jurisdictions which demonstrates the efficacy of mitigation measures adopted in relation to underwater noise.	The Developer has included summary outcomes of monitoring of SBJs (as provided in the response to RFI 10a above) to demonstrate low levels of underwater noise being produced during installation. These are also presented in Section 5.3 of the NIS and in Appendix A13: Underwater Noise Assessment and conclude that minimal underwater noise is produced by SBJ installation.
10 (c)	Further to point a) above, there is a lack of clarity and certainty in the submitted documentation as to whether Acoustic Deterrent Devices and Noise Abatement Systems (NAS) will be used, with wording varying across the documentation between ‘may’ be used and ‘will’ be used. There is also uncertainty in terms of the efficacy of the mitigation measures that are proposed given proposed future re-modelling based on unknown factors which may or may not have an impact in terms of noise ranges and frequencies (Chapter 14, table 14.45). The applicant is requested to address these issues in the submitted documentation. Such information should also include a consideration of any in-combination effects with surrounding anthropogenic noise sources and estimation of individuals of each species that are likely to be affected. The applicant is requested to address these areas of uncertainty	Based on the design refinements, the Developer in proposing the design mitigation measure of WTG jackets with a suction bucket construction methodology negates the need for noise abatement as a mitigation measure for underwater noise generation in relation to WTG foundation installation and has provided further assessment and rationale for this in Section 5.3. Due to the proposed development no longer using percussive piling, neither ADD nor NAS is considered for WTG or OSP installation, as the drilling of pin-piles for OSPs is considered to have minimal impact ranges (50 meters or less; see Section 5.3.1 of the NIS). Following the refinements to the design of the proposed development, both ADDs and NAS will be considered, however only during the use of high-order UXO clearances (if required). ADD deployment is not necessary for low-order clearance as the maximum injury range of 990m can be effectively monitored by MMO and PAM within the 1km mitigation zone. Additionally, the Developer has committed to noise reduction (e.g. bubble curtain or similar) in the unlikely event that high-order UXO clearance is required. Information about the evidence base behind the effectiveness of the ADDs is provided in Appendix E to the Appendix A10: Marine Mammal Mitigation Protocol.

RFI Section	RFI	Response to RFI and relevance to NIS.
10 (d)	With reference to the Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 2, April 2018 by the Department of Communications Climate Action and Environment (DCCAE) (DCCAE (2018) Guidance), the applicant is requested to justify: i. The selection of a 4km buffer area extending around the array area. The DCCAE (2018) Guidance recommends a minimum buffer of 10 km for cetaceans and seals, with monthly haul-out site surveys. ii. The lack of empirical acoustic data, noting the Department of Housing, Local Government and Heritage, Development Application Unit (DAU) observation which states the omission of acoustic monitoring does not allow the site to be fully characterised for all Annex IV species. iii. The lack of vantage point surveys at the cable landfall location.	The Developer has noted the request to justify points i. – iii. and provides the following responses: i) The buffer used in the original submission is considered sufficient for establishing the marine mammal baseline. Guidance from the Statutory Nature Conservation Bodies (SNCBs) in English and Scottish waters recommends a 4 km buffer (Parker et al., 2022; NatureScot, 2023). The original survey design meets this standard to the east, north, and south of the proposed development and exceeds it to the west. Offshore wind projects in English and Scottish waters routinely apply a 4 km buffer around their Array Areas for Digital Aerial Surveys (DAS), and these projects have been consented on the basis that this approach provides an adequate baseline for impact assessment. However, additional DAS were undertaken from September 2024 to August 2025. Although these data were not included in the original submission.the survey area has been extended to cover the proposed development survey site and broader North-West Irish Sea Special Protection Area. ii) The Developer disagrees that the lack of site-specific PAM data means the site cannot be fully characterised. In accordance with the Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects, areas with robust existing data (such as the Irish Sea, based on publicly available evidence) require pre-construction marine mammal baseline characterisation through monthly field surveys conducted over a two-year period using an acceptable experimental design (DCCAE, 2018). The industry standard, e.g. what is usually included in the baseline EIA reports are digital aerial surveys (project-specific across the project area plus appropriate buffer) and desktop reviews of existing datasets (e.g., SCANS surveys, SMRU data, telemetry and others). Digital aerial surveys were carried out across the Array Area plus a 4km buffer from May 2020 to October 2022, with more recent surveys (September 2024 to August 2025) covering a broader area. The relevant baseline sources are detailed in Section 1.9 of the NIS. As such, current baseline characterisation for the proposed development aligns with the relevant guidance and industry standard. It should be also noted that in order to assess whether a development could result in a significant effect on marine mammal receptors, the EIAR characterises the receiving environment with regards likely receptors present, quantify (where possible) the number of individuals impacted through specific impact pathways, and establish whether the predicted level of impact is sufficient to result in a population level effect. To quantify potential impacts in terms of the number of animals impacted, it is necessary to know the density of a given marine mammal receptor within the impacted area.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Thus, the primary purpose of the marine mammal baseline characterisation report is to identify the appropriate density, and abundance estimates to take forward to the quantitative assessment in the EIAR for each marine mammal species. Baseline characterisation PAM can be useful to understand the species of vocalising marine mammals present in the area. While PAM can provide good information on species presence or absence and how this changes temporally on a fine scale (especially for odontocete species), it currently remains difficult to obtain a density estimate from PAM data for most species. This is due to issues relating to estimating the cue rate and subsequent detection probability function (e.g. the likelihood that the PAM systems will log acoustic cues from cetaceans at different distances, which is a key requirement for density estimation), and differentiating between species (especially dolphin species). Since the quantitative assessment in the EIAR is focussed on predicting the number of individuals impacted, the use of baseline characterisation PAM will not provide the necessary data to inform this assessment. The Developer would however like to highlight that PAM is a useful monitoring tool to identify changes in detection rates and assess impacts from offshore wind farm construction activities in a before-during-after or impact-gradient analysis (or a hybrid of the two). iii) Since November 2024, the Developer has conducted seal counts at three land-based vantage points close to the proposed development landfall area. In response to the Submissions and RFI, the Developer has undertaken monthly haul-out surveys. This concluded that while both grey and harbour seals were recorded in the wider area, seal activity within the Seal Survey Area itself was low, with only grey seals observed and none hauled out. Most seal observations were concentrated around Cardy Rocks, which is outside the Survey Area, indicating a clear preference for that location. No pups of either species were recorded at any time, indicating that the area is not used as a breeding or pupping site. Additionally, between September 2024 to August 2025, the proposed development carried out additional DAS across the broader North-West Irish Sea Special Protection Area. This survey information has been summarised in Section 3.3.3 Description of Receiving Environment in the SISAA.
10 (e)	The applicant is requested to confirm whether any on-going or additional surveying has been carried out on the site in relation to mobile species since the application was lodged. If so, the applicant is invited to submit any further survey data results and incorporate these into the assessments within the application documentation as appropriate.	In response to the Submissions and RFI, the Developer has undertaken monthly haul-out surveys. This concluded that that while both grey and harbour seals were recorded in the wider area, seal activity within the Seal Survey Area itself was low, with only grey seals observed and none hauled out. Most seal observations were concentrated around Cardy Rocks, which is outside the Survey Area, indicating a clear preference for that location. No pups of either species were recorded at any time, indicating that the area is not used as a breeding or pupping site.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Additional DAS were undertaken from September 2024 to August 2025, monthly, covering the entire NWIS cSPA and recording both birds and marine mammals. Additional survey information is summarised in Section 3.3.3 Description of Receiving Environment in the SISAA.
10 (f)	The applicant is requested to more clearly define the methodology for the dose-response assessment. The studies on which the dose-response assessment is based (Graham, 2017a; 2019) are explained in detail, however the process of applying the dose-response curve to density maps to determine number of individuals disturbed is not clearly elaborated upon (e.g. description of density calculation within each isopleth and summing). The applicant is requested to address this issue.	The Developer confirms that following further design refinement in response to the RFI 10 (a) (please refer to the Developers response to 10 (a) above and Appendix A7: Design Refinements for further details), WTGs are now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Piling has been removed from Section 2 and Section 3.5.1 of the SISAA. All impacts assessed within NIS Section 5.3 and 6.3 that relate to piling, and therefore for which the dose-response have been applied, have been removed.
10 (g)	The Board notes the use of NOAA Level B Harassment Threshold (National Marine Fisheries Service, USA) for the assessment of behavioural disturbance rather than more recently defined thresholds in European jurisdictions (e.g. Danish threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) single strike sound exposure level (SELss) (Tougaard, 2021). The Board further notes the threshold values recommended by TG Noise (Sigray et al., 2023) and thresholds used in Ireland's Draft Marine Strategy Part 1, Article 8, 9 and 10 report 2024 and its Annex III. The applicant is requested to consider these thresholds and justify why they have not been used in the assessment.	The Developer confirms that following further design refinement in response to the RFI 10 (a) (please refer to the Developers response to 10 (a) above and Appendix A7: Design Refinements for further details), WTGs are now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Piling has been removed from Section 2 and Section 3.5.1 of the SISAA. All impacts assessed within NIS Section 5.3 and 6.3 that relate to piling, and therefore where the level B harassment could have been applicable, have been removed.
10 (h)	The applicant is requested to fully assess disturbance from operational turbines in the context of the size and the number of turbines proposed, and ensure that the assessment of the combined noise effects of all turbines be examined and relevant disturbance ranges identified.	In response to this RFI, disturbance from noise from operational WTG was screened into the SISAA in Section 3.4.2 and 3.5.2 and was assessed in Section 5.3 (Alone) and 6.3 (In-combination). A summary of the assessment is provided below: • The sensitivity of porpoise and dolphins to disturbance from operational noise has been assessed as negligible, while seals have been assessed as having a low sensitivity. Using the data collected at operational offshore wind farms, the magnitude of disturbance from operational noise has been assessed as low for all assessed species. • Within this NIS, in relation to operational underwater noise it is concluded beyond reasonable scientific doubt that there is no AEoI on all SACs with Marine Mammal QI's for Project Option 1 and Project Option 2 alone and in-combination with other plans and projects.

RFI Section	RFI	Response to RFI and relevance to NIS.
10 (i)	Chapter 14 of the EIAR and Appendix 14.1 Underwater Noise Modelling Report considers underwater construction noise impacts. The applicant is requested to clarify whether Ultra-short Baseline (USBL) positioning systems will be used during pre-construction surveys. If so, the applicant is requested to include these systems in the assessment.	RFI Sections 10 (i-k) were addressed through the Environmental Impact Assessment Report (EIAR) further information process. While these RFI relate primarily to the assessment presented in the EIAR (Chapter 14: Marine Mammal Ecology), the outputs of the updated modelling are also of relevance to the NIS. The Developer confirms that USBL positioning systems will be used during pre-construction surveys. In light of this, USBLs have been added to the assessment of pre-construction noise (Impacts 1 and 2) in Table A5-8 Potential Impact and the Project Option which has the greatest potential for AEoI on Marine Mammal SACs in Section 5.3.1.1 of the NIS has been updated.
10 (j)	The EIAR includes an analysis of the likely effect of PTS on minke whale, having regard to their estimated hearing range. The applicant is requested to supplement the analysis with additional literature on the hearing range of minke whale or impact of underwater noise on this species.	This RFI has been addressed through the EIAR Addendum Response to RFI process. Minke Whales are not an Annex II Marine Mammal QI and therefore no amendments are required in the NIS.
10 (k)	The applicant is requested to provide supporting reference/s for the statement in Chapter 14 that minke whales can 'tolerate temporary displacement from foraging areas due to their large size and capacity for energy storage'.	This RFI has been addressed through the EIAR Addendum Response to RFI process. Minke Whales are not an Annex II Marine Mammal QI and therefore no amendments are required in the NIS.
10 (l)	The worst-case number of piling events does not account for contingency of having to move and re-pile if substrate does not accept the pile. The applicant is requested to add in this consideration or provide justification for its exclusion from the worst-case scenario.	The Developer confirms that following further design refinement in response to the RFI 10 (a) (please refer to the Developers response to 10 (a) above and Appendix A7: Design Refinements for further details), percussive piling is no longer required for the construction of the offshore infrastructure. The SISAA has been updated throughout to remove reference to piling from Section 2 (Description of Development) and Section 3.5.1 (Potential Impacts). The NIS has been updated throughout to remove piling from the Description of the Development (Section 2), Identification of Potential Effects (Section 4) and assessment sections presented in Sections 5 (Alone) and 6 (In-combination).
10 (m)	The DAU state in their observation that when assessing the risk of collisions between marine mammals and vessels, the applicant must include all data relevant to Irish waters and not solely rely on reports from UK monitoring programmes, e.g. those reported in Irish Whale and Dolphin Group Cetacean Stranding Schemes and Irish Whale & Dolphin Group Deep Diving and Rare Species Investigation Programme (both supported by NPWS funding). The applicant is requested to address this issue and incorporate the findings of these data sources in the submitted documentation.	The Developer requested further strandings data from IWDG. The request was declined by IWDG as the data is not relevant to the application as it does not include any information on the cause of death given that detailed necropsies have not been consistently carried out and as they have not previously shared data with other Phase 1 projects. It is noted that while strandings are reported to IWDG by the public, there is no "regular, standardized post-mortem examinations of suitable carcasses to establish the cause of death" (McGovern et al, 2018), and therefore there is unlikely to be sufficient data available on the risk of vessel collision mortality in Irish waters to provide any further context to the assessment".

RFI Section	RFI	Response to RFI and relevance to NIS.
10 (n)	Mitigation and Monitoring The DAU notes that monitoring for pinniped species at the location where the proposed development interacts with the shore was not carried out by the applicant and therefore there is no information on whether harbour and grey seals use this site. The applicant is requested to submit further information by means of specific surveys of the site for pinnipeds and that this should also be set in the context of seasonal changes in distribution of these species. The applicant is requested to refer to the most up-to-date NPWS seal data and Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 2, April 2018, DCCAE.	In response to the Submissions and RFI, the Developer has undertaken monthly haul-out surveys. Surveys were undertaken in accordance with DCCAE (2018) guidance. Monthly surveys are considered appropriate as they provide coverage of intra-annual variability in seal presence and captures key life history events. The site is not adjacent to any breeding or moulting sites, and therefore monthly surveys are considered sufficient and consistent with DCCAE (2018) guidance. This concluded that while both grey and harbour seals were recorded in the wider area, seal activity within the Seal Survey Area itself was low, with only grey seals observed and none hauled out. Most seal observations were concentrated around Cardy Rocks, which is outside the Survey Area, indicating a clear preference for that location. No pups of either species were recorded at any time, indicating that the area is not used as a breeding or pupping site. Additional survey information is summarised in Section 3.3.3 Description of Receiving Environment in the SISAA. Section 1.9 (Data Collection) of the NIS has been updated.
10 (o)	The applicant is requested to update the Marine Mammal Mitigation Protocol (MMMP) (Appendix 14.4 of EIAR and Appendix 10 of NIS) to include reference to TTS, as this may constitute injury under Irish legislation and guidance.	The Developer has consulted with SMRU Consulting regarding TTS and effects on marine mammals. It is noted that the DAGH 2014 Guidance suggests that TTS may constitute injury, and that injury under the Wildlife Act 1976 it is an offence to injure. The DAGH guidance is ambiguous and cautious due to the limited science available to definitively state that TTS itself is an injury at the time of publishing. Based on the available science now it was assessed that impacts at the TTS-onset level does not constitute injury and that predicted TT-onset ranges should not require mitigation. This position is fully detailed in the SMRU Consulting TTS Position Statement, 2025 (Appendix A25: Temporary Threshold Shift Position Statement), and summarised here: Whilst there is a lack of legal and regulatory consensus regarding the definition of 'auditory injury', most countries do not consider TTS to be auditory injury. TTS represents a short-term reduction in hearing sensitivity, typically recovering within an hour for small shifts (4–5 dB). [TTS at the currently defined onset threshold, does not lead to tissue damage and thus is not physical injury]. TTS effects from pile driving have been shown to be frequency-specific (e.g. 4-8 kHz in harbour porpoises). As such, their impact on marine mammal biological functions (communication, predator/prey detection) is currently considered to be limited.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Current TTS-onset thresholds (NMFS, 2024) are based on the smallest measurable changes in hearing, not on levels likely to cause functional impairment. These thresholds were originally developed to support estimations of PTS-onset, not to serve as regulatory thresholds for ecologically significant impact. What level of threshold shift might be considered biologically meaningful is currently unknown, and no biologically meaningful TTS thresholds have been established. TTS predictions based on SELcum are highly conservative as they omit: (i) the potential for TTS recovery between pile strikes or during breaks in pile driving, and (ii) distance-related effects on the impulsive characteristics of the sound. These factors likely lead to overestimations of impact ranges. Until there is sufficient scientific evidence to indicate a level and duration of TTS that may have a biologically meaningful effect on individuals, it is more appropriate to focus environmental impact assessments on PTS (as true auditory injury) and behavioural disturbance (e.g. disruption to foraging or migration) It is also noted that the National Marine Fisheries Service (2024) guidance differentiates between "auditory injury" and "TTS". Where TTS is defined as: "A temporary, reversible increase in the threshold of audibility at a specified frequency or portion of an individual's hearing range above a previously established reference level (ANSI 1995; Yost 2007). Based on data from cetacean TTS measurements (see Southall et al. 2019 for a review), a TTS of 6 dB is considered the minimum threshold shift clearly larger than any day-to-day or session-to session variation in a subject's normal hearing ability (Schlundt et al. 2000; Finneran et al. 2000; Finneran et al. 2002)" While auditory injury is defined as: "Damage to the inner ear that can result in destruction of tissue, such as the loss of cochlear neuron synapses or auditory neuropathy (Houser 2021; Finneran 2024). Auditory injury may or may not result in a permanent threshold shift (PTS)."
10 (p)	The MMMP states the development will follow standard DAHG (2014) guidelines, however it describes the use of Passive Acoustic Monitoring (PAM) as a form of mitigation under hours of darkness. The guidelines state: 'Pile driving activities shall only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. Where effective visual monitoring, as determined by the MMO, is not possible the sound-producing activities shall be postponed until effective visual monitoring is possible'. The following text is also noted: 'Once an appropriate and effective Ramp-Up Procedure commences, there is no requirement to halt or discontinue the procedure at night-time, nor if weather or visibility conditions deteriorate nor if marine mammals occur within a 1,000m radial distance of the sound source, i.e., within the Monitored Zone'.	The Developer confirms that the MMMP has been updated (Appendix A10) and is compliant with the DAHG (2014) guidance. Following design refinements to the proposed development, impact piled monopiles are no longer included as a foundation option for either Project Option 1 or Project Option 2, meaning that impact piling is no longer required for either WTG or OSP installation. Therefore, mitigation measures for pile driving have been removed from the MMMP. However, there are still proposed activities which require mitigative measures, these include geophysical surveys and UXO clearances, with clear methodologies provided in Appendix A10: Marine Mammal Mitigation Protocol, which are

RFI Section	RFI	Response to RFI and relevance to NIS.
	According to standard practice, there is no requirement for piling to stop once daylight fades, however if there is a break in pile driving sound output for a period greater than 10 minutes (e.g. due to equipment failure, shutdown or location change), the piling must not resume until daylight hours. Although the proposed development will be able to employ PAM to aid in identifying the presence of cetaceans, to begin before daybreak would constitute a deviation from the DAHG (2014) Guidance. As per DAHG (2014) Guidance, PAM may be used as a supplementary mitigation tool to optimise marine mammal detection, but not as a primary mitigation tool. The applicant is requested to clarify the relevant mitigation measures to be utilised. It is requested that all elements of the MMMP comply with NPWS (2014) Guidance including soft start times, delay durations, mitigation zone sizes, and mandatory ramp-up procedures, and defined reporting requirements. Furthermore, the use of distance estimation formula should follow the same approach suggested for distance estimation by the Joint Nature Conservation Committee (JNCC) (refer to Marine Mammal Observer Association article on the subject of distance estimation using reticular binoculars for further explanation) and use standard trigonometric equations for calculation.	compliant with DAHG (2014) guidance. Whilst the DAHG guidance does not cover UXO clearance mitigation measures, the updated MMMP contains UXO specific mitigation methodology, which have been informed by JNCC (2025). To remain compliant with the DAHG (2014) guidance the primary mitigation method used for geophysical surveys or UXO clearances will be through the use of MMOs, visually monitoring the mitigation zone prior to operations commencing. PAM may be used to supplement MMO observations; however, it will not be used as the primary mitigation tool. This is because PAM cannot replace an MMO during periods of low visibility conditions or at night, but it can be used alongside an MMO in good visibility conditions. Finally, as stated in the 2024 MMMP, MMOs will use reticule binoculars to estimate distances of marine mammals, which is in line within the JNCC methodology.
10 (q)	The applicant is requested to address the possibility for temporal mitigation, for example limiting piling to periods that do not overlap with the harbour or grey seal pupping season or the harbour porpoise calving season, to further limit effects on nearby SACs.	Following design refinements to the proposed development, impact piled monopiles are no longer included as a foundation option for either Project Option 1 or Project Option 2, meaning that impact piling is no longer required for either WTG or OSP installation. Therefore, temporal mitigation does not need to be considered for piling. Due to refinements in the design of the proposed development, the activity that now presents the greatest potential risk to SAC features is high-order UXO clearance with noise reduction. The mitigation as set out in the MMMP will reduce the risk of auditory injury (PTS) to negligible, but there is a potential for overlap of the behavioural disturbance ranges and/or 10 km Effective Deterrence Range (EDR) with the Rockabill to Dalkey Island SAC. The assessment in light of the conservation objectives provided in the NIS has identified no adverse effects on the integrity of the SAC that need to be addressed with temporal mitigation. proposed development. On this basis, no additional seasonal restrictions are considered necessary.
10 (r)	The applicant is requested to provide further information regarding the piling schedule outlined in Chapter 14 of the EIAR and Appendix 14.6 to provide a more comprehensive assessment of potential adverse effects of cumulative noise (airborne and underwater) from concurrent pile driving across the Irish Sea Phase ORE 1 projects in the Irish Sea.	The Developer confirms that following further design refinement in response to the RFI 10 (a), piling will no longer be used for Project Options 1 and 2. All impacts assessed within Section 5.3 and 6.3 of the NIS that relate to piling have been removed.

RFI Section	RFI	Response to RFI and relevance to NIS.
		The SISAA and NIS has been updated throughout to remove piling from the Description of the Development (Section 2), Identification of Potential Effects (Section 4) and assessment sections presented in Sections 5.3 (Alone) and 6.3 (In-combination).
10 (s)	The applicant is requested to map maximum masking and behaviour impacts in the cumulative noise impact assessment on marine mammals, and fish and behavioural impacts for shellfish. The cumulative assessment should model impacts based on concurrent construction with and without noise abatement with at least one other windfarm in the Irish Sea. Critical periods of breeding and spawning should be identified and if these are associated with any known vocalisations.	The Developer confirms that following further design refinement in response to the RFI 10 (a) (please refer to the Developers response to 10 (a) above and Appendix A7: Design Refinements for further details), WTGs are now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. As such, all impacts assessed within the SISAA Section 5.2 (Migratory Fish) and Section 5.3 (Marine Mammals) that relate to piling have been removed, including within the cumulative effects assessment. This has been considered in responding to the RFI request for mapping masking and behaviour impacts in the in-combination noise impact assessment. For marine mammals, the Developer confirms that there are currently no industry standard marine mammal masking thresholds established in either Ireland, the EU or the UK. The lack of established thresholds means a direct relationship between noise levels and masking is difficult to quantify, and as such, this cannot be explicitly modelled or assessed in the NIS. Auditory masking can be defined as "the process by which the threshold of hearing for one sound is raised by the presence of another (masking) sound; and the amount by which the threshold of hearing for one sound is raised by the presence of another (masking) sound, expressed in dB" (American National Standards Institute, 1995). The extent of auditory masking caused by anthropogenic activities is dependent on the characteristic of noise emissions, the source levels of biologically important sound sources such as prey or calling conspecifics, the rate of propagation loss and the absolute hearing sensitivity of the listener as a function of sound frequency (Pine et al., 2018). Scientific evidence available in the public domain suggest that more research is needed to better understand the mechanisms of auditory masking in marine mammals (Erbe et al., 2016, Erbe et al., 2019, Branstetter and Sills, 2022). Erbe et al. (2016) carried out a thorough review of the evidence available to masking , including various methods applied to date in an attempt to evaluate masking and highlighted that predicting masking is complex and difficult given the variety of factors that must be accounted for (including but not limited to data on audiograms, critical ratios and critical bandwidths). Branstetter and Sills (2022) also noted that predicting masking is inherently complex due to the spectral-temporal properties of signals and the spatial relationships among sound sources. Auditory masking in marine mammals has gathered attention in recent years and there are new and ongoing studies to fill these data gaps in the coming years (Jones, 2024, Burnham and Vagle, 2025, Sills et al., 2025, Dunlop et al., 2026).

RFI Section	RFI	Response to RFI and relevance to NIS.
		However, given the lack of relevant threshold criteria and/or the availability of modelling tools to enable a quantitative assessment for masking, such evaluation cannot be carried out currently. Although masking may have more far-reaching effects compared to behavioural disturbance, it is a more subtle interference of acoustic perception compared to behavioural disturbance, with studies indicating anti-masking strategies in a few species (Erbe et al., 2016). It is therefore considered that the effect concluded for masking would not be greater than compared to behavioural disturbance and therefore there would be no change to the conclusions of the in-combination assessment presented in Section 6.3 of the NIS. For fish and shellfish, the Developer confirms that the potential for masking and behaviour impacts on all sensitive fish and shellfish receptors were assessed in Section 5.3 and 6.3 of the NIS however, this does not include mapping or modelling. The assessment was based on the qualitative underwater noise thresholds as defined by Popper et al., (2014), and informed by a review of peer reviewed literature. Qualitative thresholds are deemed appropriate, due to the range of behavioural responses exhibited by fish, which differ between species, and can be influenced by a range of factors, including life history events, and the environment. Notwithstanding this, as a result of the design refinements no impact piling operations will be undertaken during the construction phase of the development, and subsequently the impact ranges from underwater noise have been significantly reduced for the project alone. The in-combination assessment has been revised in accordingly which confirms that there will be no adverse effects on integrity in-combination with any other plans or projects.
10 (t)	Notwithstanding the rationale provided in relation to the assessment of impacts of operational underwater noise on marine megafauna (Chapter 14, pg 14-42, of the EIAR), the applicant is requested to assess potential impacts from operational underwater noise on marine mammals in terms of the cumulative assessment with other Irish Sea Phase 1 ORE projects.	The Developer acknowledges this request and has included an in-combination assessment of the disturbance from operational noise in Section 6.3. This includes assessment with other Irish Sea Phase 1 ORE projects. The impact of underwater noise during the operational phase of all OWFs is considered to be localised to the very immediate vicinity of the WTGs. The effect of disturbance is expected to last less than a day, though the disturbance impact could occur across many years. It is unlikely to lead to the exclusion of animals within the OWF array areas, and therefore, at most, affecting a very small proportion of receptor population and without an alteration to population trajectories. Operational WTG for was assessed for all SACs included in the SISAA in Section 5.3 and 6.3 of the NIS with marine mammal QIs, it was concluded beyond reasonable scientific doubt that there is no adverse effect on integrity alone or in-combination with any other plans or projects.

RFI Section	RFI	Response to RFI and relevance to NIS.
11 (a), (b), (c)	Atlantic Herring a. The assessments relating to Atlantic herring omit the potential spawning habitat in Dundalk Bay (MPA Advisory Group, 2023, Ecological sensitivity analysis of the western Irish Sea to inform future designation of Marine Protected Areas (MPAs, 2023), focusing instead on the known Mourne spawning ground (Dickey-Collas et al., 2001, The location of spawning of Irish Sea herring (Clupea harengus). Journal of the Marine Biological Association of the United Kingdom, 81(4): pp. 713-714) to the northeast of Dundalk Bay (including the potential spawning grounds). The two areas are defined within Chapter 13, Figure 13.5. The Dundalk Bay potential spawning habitat and Mourne spawning grounds are located outside of the Zone of Influence (ZoI) for seabed disturbance effects (12 km). However, Figure 13.13 and Figure 13.14 in Chapter 13 clearly show areas being located within the ZoI for underwater noise effects (70 km) and subsequently within the modelled impact ranges for Temporary Threshold Shift (TTS) effects (186 dB re 1µPa² / 186 dB SELcum). If it is the case that both spawning grounds are included in the assessment and collectively termed 'the Mourne spawning ground' as a result of their close proximity, the applicant is requested to clarify this in the text so the assessment of both spawning grounds is clear. Otherwise, the applicant is requested to review their assessment of underwater noise for Atlantic herring to include both areas. b. The applicant is requested to consider the inclusion of additional data pertaining to potential spawning grounds in their assessments. Data aggregate sites including those provided by the Marine Institute (Marine Data Centre | Marine Institute) may provide further evidence to aid in increasing confidence relating to the population distribution of these species, specifically where spring spawning season data is available in addition to autumn spawning season data. These may be beneficial in developing understanding and assessment of the Mourne herring spawning grounds extent, and whether the Dundalk Bay grounds should be considered as a separate ground, or as a component of the extensive Mourne spawning grounds. c. Within the review arising from a) above, the applicant is requested to consider the updates by Kyle-Henney et al. (2024) and Reach et al. (2024) to the Reach et al. (2013) and Latto et al. (2013) methodologies to identify potential spawning habitats for Atlantic herring and potential supporting habitats for sandeel Ammodytidae. The applicant is requested to update the Fish and Shellfish Ecology chapter to take account of these methodologies.	RFI Sections 11 (a-c) are addressed through the EIAR RFI response process. Atlantic herring are not an Annex II Migratory Fish QI and so are not assessed within the NIS documentation.
11 (d)	d. Given the extensive distance of Temporary Threshold Shift (TTS) on fish with a swim bladder used in hearing (69 km), the location of sensitive Atlantic herring spawning grounds, and the limited spatial extent of potential spawning habitat available in the region, as referenced above under the heading of marine mammals, the applicant is requested to assess the possibility for the use of Noise Abatement Systems (NAS) to reduce the spatial impact of underwater noise associated with impact piling beyond soft start procedures so that TTS extent would not overlap with the spawning grounds.	Following design refinements in response to the RFI, impact piling is no longer included in the construction strategy, resulting in a significant reduction in predicted underwater noise exposure. The NIS has been updated to remove piling operations.

RFI Section	RFI	Response to RFI and relevance to NIS.
	Reference to NAS should contain appropriate links with and inform other relevant chapters (eg Chapter 14 Marine Mammal Ecology), in which NAS may be applicable.	The Developer has committed to the use of NAS (e.g. bubble curtains or similar) as noise abatement if high order UXO clearance is required. Reference to NAS has been included in relevant sections of the NIS, as requested in RFI 11(d). The MMMP has been updated and provided in Appendix A10.
11 (e) and (f)	e. Given the concerns raised in observations regarding potential impacts to Norway lobster (Nephrops norvegicus) fisheries, the applicant is requested to present a figure / figure for both inshore and offshore fishing grounds relative to the development area, rather than focussing on inshore fisheries (Figure 13.11). Offshore fishing grounds and distribution boundaries are requested to be added to Figure 13.11 as an addition to inshore fisheries information and subsequently referred to in text. f. The applicant is requested to strengthen relevant cross references to commercial fisheries (Chapter 16) within Chapter 13 Fish and Shellfish.	RFI Sections 11 (e-f) are addressed through the EIAR RFI response process. Lobster are not an Annex II Migratory Fish or Shellfish QI and so are not assessed within the NIS documentation. Impacts to commercial fisheries are not assessed through the NIS process.
11 (g)	g. The applicant is requested to consider disturbance to fish, basking shark and sea turtles from underwater noise generated by wind turbines during the operational phase of the proposed development.	In response to RFI 11 (g) operational underwater noise from WTGs has been screened into the NIS. Section 3.6.2 of the SISAA has been updated. Assessments are provided in updated Section 5.2 Migratory Fish Alone Assessment and Section 6.2 Migratory Fish In-combination Assessment of the Addendum to the NIS. For clarity, it is concluded beyond reasonable doubt that operational underwater noise from WTGs will not result in an AEoI on any SAC assessed with migratory fish QIs for both Project Options both alone or in-combination with other plans and projects.
15 (a-f)	a. The Board notes the observation from the DAU in relation to the assessment of coastal foraging bats. The DAU notes there is some evidence of Leisler's bats throughout the summer and autumn at Rockabill, which is c. 5/6km from the proposed offshore array and therefore the proposed development is within the foraging range of this species. The DAU observations notes a potential roost of pipistrelles on Rockabill needs further investigation. The applicant is requested to include the use of the data collected during vessel and headland surveys in 2024, as well as further surveys of the buildings at Rockabill Island to determine if a bat roost is present and address the potential for any interaction between foraging bats on Rockabill and the offshore development area. b. Whilst the applicant has stated that any risk to migrating bats has been ruled out, the DAU notes that data collected by the applicant, particularly in relation to Leisler's bats, provides the strongest indication to date that this species may migrate between the UK and Ireland. The DAU recommend that further data should be acquired or more data analysed to allow further consideration of the implications of the proposed development on offshore bat activity.	RFI sections 15 (a-f) are being addressed within the EIAR RFI response process. Leisler's bat (an Annex IV species) is not an Annex II species and therefore not assessed in the NIS.

RFI Section	RFI	Response to RFI and relevance to NIS.
	These analyses should include use of the data collected during vessel and headland surveys in 2024 as well as further surveys of the buildings at Rockabill Island to determine if a bat roost is present and should address the potential for any interaction between bats on Rockabill and the offshore development area. The applicant is requested to respond to the observation made by the DAU and address concerns raised. c. With regard to artificial lighting at night, the applicant is requested to provide a more comprehensive assessment for the effects due to Artificial Lighting at Night (ALAN) and the extent to which it may displace bats. The applicant is requested to provide an assessment (with reference to appropriate lux contours) having regard to the submitted Lighting and Marking Plan to determine the extent to which WTG and OSP lighting may disturb or displace bats. d. The applicant is requested to clarify what specifically are the 'optimisation strategies' utilised by bats and how are they relied upon to mitigate risks from the proposed development for bats. e. As indicated within Chapter 35 of the EIAR, some bat species, which are known to have migratory behaviours, have a foraging height of approx. 40m above ground level (as per studies relating to onshore windfarms). The applicant is requested to review the EIAR in the context of the most up-to-date literature available, which claims that certain species regularly fly above 40m. In light of this literature, the application is requested to reconsider the tidal range and its impact on the available gap between the swept area and water level and the factor which flight height plays in the risk to foraging and migratory bats. f. The applicant is requested to examine the need for mitigation measures, in addition to monitoring during the operational phase, to reduce potential impacts on bats, and is requested to provide details in relation to potential mitigation measures, for example, including, inter alia, measures such as curtailment or feathering of blades under certain conditions.	
20 (a)	a. Chapter 23 of the EIAR and the NIS both refer to Cutts, N., Phelps, A. & Burdon, D. (2009) Construction and waterfowl: defining sensitivity, response impacts and guidance. Institute of Estuarine & Coastal Studies (IECS) The University of Hull. The Waterbird Disturbance Mitigation Toolkit (Cutts, N., Hemingway, K. & Spencer, J. (2013), Waterbird Disturbance Mitigation Toolkit. Informing Estuarine Planning & Construction Projects, Institute of Estuarine and Coastal Studies (IECS) University of Hull, Version 3.2) has been published since this paper and incorporates some newer information. Please confirm whether the conclusions drawn based on the 2009 paper are still valid in light of the more recent toolkit.	The NIS has been reviewed against The Waterbird Disturbance Mitigation Toolkit (Cutts et al. (2013)). Updated information in Cutts et al. (2013) that differs from Cutts et al. (2009) and with relevance to the assessment in Section 5.4 includes disturbance distances for light-bellied Brent geese, shelduck and some wading species. Disturbance distances are not specifically set out for light-bellied Brent geese in Cutts et al. (2009). The assessment in the Section 5.4 of the NIS assumed a disturbance distance of up to 300m from noise stimuli for light-bellied Brent geese based on noise disturbance information and distances to third party disturbances contained in Cutts et al. (2009). For Brent geese, Cutts et al. (2013) identify the species as highly sensitive to noise disturbance. The study reports a disturbance distance threshold of 105m when birds are foraging, with this increasing to 205m for roosting or loafing birds due to increased vigilance at the roost.

RFI Section	RFI	Response to RFI and relevance to NIS.
		Considering the information presented in Cutts et al. (2013) the disturbance distance of 300m applied for light-bellied Brent geese during the assessment in the 2024 NIS remains valid (i.e. the disturbance distance of 300m used in the 2024 EIAR is considerably more than the 105m - 205m). In addition, the survey area extended to within 1km of the onshore development area and included estuarine habitats, refer to Section 1.9 of the NIS (Data Collection), and therefore, captured and assessed birds occurring beyond the 300m distance. . Similarly, updated information has been provided for shelduck in Cutts et al. (2013). The assessment in Section 5.4 for shelduck assumed a disturbance distance of up to 300m from noise stimuli based on information contained in Cutts et al. (2009). Cutts et al. (2013) reports that shelduck are quite sensitive to noise stimuli with a minimum approach distance of no less than 150m. It also states, "the species is subject to a high degree of habituation and further exposure to sounds of the same or greater level can lead to no response to stimuli." Considering the information presented in Cutts et al. (2013), the disturbance distance of 300m applied for noise stimuli is sufficient and valid for shelduck. Cutts et al. (2013) has identified shelduck as highly sensitive to visual disturbance reporting they are affected by visual disturbance up to 500m away from source. Visual disturbance assessed in Section 5.4 of the NIS, does not define 300m (or any distance) as a set disturbance distance for shelduck from the visual stimuli associated with the onshore proposed development. However, the survey area extended to within 1km of the onshore development area and included estuarine habitats, refer to Section 1.9 (Data Collection) and therefore captured and assessed birds occurring within and beyond the 500m distance set out in Cutts et al. (2013). Mitigation measures applied in Section 4 of the 2024 NIS, remain appropriate to the disturbance distances and disturbance stimuli reported for shelduck in Cutts et al. (2013) given the survey was completed within and beyond the recommended 500m distance. As such, the assessment in Section 5.4 and 6.4 of the 2024 NIS for shelduck remains valid. A review of mitigation measures included in the 2024 NIS against the Waterbird Disturbance Mitigation Toolkit for Brent geese and shelduck as set out in Cutts et al. (2013), concludes the proposed mitigation remains appropriate and valid for minimising impacts on light-bellied Brent geese and shelduck. In an estuarine environment, Cutts et al. (2013) mitigation measures should be considered for works occurring within 400m of Brent geese. Mitigation measures to minimise disturbance on wintering waterbirds, including light-bellied Brent geese and shelduck, as detailed in Section 4.1.6 are:

RFI Section	RFI	Response to RFI and relevance to NIS.
		At the landfall site, the HDD compounds near the shoreline will have noise barriers erected; At Malahide Estuary, works along the Estuary Road will avoid the period September to March Where this is not practicable, noise barriers will be erected at works along the Estuary Road Noise barriers will act as a visual barrier at the landfall and at Malahide Estuary These measures will reduce noise and visual stimuli to an acceptable level for light-bellied Brent geese and shelduck when referring to Cutts et al. (2013) and as set out in Section 5.4 of the NIS. For species that will feed up to 50m (or <50m) to construction plant, a review of the Waterbird Disturbance Mitigation Toolkit as set out in Cutts et al. (2013) confirms that mitigation measures included in the 2024 NIS remain appropriate and valid. These species include oystercatcher, ringed plover, golden plover, lapwing, knot, sanderling (not recorded during surveys for the proposed development), redshank and turnstone. For such species, the Waterbird Disturbance Mitigation Toolkit suggests mitigation should be applied at noise levels of above 55db (60dB in a highly disturbed area) to 60dB (65dB in a highly disturbed area). Based on the review of the Cutts et al. (2013) and the assessment presented in Section 5.4, no updates are required in the NIS in response to RFI Item 20 (a).

1.1 Project Background

Several matters raised in the RFI have resulted in changes to the offshore elements of the proposed development (See Appendix A7: Design Refinements). These design refinements are presented in Section 2 of the NIS. Appendix 1 of the 2024 NIS shall also be replaced by Appendix A1: Key Personnel in order to provide updates to key personnel.

The following paragraph shall therefore be deleted:

'The key differences between the two project options relate to Wind Turbine Generator (WTG) number, WTG dimensions, WTG layout and Offshore Substation Platform (OSP) foundation type and dimensions. A fixed WTG layout for each of the two project options is included in the application. A 500m limit of deviation for each WTG and the OSP is proposed. The precise location of WTGs and the OSP within the array area, and the export cable within the export cable corridor, will not be confirmed until detailed geotechnical site investigation surveys have been undertaken.'

And replaced with:

The key differences between the two project options relate to Wind Turbine Generator (WTG) number, WTG dimensions and WTG layout. A fixed WTG layout for each of the two project options is included in the application. Both Project Option 1 and Project Option 2 have been designed and refined in liaison with the Irish Coast Guard (IRCG) to ensure that Search and Rescue (SAR) access lanes are available in at least one line of orientation throughout the array area. A 500m limit of deviation for each WTG and the OSP is proposed, this would be applied pre-construction, and relocation will only occur if linear alignment along the row of structures can be retained. The precise location of WTGs and the OSP within the array area, and the export cable within the export cable corridor, will not be confirmed until detailed geotechnical site investigation surveys have been undertaken.

There are no other changes to this section. Refer to Section 1.1 in the 2024 NIS.

1.2 Purpose of this Document

There are no changes to this section. Refer to Section 1.2 in the 2024 NIS.

1.3 Structure of the Document

There are no changes to the overall structure of this document, however some sections have been updated based on design refinements for Project Options 1 and 2, the response to the RFI and updated in-combination assessments. Refer to Section 1.3 in the 2024 NIS for the structure of the original 2024 NIS. The information presented below identifies how sections have been updated and presented in this Addendum to the NIS.

The structure of the NIS can be summarised as follows:

- Section 1: Introduction. **This section has been updated to provide an overview of the RFI and resultant design refinements. Updates to the structure of the NIS and its Appendices, data collection and consultation are also provided.**
- Section 2: Description of Development. **This section has been updated to provide the updated description of the Proposed Development.**
- Section 3: Screening. **Screening updates as presented in the SISAA are presented in this section.**
- Section 4: Identification of Potential Impacts and Mitigation Measures. **This section has been updated as a result of the design refinements to Project Options 1 and 2.**
- Section 5: Stage 2 Appropriate Assessment - Project Alone. **This section provides the updated assessments as a result of the design refinements presented in Section 2.**
- Section 6: Stage 2: Appropriate Assessment - Project In-Combination. **This section provides the updated in-combination assessments as a result of the design refinements to Project Options 1 and 2 as presented in Section 2 and the updated list of plans and projects.**

- Section 7: Transboundary Statement. Provides information on European sites outside the jurisdiction of Ireland. **There is no change to this assessment. Please refer to Section 7 of the 2024 NIS**.
- Section 8: Conclusions. **The conclusions table has been updated as a result of the updated assessments in Section 5-7 of the Addendum to the NIS.**
- Section 9: References. **Any new references have been added to the Addendum to the NIS are presented here.**

Several appendices have been updated to accompany the Addendum to NIS document as follows:

- Appendix A1: Key personnel. **This appendix has been updated to support the Addendum to NIS (previously Appendix 1 of the 2024 NIS)**;
- Appendix A2: Integrity Matrices. **This appendix has been updated to support the Addendum to NIS and (previously Appendix 2 of the 2024 NIS**;
- Appendix A3: In-combination long list. **This appendix has been updated to support the Addendum to NIS and (previously Appendix 3 of the 2024 NIS**;
- Appendix 4: Cable Route Benthic Survey Report. **This appendix has not been updated please refer to 2024 NIS Appendix 4**;
- Appendix 5: Array Area Benthic Survey Report. **This appendix has not been updated please refer to 2024 NIS Appendix 5;**
- Appendix A4: Benthic Ecology Survey Report 2025.**This is a new appendix supporting the Addendum to NIS**.
- Appendix A5: Breeding Bird Survey Effort and Results 2024-25. **This is a new appendix supporting the Addendum to NIS**.
- Appendix A6: Wintering Waterbird Survey Effort and Results 2024-25.**This is a new appendix supporting the Addendum to NIS**.
- Appendix A7: Design Refinements. **This is a new appendix supporting the Addendum to NIS**.
- Appendix A8: Offshore Environmental Management Plan. **This appendix has been updated to support the Addendum to NIS (previously Appendix 7 of the 2024 NIS);**
- Appendix A9: Onshore Construction Environmental Management Plan (CEMP). **This appendix has been updated to support the Addendum to NIS (previously Appendix 8 of the 2024 NIS);**
- Appendix 9: NISA Bioenergetic Modelling. **This appendix is no longer required and has been deleted from the NIS.**
- Appendix A10: Marine Mammal Mitigation Protocol. **This appendix has been updated to support the Addendum to NIS (previously Appendix 10 of the 2024 NIS);**
- Appendix 11: Environmental Vessel Management Plan. **This appendix has not been updated please refer to 2024 NIS Appendix 11;**
- Appendix A11: Marine Physical Processes Numerical Modelling. **This is a new appendix supporting the Addendum to NIS**.

Appendix A12: Supporting Assessment Sensitivity Studies. **This is a new appendix supporting the Addendum to NIS**.

- Appendix A13: Underwater Noise Assessment. **This appendix has been updated to support the Addendum to NIS (previously Appendix 6 of the 2024 NIS);**
- Appendix 14: Method Statement - Offshore Wind Ornithology Assessment for East Coast Phase 1 Projects. **This appendix has not been updated, please refer to 2024 Appendix 14;**

- Appendix 15: NPWS Review of Method Statement. **This appendix has not been updated please refer to 2024 NIS Appendix 15;**
- Appendix 16: Method Statement Review Consultation and Justification Log. **This appendix has not been updated please refer to 2024 NIS Appendix 16;**

Appendix A14: Offshore and Intertidal Ornithology Technical Baseline. **This appendix has been updated to support the Addendum to NIS (previously Appendix 12 of the 2024 NIS).**

Appendix A15: MRSea Modelling for Offshore Ornithology. **This appendix has been updated to support the Addendum to NIS (previously Appendix 23 of the 2024 NIS);**

- Appendix A16: Fish and Shellfish Ecology Baseline Characterisation. **This appendix has been updated to support the Addendum to NIS (previously Appendix 21 of the 2024 NIS);**
- Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis. **This appendix has been updated to support the Addendum to NIS (previously Appendix 17 of the 2024 NIS);**
- Appendix A18: Offshore and Intertidal Ornithology Apportioning Appendix. **This appendix has been updated to support the Addendum to NIS (previously Appendix 20 of the 2024 NIS);**
- Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. **This appendix has been updated to support the Addendum to NIS (previously Appendix 18 of the 2024 NIS);**
- Appendix A.20: Offshore and Intertidal Ornithology Population Viability Analysis. **This appendix has been updated to support the Addendum to NIS (previously Appendix 19 of the 2024 NIS);**
- Appendix A.21: Additional Guillemot Ecological Evidence Note. **This is a new Appendix supporting the Addendum to the NIS.**
- Appendix 22: NISA/Dublin Bioenergetic Modelling. **This appendix is no longer required and has been deleted from the NIS**;
- Appendix A.22: Senior Legal Counsel Opinion on NPWS submission. **This is a new Appendix supporting the Addendum to the NIS.**
- Appendix A23: Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment. **This appendix has been updated to support the Addendum to NIS (previously Appendix 14 of the 2024 NIS);**
- Appendix A24: Migratory Bird Survey Report **This is a new Appendix supporting the Addendum to the NIS.**
- Appendix A25: Temporary Threshold Shift Position Statement. **This is a new Appendix supporting the Addendum to the NIS.**

1.4 Overview of the North Irish Sea Array Offshore Wind Farm

There are no changes to this section. Refer to Section 1.4 in the 2024 NIS.

1.5 Appropriate Assessment Process

There are no changes to this section. Refer to Section 1.5 in the 2024 NIS.

1.6 The Birds and Habitats Directives

There are no changes to this section. Refer to Section 1.6 in the 2024 NIS.

1.7 Relevant Guidance

There are no changes to this section. Refer to Section 1.7 in the 2024 NIS.

1.8 Case Law

There are no changes to this section. Refer to Section 1.8 in the 2024 NIS.

1.9 Data Collection

The timeframes associated with the RFI have required a review of the datasets previously used in the 2024 NIS to ensure any necessary updates to the baseline environment are captured. This is to ensure compliance with RFI Section 1 (b).

In response to RFI Section 1(c), the Developer confirms that additional surveys have carried out following submission of the 2024 NIS. The details of these surveys are presented below within the relevant sections for each receptor group and have been used to inform the updates to the NIS.

1.9.1 Coastal and Marine Habitats

In response to RFI Section 1 (b), the key change to this section is the addition of the site-specific Benthic Ecology Survey Report 2025 and also the Nearshore and Intertidal Geophysical Survey 2023 (reported on in 2024 after the 2024 planning submission). An additional change to this section includes the addition of a table column to clarify the spatial coverage of each survey. The following paragraph and Table 1.1 in Section 1.9.1 the 2024 NIS is deleted and replaced with updated text and Table A1.1.

The following text shall be deleted:

Site-specific surveys for the proposed development have been undertaken to provide an up-to-date characterisation of the coastal and marine habitats and species occurring within the proposed development boundary. All survey methodologies were in line with the relevant guidance documentation (Cefas, 2002; Cefas et al., 2004; Davies et al., 2001 and Ware and Kenny, 2011). The surveys are summarised in Table 1.1 below.

And replaced with:

Site-specific surveys for the proposed development have been undertaken to provide an up-to-date characterisation of the coastal and marine habitats and species occurring within the proposed development boundary. Further benthic subtidal ecology surveys covering the array area and ECC were conducted in October 2025 to validate the baseline assumptions presented in the 2024 NIS. All survey methodologies were in line with the relevant guidance documentation (Cefas, 2002; Cefas et al., 2004; Davies et al., 2001 and Ware and Kenny, 2011). In addition, SEP Hydrographic was commissioned to conduct a geophysical survey in the nearshore cable route to bridge the survey coverage between intertidal and subtidal habitats and facilitate the identification of potential reef habitats.

The surveys are summarised in Table A1.1 below.

Table A1.1: Site specific survey data used to inform the coastal and marine habitats assessment (replaces Table 1.1 of the 2024 NIS).

Title	Summary	Spatial coverage
NISA Benthic Ecology Baseline Cable Route Benthic Survey Report (Natural Power Consultants Ltd, 2023).	An Intertidal Phase I walkover survey was undertaken on the 26th of September 2022 and was carried out between Mean High Water (MHW) and Mean Low Water (MLW) to determine the composition and distribution of intertidal biotopes and the extent of sub-features. In areas of soft substrate, sediment characteristics were assessed with material collected from eight sites for particle size analysis (PSA) and Total Organic Carbon (TOC) content determination. Sediment samples were also collected from ten sites for infaunal analysis with sediment taken to a depth of 20-25cm and washed over a 1mm sieve with all retained fauna identified and enumerated. Biotopes/habitats were assigned and mapped by reference to the benthic community data collected and by reference to aerial imagery.	Intertidal and ECC survey area

Title	Summary	Spatial coverage
	The subtidal benthic survey campaign was carried out between the 27th of September – 1st October 2022 with 30 sites surveyed, of which 24 were within the ECC with the remainder directly to the south. Drop Down Video (DDV) transects were conducted at all sites to inform seabed habitat classification. Similarly, samples for infaunal analysis were collected at all 30 sites using a 0.1m^2 Day Grab. Material was washed over a 1mm sieve with all retained fauna identified and enumerated. Additional sediment was collected at ten sites for PSA and TOC determination while surficial sediments were collected for chemical analyses. Turbidity measurements were collected at various depths at three sites, one measurement per site; located near shore, mid-way along the ECC assessment area and near the array area.	
NISA Benthic Ecology Baseline Array Area Benthic Survey Report (Natural Power Consultants Ltd, 2022).	A total of 40 sampling stations were selected in the vicinity of the array area and the adjacent subtidal environment, of which 11 sites were within the array area. Sites were selected with reference to existing habitat and geophysical data to ensure that all habitats present within the survey area were represented. At each station sediment was collected for physiochemical analyses (PSA, TOC, chemistry) and a single 0.1m^2 Day Grab sample was taken for faunal analysis. DDV samples were collected from 12 sampling stations, five of which were within the array area distributed throughout the array. In addition, DDV data were acquired at 20 sites located to the southwest of the array area where historical data indicated the prevalence of hard substrate unsuitable for grab sampling. All survey sites were within the area covered by the Marine Area Consent (MAC)1 for the proposed development, which has been refined since the survey was undertaken in 2022 through design development to the offshore development area.	Array subtidal survey area
Appendix A4: Benthic Ecology Survey Report 2025	A total of 23 sampling stations were selected in the vicinity of the array area and ECC, of which 13 sites were within the array area and 10 within the ECC. Sites were selected with reference to 2022 surveys and existing geophysical data to ensure that all habitats present within the survey area were represented. At each station sediment was collected for physiochemical analyses (PSA, TOC, chemistry) and a single 0.1m^2 Day Grab sample was taken for faunal analysis. DDV samples were also collected from all 23 sampling stations. All survey sites were within the area covered by the Marine Area Consent (MAC) for the proposed development, which has been refined since the survey was undertaken in 2022 through design development to the offshore development area.	Array and ECC subtidal survey area
Nearshore and Intertidal Geophysical Survey (SEP Hydrographic, 2024)	Survey of the nearshore section of the ECC with side scan sonar, multi-beam echosounder, magnetometer and sub bottom profiler This was primarily used to obtain a full coverage of bathymetry in the ECC, to interpret and classify seabed features and to aid geological interpretation and understanding. 62 lines were surveyed orientated transversely across the ECC, with survey coverage extending 1.5km seaward from low water. The intertidal section of the ECC was surveyed using Seismic Refraction with ten lines running from the upper to lower shore. Surveys were undertaken over November and December 2023.	Nearshore subtidal and intertidal areas of ECC

There are no other changes to this section. Refer to Section 1.9.1 of the 2024 NIS.

[1] the MAC is a State consent, awarded to the Developer in December 2022 which allows the right to occupy a part of the maritime area and the ability to subsequently apply for development consent within that maritime area.

1.9.2 Migratory Fish

In response to RFI Section 1 (b), the key change to this section is the update to relevant site-specific and existing data sources originally reported in Table 1.3 in the 2024 NIS. This update incorporates additional and more recent data and reports that have become available since submission of the 2024 NIS. In addition to those presented in the 2024 NIS, new and updated information considered in this Addendum is presented in Table A1.2 and is identified by grey shading. Accordingly, Table A1.2 replaces Table 2.1 of the 2024 NIS.

Table A1.2: Data sources used to inform the migratory fish baseline characterisation and assessment (replaces Table 1.3 of the 2024 NIS).

Data source	Data utilisation
Site-specific Surveys	
2022 Site-specific benthic ecology baseline surveys across the array area (Natural Power, 2022) and ECC (Natural Power, 2023).	Site-specific survey data inclusive of benthic grabs, DDV, PSA, sediment total carbon content and contaminant analysis. DDV data used to inform the fish baseline characterisation.
2025 Site-specific benthic ecology baseline surveys across the array area and ECC (Appendix A4 Benthic Ecology Survey Report 2025)	Site-specific survey data inclusive of benthic grabs, DDV, PSA, sediment total carbon content and contaminant analysis. DDV data used to validate the fish baseline characterisation.
Existing Data Sources	
ICES (2023a) Northern Irish Ground Fish Survey (NIGFS) (2012-2022).	Provided distribution data on ground fish in the western Irish Sea (ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4).
ICES (2023b) Offshore Beam Trawl Survey (BTS) (2012-2022).	Provided distribution data on ground fish in the western Irish Sea (ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4).
ICES (2022) ICES Ecosystem Overviews. Celtic Seas ecoregion - Ecosystem Overview.	Overview of the state of the ecosystem in the region.
ICES (2025a) Northern Irish Ground Fish Survey (NIGFS) (2014-2024).	Provided distribution data on ground fish in the western Irish Sea (ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4)
ICES (2025b) Offshore Beam Trawl Survey (BTS) (2014-2024)	Provided distribution data on ground fish in the western Irish Sea (ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4)
ICES (2024) ICES Ecosystem Overviews. Celtic Seas ecoregion – Ecosystem Overview	Overview of the state of the ecosystem in the region.
King et al. (2011) Ireland Red List No. 5: Amphibians, Reptiles and Freshwater Fish	Details most up-to-date list of amphibians, reptiles and freshwater fish native and non-native to Ireland, listed from least concern to extinct.
Inland Fisheries Ireland (IFI) publications on the status of migrating fish populations (2018-2025).	Findings of a monitoring programme designed to assess the status of salmon and other migrating fish populations in river catchments throughout Ireland.
Aquatic Services Unit (2020) Dublin Port Maintenance Dredging 2022 – 2029 Benthic and Fisheries Assessment	Trawls undertaken in 2020 within Dublin Bay to build the fish baseline for the Dublin Port Maintenance Dredging project. Data used to support the fish baseline characterisation
Saorgus Energy Limited, 2013. Dublin Array An Offshore Wind Farm on the Kish and Bray Banks. Environmental Impact Statement.	Environmental and ecological data collected from the Kish and Bray banks and along the ECC of the proposed Dublin Array wind farm development. Data used to support the fish baseline characterisation.

There are no other changes to this section. Refer to Section 1.9.2 of the 2024 NIS.

1.9.3 Marine Mammals

In response to RFI Sections 1 (b), 10 (d), 10 (e) and 10 (n), the key change required in this section is the inclusion of additional site-specific surveys to validate the earlier studies used to characterise the baseline and the inclusion of additional desk-based reports on marine mammals that were published following the submission of the 2024 NIS. In addition to those presented in the 2024 NIS, new and updated information considered in this Addendum to the NIS is presented in Table A1.3 and is identified by the grey shading. Accordingly, Table A1.3 replaces Table 1.3 of the 2024 NIS.

The following paragraph shall also be added to Section 1.9.3 of the 2024 NIS:

The Developer undertook a 12-month NWIS Digital Aerial Survey (DAS) programme from September 2024 to August 2025. The NWIS Digital Aerial Surveys (NWIS DAS) covered the proposed development survey site and broader NWIS cSPA, collectively referred to as the Survey Area, covering a maximum area of 2,396km².

In addition, from November 2024, seal landfall surveys (visual landfall surveys) were undertaken from three land-based vantage points in proximity to the NISA landfall area. These counts include counts of seals within the landfall area, both at-sea and hauled-out on land.

In parallel with these site-specific surveys, a targeted review of relevant data sources for marine mammals that have become available since the 2024 NIS was undertaken. The forementioned sources are listed in Table A1.3.

Table A1.3: Data sources used to inform the marine mammal assessment (replaces Table 1.4 of the 2024 NIS)

Data source	Type of data	Temporal and spatial coverage
Site-specific NWIS DAS (Sep 2024 to Aug 2025)	Digital aerial surveys	September 2024 to August 2025, NISA survey site and broader North-West Irish Sea candidate Special Protection Area (cSPA).
Site-specific seal landfall surveys	Visual landfall surveys	Since November 2024, GoBe have conducted seal counts at three land-based vantage points close to the NISA landfall area. These counts include counts of seals within the landfall area, both at-sea and hauled-out on land.
ObSERVE 2 (Giralt Paradell et al., 2024)	Visual aerial surveys	3 surveys: summer 2021, summer 2022 and the winter of 2022-2023. Offshore waters around Ireland, within and beyond Ireland's continental shelf. The offshore development area is entirely located within ObSERVE survey Stratum 5.
Gilles et al. (2025) SCANS IV density surface	Predictive habitat-based models of cetaceans in European Atlantic waters in the summer of 2022 based on SCANS IV survey data	Modelled density surfaces cover the entire SCANS IV survey area. NISA is located within SCANS IV block CS-D.
Irish seal haul-out surveys (Morris et al., 2025)	Aerial thermal-imaging	August 2024, surveys covered the whole Irish coastline.
Site-specific surveys	Combination of visual boat-based surveys and digital aerial surveys	November 2019-October 2020: original NISA OWF array area (from the foreshore licence, excluding the seabed beyond 12nm) plus 4 km buffer. November 2020 onwards: MAC area (includes the seabed beyond 12nm) plus 4km buffer.
ObSERVE (Rogan et al. 2018)	Visual aerial surveys	4 surveys: summer 2015, winter 2015, summer 2016 and winter 2016.

Data source	Type of data	Temporal and spatial coverage
		The offshore development area is entirely located within ObSERVE survey Stratum 5. Offshore waters around Ireland, within and beyond Ireland's continental shelf.
SCANS III & IV (Hammond et al. 2017, Hammond et al. 2021, Lacey et al. 2022, Gilles et al. 2023)	Aerial and vessel visual surveys	All European Atlantic waters. CWP Project located in block E (western Irish Sea) for SCANS III surveys. This block was renamed to block CS-D for SCANS IV.
SCANS II (Hammond et al. 2013)	Aerial and vessel visual surveys	June & July 2005. All European Atlantic waters. Proposed development located in block O (entire Irish Sea).
Distribution and abundance of cetaceans Wales and its adjacent waters (Evans and Waggitt 2023)	Maps of sighting rates and indicative density surface maps from aerial and vessel survey data	1990 – 2020. Wales and adjacent seas.
Irish marine mammal atlas (Wall et al. 2013)	Collation of data from Irish Whale and Dolphin Group (IWDG), the ISCOPE I and II projects, ferry survey programme and the PReCAST surveys.	2005-2011. Irish Exclusive Economic Zone (EEZ).
IWDG Irish Sea surveys (Berrow et al. 2011)	Visual and acoustic survey	2 surveys in August 2011. Inshore surveys in 2 blocks: Block A (northern Irish Sea – including the proposed development) and Block B (southern Irish Sea).
IWDG SAC surveys (Berrow and O'Brien 2013, O'Brien and Berrow 2016, Berrow et al. 2021)	Visual and acoustic line transect surveys	1 survey in 2013. 4 surveys in 2016. 6 surveys in 2021. Rockabill to Dalkey Island SAC.
IWDG Irish coastal water surveys (Berrow et al. 2008)	Vessel based visual line transect surveys and T-POD acoustic monitoring	6 survey days between July-September 2008. 5 sites (North County Dublin, Dublin Bay, Cork coast, Roaringwater Bay SAC and Galway Bay).
IWDG Greater Dublin Drainage Project surveys (Meade et al. 2017)	Land based observations, vessel-based surveys and C-POD acoustic monitoring	24 surveys: March 2015-March 2017. Land: North-eastern cliffs of Howth Head. Vessel: waters off Loughshinny and Portmarnock area. CPODs: 3 sites: East of Loughshinny, North of Lambay Island and off Portmarnock.
MERP maps (Waggitt et al. 2020)	Collation of data from Joint Cetacean Protocol (JCP) (aerial and vessel)	1980 and 2018. European Atlantic waters.
Seal counts 2017-2018 (Morris and Duck 2019)	Aerial survey	August 2017 and 2018. Entire coastline of Ireland.
Seal at-sea density (Carter et al. 2020)(Carter et al. 2022)	Seal habitat-use derived from telemetry data	2005 – 2019 UK and Ireland
Seal telemetry (Cronin et al. 2016)	Telemetry tags	Strangford Lough: 33x harbour seals (2006, 2008 & 2010). Raven Point: 19x grey seals 2013 & 2014.

Data source	Type of data	Temporal and spatial coverage
		Great Blasket Island: 8x grey seals 2009.
Seal counts 2005 (Ó Cadhla et al. 2007)	Aerial survey	Spring & summer 2005. Entire coastline of the Republic of Ireland.
Seal counts 2017-18 (Morris and Duck 2019)	Aerial survey	August 2017 and 2018. Entire coastline of Ireland.
Seal telemetry (Cronin et al. 2016)	Telemetry tags	Strangford Lough: 33x harbour seals (2006, 2008 & 2010). Raven Point: 19x grey seals 2013 & 2014. Great Blasket Island: 8x grey seals 2009.
Codling surveys (Codling Wind Park Limited 2020)	Visual vessel surveys	April 2013 – March 2014 and again in Oct 2018 – Oct 2019. Codling Wind Park array area.
Arklow surveys (GoBe 2023)	Visual vessel surveys Digital aerial surveys	Monthly vessel surveys: July 1996 and March 1997, and June 2000 and June 2009. Arklow Bank wind farm array area plus a 5km buffer. Monthly aerial surveys between March 2018 and February 2020. Lease Area plus a 4km buffer.
Oriel Surveys (RPS, 2019)	Boat-based survey Acoustic monitoring survey (4x CPoDs)	Surveys started in 2018. Unknown timeline.

There are no other changes to this section. Refer to Section 1.9.3 of the 2024 NIS.

1.9.4 Ornithology

In response to RFI Section 1 (b) this section has been updated to account for the updated NWIS DAS surveys covering the NWIS cSPA, which subsequently covers the Project Footprint of Infrastructure (PFI), PFI + 10km buffer and the full ECC, and additional vantage-point and PAM survey data, described in Table A1.4 below. This additional coverage was triggered by RFI Sections 8(aii) and 8(aiii), which required expanded DAS data for red-throated diver, and by RFI Sections 8(iv) and 8(v), which requested further site-specific data on migratory and terrestrial birds. The name of the 2020 to 2022 DAS survey was edited to clarify this is hereafter referred to as the 'MAC DAS' and summary text has been added.

In addition to data sources presented in the 2024 NIS, new and updated information considered in this Addendum is presented in Table A1.4 and is identified by the grey shading. Accordingly, Table A1.4 replaces Table 1.4 of the 2024 NIS.

Table A1.4: Site-specific survey data used to inform the ornithological assessment (replaces Table 1.5 of the 2024 NIS)

Source	Date	Summary
NISA – MAC Digital aerial survey (DAS) data	2020-2022	The original site-specific DAS survey extent mirrored the array area within the foreshore licence plus a 4km buffer. The DAS survey extent was updated in November 2020 to include the entire MAC boundary (which included the small area beyond 12nm that was not within the original DAS survey extent). Throughout this process, boundary refinements have taken place, with the PFI now representing 29% of the MAC boundary. The data used to inform this EIAR chapter consists of data within the final PFI and 10km buffer for the proposed development.

Source	Date	Summary
Boat-based survey data	2019 – 2020	Vessel surveys were conducted by in November 2019, January 2020, March 2020, August 2020, June 2021, July 2021, and July 2022. Initial baseline characterisation was undertaken using vessel-based surveys; however, these were then succeeded by DAS data collection as the main form of data collection with supplementary vessel-based surveys.
Landfall surveys	2021 – 2022	Intertidal bird surveys were conducted at the selected landfall site to characterise the baseline environment in terms of ornithological receptors.
Coastal vantagepoint surveys	2019 – 2021	Vantagepoint surveys conducted at two locations to better quantify the movements of migratory species and to supplement DAS data collection
Breeding bird surveys	2021 – 2023	To provide information on the distribution of breeding birds within or close to the onshore development area, walkover and point count surveys were undertaken at the landfall site, grid facility, Blakes Cross North and South, M1 crossing, Malahide Estuary and the existing Belcamp substation.
Wintering waterbird surveys	2021 – 2022	To determine density of use by wintering bird populations, and especially to identify any important foraging or roosting sites within sensitive locations, Irish Wetlands and Birds Survey (I-WeBS) style surveys were undertaken at the landfall site, grid facility and at Malahide Estuary.
NWIS DAS	2024-2025	DASs conducted on a monthly basis between September 2024 and August 2025. The Survey Area (NISA offshore wind farm site and broader NWIS cSPA). A total of 19 transects spaced approximately 3.5 km between track covering a maximum Survey Area of 2,396 km^2. Covered the PFI, PFI + 10km buffer and the ECC + 2 km buffer.
NISA Coastal vantagepoint surveys including Rockabill Island.	2025	Vantage point surveys conducted at three locations to inform the migratory bird assessment. Weekly vantagepoint surveys throughout the 2024 Autumn migration season (Sep – Dec 2025).
NISA – Coastal Passive Acoustic Monitoring (PAM) surveys including Rockabill Island	2025	PAM conducted on Rockabill Island to inform the migratory bird assessment. Coverage of the autumn migration period from mid-September to mid-December on Rockabill Island.

This section, specifically Table A 1.5, has been updated to reflect the most up-to-date sources used in the NIS and is in response to RFI Section 1 (b). All literature references have been reviewed and revised to ensure that the assessment draws exclusively on the latest available information, including updated ornithological guidance, population data, and technical standards relevant to offshore and intertidal ornithology. Therefore Table 1.6 of the 2024 NIS shall be deleted and replaced with Table A.1.5. New and updated information provided in this addendum is indicated by the grey shading.

Table 1.5: Desk-based data sources used to inform the ornithological assessment (replaces Table 1.6 of the 2024 NIS)

Source(s)	Date	Summary
Relevant literature on seabird distribution, population sizes, migration routes and foraging ranges		
Joint Nature Conservation Committee (JNCC) Report No. 267 (Pollock et al. 1997)	1997	European Seabirds at Sea (ESAS) survey data collected between 1980 and 1997 in Irish waters, including a period of intensive surveys between 1994 and 1997, which targeted areas around Ireland with poor survey coverage. Used to provide historic context for the wider Irish Sea.
ObSERVE (Jessop et al. 2018)	2018	Visual aerial surveys of the western Irish Sea. Four surveys: summer 2015, winter 2015, summer 2016 and winter 2016. . This dataset was used to classify and inform a baseline for the assessment of the offshore ECC.

Source(s)	Date	Summary
Designated sites	Various dates	Information of Special Protection Areas (SPAs) and other designations relevant to Important Ornithological Features (IOFs) with potential connectivity to the proposed development. Key source of information will be Natural England designated sites portal.
Seabirds Count 2023 (Burnell et al., 2023)	2015–2021	A comprehensive census (2015–2021) of 25 breeding seabird species across Britain and Ireland, covering >10,000 colony sites. Results show widespread declines in many species, with some increasing. Forms the core evidence base for seabird conservation and SPA assessments.
Seabird Monitoring Programme (SMP) (BTO, 2026)	2015-present	Online database of seabird colony counts in Ireland and UK – most recent data from Seabirds Count national census 2015-2021. Used to provide SPA reference populations for the EIAR.
NPWS Published Report (Cummins et al. 2019)	2019	The Status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Used to provide SPA reference populations for this assessment.
Birdwatch Ireland Irish Wetland Bird Survey (I-WEBS)	Annual Reports	Annual survey reports of wetland waterbirds and intertidal birds throughout the Republic of Ireland.
Regional and national bird reports and atlases	Various	Atlases covering breeding and non-breeding birds within relevant areas, e.g. Birds in Ireland (Hutchinson, 2010), North-west European waters (Stone et al., 1995) and in Europe (BirdLife international, 2004).
Review of seabird foraging ranges – Woodward et al., (2019)	2019	British Trust for Ornithology (BTO) report updating foraging ranges of seabirds. These are used to consider connectivity with both designated sites and other OWFs. This report provides an update from previous information on foraging ranges from Thaxter et al., (2012).
Literature on seabird foraging movements	Various	Various sources on seabird foraging (e.g. tracking data), including the FAME Project (Baer & Newton, 2012) and tern tracking data at Rockabill Island (Perrow et al., 2019)
Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (regional population) – Furness (2015)	2015	Furness 2015 provides regional non-breeding season population sizes for relevant offshore ornithological receptors. Though focussed on UK waters, population sizes in UK Western Waters are considered relevant to Ireland.
The status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018 – Cummins et al (2019)	2019	NPWS commissioned report providing data on breeding seabird population sizes and trends of Ireland's breeding seabird species.
Literature on migratory bird populations and movements relevant to the proposed development	Various	Various sources on migratory birds and movements, including 'The Migration Atlas: Movements of the birds of Britain and Ireland' (Wernham et al., 2002), and literature on the risk of OWF developments to migratory birds (Wright et al., 2012), and review of non-seabird features of SPAs used to inform CRM assessment tool (Woodward et al., 2023).
Bird breeding ecology	Various dates	Information on the breeding ecology of various bird species e.g., Cramp and Simmons, 1977-94; Del Hoyo et al., 1992-2011; Camphuysen (2002); Robinson, 2005; Harris et al. (2015); Buckingham et al. (2021); Dunn et al. (2020; 2022).
JNCC review of seabird demographic rates (Horswill and Robinson 2015)	2015	Information on demographic rates of seabirds, used to inform the assessment.

Source(s)	Date	Summary
eBird2 citizen science data	Various dates	Information on bird observations in relevant areas was used to supplement vantagepoint surveys (e.g., data from Clogher Head3 to compare recorded species distributions)/
Wintering Waterbird Survey Results Report	2024	Updated surveys were commissioned over the winter months of 2023-2024 to monitor the baseline conditions of wintering waterbird activity and to ascertain if there have been any changes in activity since the previous surveys were undertaken (winter months of 2021-2022).
Lambay Island & Ireland's Eye Survey Breeding Birds Report	2025	To provide information on the distribution of breeding birds.
Relevant literature on the vulnerability of birds to OWFs		
Potential impacts of offshore windfarms on birds	Various dates	Various peer reviewed scientific literature regarding the potential impacts from OWF e.g. (Garthe and Hüppop, 2004; Drewitt and Langston, 2006; Stienen et al., 2007; Speakman et al., 2009; Langston, 2010; Band, 2012; Cook et al., 2012; Furness and Wade, 2012; Wright et al., 2012; Furness et al., 2013; Johnston et al., 2014; Cook et al., 2014; Dierschke et al., 2017; Jarrett et al., 2018; Leopold & Verdaat, 2018; Mendel et al., 2019); APEM (2022); GoBe (2024); Trinder et al. (2024); Degraer et al. (2020); Lamb et al. (2024); Woodward et al. (2023).
Potential impacts resulting from highly pathogenic avian influenza (HPAI)	Various	Various literature regarding the impacts of HPAI on seabird species is considered in relation to potential additional impacts on ornithological receptors assessed in this NIS. These include: Paradell et al., (2023), Lane et al., (2023), Pearce-Higgins et al., 2022). Available information on HPAI from sources such as Birdwatch Ireland and the BTO is also considered wherever relevant.

There are no other changes to this section. Refer to Section 1.9.4 in the 2024 NIS.

1.10 Consultation

Since submission of the 2024 NIS, further extensive consultation has been undertaken with relevant statutory bodies. An updated summary of this consultation is provided in the SISAA Appendix A2: Summary of Consultation. However, there are no other changes to this section. Refer to Section 1.10 of the 2024 NIS.

1.11 Transboundary Consultation

There are no changes to this section. Refer to Section 1.11 in the 2024 NIS.

1.12 Approach to the Assessment

Due to changes presented in this NIS, Integrity Matrices presented in Appendix 2: Integrity Matrices of the 2024 NIS have been updated where appropriate and presented in an Appendix A2: Integrity matrices.

There are no other changes to this section. Refer to Section 1.12 in the 2024 NIS.

[3] https://ebird.org/barchart?r=L7333978&yr=all&m=

1.13 In-Combination Assessment

1.13.1 Overview

In response to RFI Section 5, the Developer has used advice from Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (NSIP, 2024) to update the approach in the in-combination assessment.

In summary, the updates consist of updated tier descriptions and an updated long list of developments and short-listing process is provided in Appendix A3: Long List.

There are no changes to this section. Refer to Section 1.13.1 in the 2024 NIS.

1.13.2 Screening in Process

There are no changes to this section. Refer to Section 1.13.2 in the 2024 NIS.

1.13.3 Short-listing Process

In response to RFI Section 5, the outcome of the short-listing process for onshore and offshore projects is provided in the in-combination matrices in Appendix A3: Long List.

There are no other changes to this section. Refer to Section 1.13.3 in the 2024 NIS.

1.13.4 Assessment Tiers

In response to RFI Section 5, the key changes to this section are the updating of text to reflect the minor changes in in-combination assessment methodology to follow the Nationally Significant Infrastructure Projects (NSIP) (2024) guidance, following the request by An Bord Pleanála in RFI Section 5.

The third paragraph shall be deleted;

Tier 1: *this is the proposed development plus an Operation and Maintenance Facility (OMF). The OMF does not form part of this planning application and will be developed by others. It is not yet a "permitted/consented" development.*

And replaced with:

Tier 1: this is all existing submitted and approved projects (not yet in operation/part of baseline), including Greenore Operation and Maintenance Facility (OMF) and East Coast Phase One Projects.

The seventh paragraph of this section shall be deleted;

'***Tier 2:*** *these are the east coast Phase One Projects (proposed offshore renewable energy projects) located off the east coast of Ireland which are Oriel Windfarm, Codling Wind Park I and II, Arklow Bank II and Dublin Array. The proposed development is also a Phase One Project. Whilst none of these other Phase One Projects have submitted applications to the planning authority (ABP) at the time of writing of this NIS, they have been included in the in-combination assessment given the location and nature of these projects, given that they have all been awarded Marine Area Consent (MAC) and have more certainty of proceeding through the consenting process at the same time as the proposed development and given feedback from ABP during pre-application consultations'.*

And replaced with:

Tier 2: All projects that have scoping reports or have a MAC.

The eighth paragraph of this section shall be deleted, as this project has been cancelled and is no longer considered in this assessment:

Sceirde Rocks Windfarm, located off the Connemara coast in County Galway, is also a Phase One offshore wind farm however, due to the distance between it and the east coast Phase One Projects it is less likely to present cumulative effects for multiple topics and so has been included within Tier 3.

The ninth paragraph of this section shall be deleted;

Tier 3: *All other relevant projects, plans and programmes that have been identified in the long list search and then screened in for assessment.*

And replaced with;

Tier 3: All other projects including existing and/or approved developments that have been identified in the relevant Development Plans and all other plans and programmes as appropriate .

The tenth paragraph of this section shall be deleted:

'*This includes ORESS 2.1[4], a plan-led approach and greater certainty as regards to identification of sites will be available upon publication of the relevant Designated Maritime Area Plans (DMAP). It is noted that the draft DMAP for ORESS 2.1 has been published[5], however it is currently out for consultation and not yet actioned. It is considered that all future projects being developed will follow in the DMAP process'.*

And replaced with:

This includes ORESS 2.1, a plan-led approach providing greater certainty as regards to identification of sites, as part of a plan-led approach to offshore renewable energy adopted by Government in 2023, all post Phase One offshore wind projects in Ireland will be located within maritime areas identified for this purpose by Government through the establishment of Designated Maritime Area Plans (DMAP). The South Coast DMAP has been implemented[6]. It identifies four maritime areas off the south coast in which the development of fixed offshore renewable energy (ORE) is proposed to take place over the next decade. The auction winner for Area A is Tonn Nua OWF, which also has a MAC in place, is considered in Tier 2 of the in-combination assessment.'

In response to RFI Section 5 Table 1-7 of the 2024 NIS shall be delated and replaced with Table A1.6.

Table A1.6: In Combination Tiers for Assessment (replaces Table 1.7 of the 2024 NIS)

Stage	Assessment undertaken	
1	Tier 1	All existing submitted and approved projects (not yet in operation/part of baseline), including Greenore Operation and Maintenance Facility (OMF) and East Coast Phase One Projects'
2	Tier 1 and Tier 2	All projects in Tier 1 plus all projects that have scoping reports or have a MAC.
3	Tier 1 and Tier 2 and Tier 3 (all tiers)	The above plus all other projects i.e. not in the consent application process but identified in plans

There are no further changes to this section. Refer to Section 1.13.4 in the 2024 NIS.

1.13.5 Phase One Collaboration and Data Sharing

The key change to this section is the removal of reference to a Dynamic Energy Budget modelling exercise which will not be submitted as part of this NIS. Therefore, the following bullet point under Section 1.13.5 of the 2024 NIS shall be deleted:

- *Collaboration between the proposed development and Dublin Array Offshore Wind Farm including data sharing, for the purposes of a Dynamic Energy Budget modelling exercise to establish the potential for likely significant effects on the Rockabill to Dalkey Island SAC.*

There are no other changes to this section. Refer to Section 1.13.5 in the 2024 NIS.

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[4] The Irish Government aims to generate 5GW of renewable electricity from offshore by 2030, rising to 20GW by 2040. ORESS 1 awarded licenses to two projects off the east coast (2.6GW) and one off the west coast (450MW). ORESS 2.1 will take place off Ireland's south coast and will procure up to 900MW of offshore wind.

[5] gov - Public Consultation on the Draft South Coast Designated Maritime Area Plan for Offshore Renewable Energy (SC-DMAP) (www.gov.ie)

[6] https://www.gov.ie/en/department-of-climate-energy-and-the-environment/publications/implementation-of-the-south-coast-designated-maritime-area-plan-sc-dmap-for-offshore-renewable-energy/

2. Description of Development

Several matters raised in the RFI (see Appendix A7: Design Refinements) have resulted in changes to the offshore elements of the proposed development. To address these matters, the Developer engaged with the submission authors. Further to this engagement the Developer undertook further design work to address the matters and now proposes design refinements on foot of this engagement and the design work undertaken. These refinements reduce the environmental impacts of the proposed development. The design refinements are outlined in further detail below: these refinements require amendments to 2024 NIS submitted alongside the planning application (An Coimisiún Pleanála Ref: 319866).

At Section 2 (a) of the RFI the Irish Coast Guard (IRCG) raised concerns on the WTG layout of the proposed development:

The Irish Coast Guard (IRCG), through the Department of Transport, has raised concerns in relation to the layout of the proposed development with respect to search-and-rescue (SAR) access. The applicant is requested to consult with the IRCG, in addressing these concerns, and provide further information and clarification on such matters

The Developer participated in further consultation with the IRCG in 2025 and 2026. Following this consultation, a revised WTG layout has been prepared for Project Option 1 and Project Option 2 which addresses the concerns raised by the IRCG. Further information on this consultation is included in Appendix A2 of the SISAA.

At Section 6 of the RFI, An Bord Pleanála noted that:

"*a number of observations have raised concerns in relation to the assessment of site alternatives and suitability of the site for development having regard to the location of the site within the recently designated North-west Irish Sea (NWIS) cSPA.lHaving regard to:*

- *the recent designation of the North-west Irish Sea cSPA, with the proposed development site located within the NWIS cSPA site area…*"

The Developer has committed to reduce the spatial extent of the offshore infrastructure (Project Footprint of Infrastructure (PFI)). The PFI represents the defined sub area of the overall array area where all permanent offshore array infrastructure will be located following design refinement to minimise spatial overlap with the NWIS cSPA and other sensitive receptors. Further information on the refinement of the offshore infrastructure footprint is provided in Appendix A7: Design Refinements. The reduction is illustrated in Figure A2.2 for the proposed development. However, the extents of the proposed development boundary remain unchanged from the 2024 NIS. The PFI is used in the updated ornithological assessments only. The use of the PFI therefore provides a more spatially constrained basis for assessing potential effects, particularly for disturbance and displacement, and forms the basis of the assessment presented in this section. Throughout the assessment, the term PFI is used specifically to refer to the area over which the quantitative assessment is undertaken. However, the array area may still be referenced more generally when describing the broader site.

Further, Section 10 (a) of the RFI outlines the concerns raised by the National Parks and Wildlife Service (NPWS) in relation to potential underwater noise impacts on marine mammals. As a result, the Developer has proposed a refinement to the foundation types used for the wind turbine generators (WTGs). Instead of either monopiles or jackets, only jackets will be used. Additionally, instead of installation with pin piles the jackets will be installed with suction buckets. Further, the OSP foundation design has also been updated to jacket substructures with suction bucket foundations or drilled pin piles. Following careful examination and assessment by the Developer, this refinement has been implemented to significantly reduce the level of underwater noise generated by the proposed development by eliminating pile driving noise during construction. Further information on the underwater noise impacts of revised WTG foundations is provided in Section 5 of the NIS.

Details of these refinements have been included throughout this document and presented in Appendix A7. For the purposes of clarity, this document shall be read in conjunction with the 2024 NIS.

2.1 The proposed development

A change required to Section 2.1 of the 2024 NIS is in relation to Figure 2.1. The image, which presented WTGs with monopiles, has been updated to show the WTGs with jacket substructures and suction bucket foundation and removes the previous depiction of an ownership boundary provided in error, which is not relevant to this geographical illustration of the proposed development.

For the purposes of clarity, Figure A 2.1 replaces Figure 2.1 in the 2024 NIS.

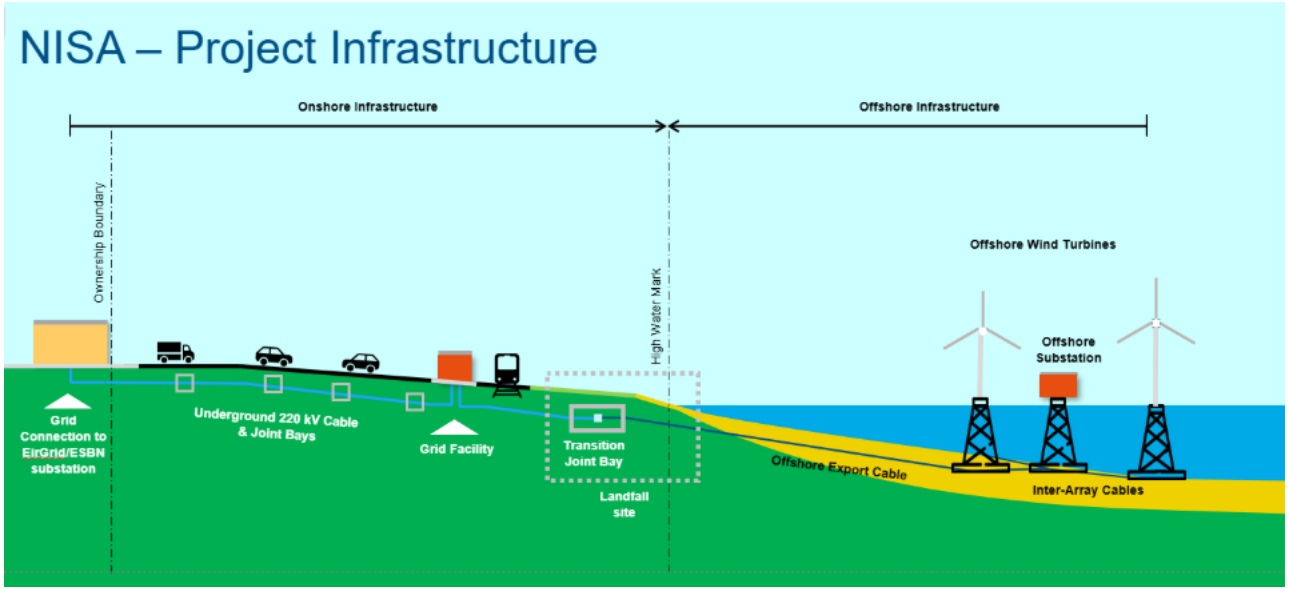


Figure A2.1 Infrastructure of the proposed development – not to scale (Source ARUP) (Replacing Figure 2.1 of the 2024 NIS)

A further change as a result of RFI Section 6 is to Figure 2.2 of the 2024 NIS showing the location and boundaries of the proposed development, which has been replaced by Figure A2.2, which has been updated to include the PFI within the proposed development boundaries for Project Option 1 and Project Option 2 respectively, the PFI consists of the overlap of Project Option 1 and 2 layouts plus the relevant Limit of Deviation (LOD).

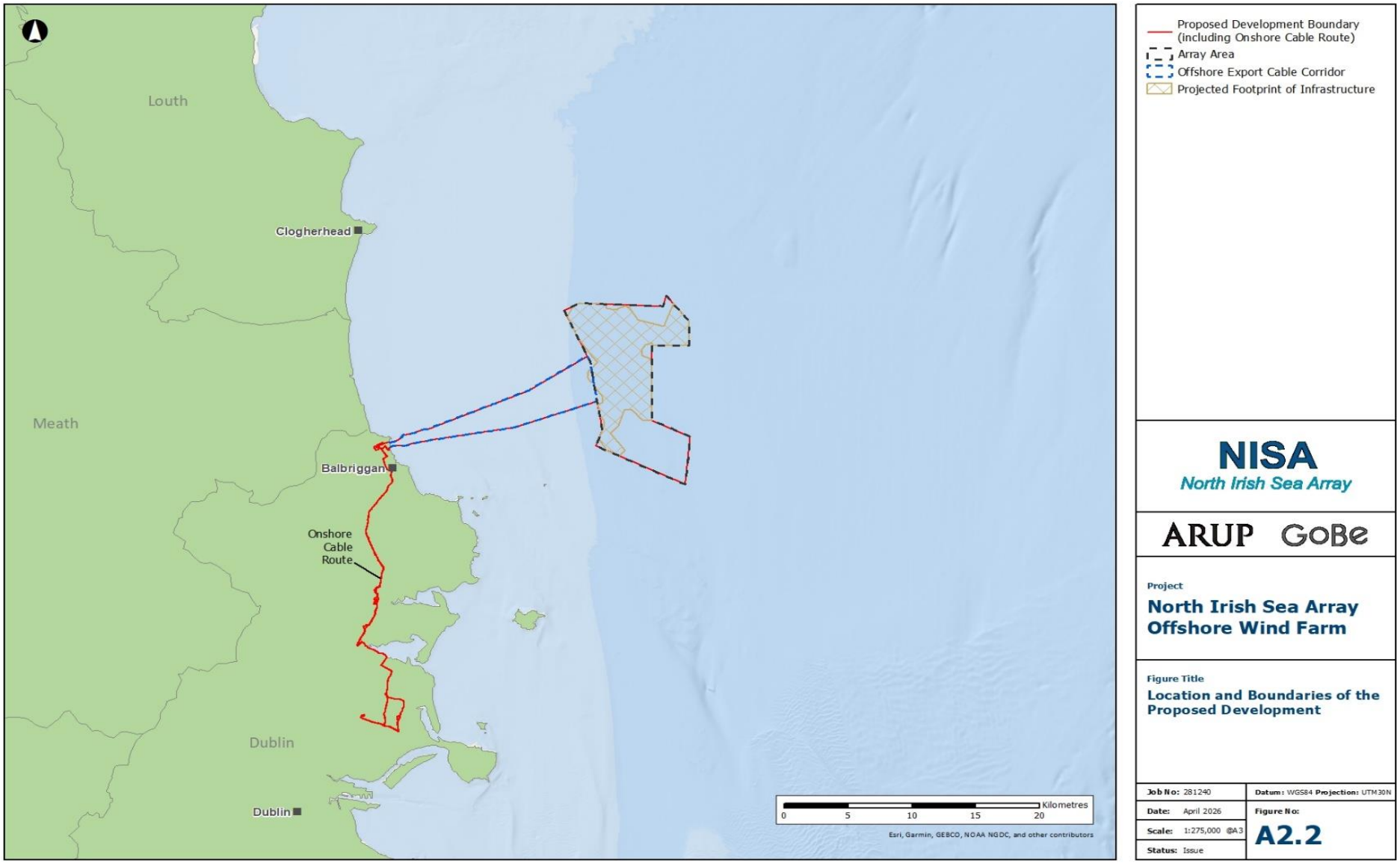


Figure 2.2 Location and Boundaries of the Proposed Development (Replaces Figure 2-2 of the 2024 NIS).

The other change required to Section 2.1 in the 2024 NIS is in relation to the description of the nearest WTG to the coastline and to describe the reduced spatial extent of the infrastructure. Additional geophysical surveys have informed an update to the array area water depths. These have been updated following the refinements to the WTG and OSP layout for Project Option 1 and Option 2.

For the purposes of clarity, the following text from Section 2.1 of 2024 NIS is deleted:

The array area covers approximately 89km^2. At its closest point, the array area is located approximately 11.3km from land in water depths of approximately 30m to 63m below lowest astronomical tide (LAT), with the closest WTG situated approximately 12.3km from the coastline.

And replaced by:

The array area covers approximately 89km^2. At its closest point, the array area is located approximately 11.3km from land. The array area is located in water depths of approximately 33m to 63m below lowest astronomical tide (LAT), with the closest WTG situated approximately 12.4km from the coastline.

Accounting for the proposed 500m limit of deviation in the final siting of the WTG, the nearest WTG from shore is 12.4km for both Project Option 1 and Project Option 2.

The proposed development is committed to a Structure Exclusion Zone within the southern portion of the array area where no WTG will be sited. The Structure Exclusion Zone has been established to ensure a 3.06nm gap between Rockabill Island and the nearest WTG within the offshore development area.

Additionally, in response to RFI Section 6, the spatial extent of infrastructure within the array area has been refined to reduce the impacts on the North-west Irish Sea SPA. Therefore, the following text shall also be included in Section 2.1 of the NIS.

Within the array area, the Developer has reduced the spatial extent of the offshore infrastructure within the North-west Irish Sea SPA. The refinement of the footprint of offshore infrastructure is reflected in Figure A2.2 for Project Option 1 and Figure A2.3 for Project Option 2.

There are no other changes to this section. Refer to Section 2.1 of the 2024 NIS.

2.2 Offshore Infrastructure

2.2.1 Design Flexibility Options

As noted at the outset of this chapter, design refinements are required to the proposed development. These refinements are explained in full in Appendix A7: Design Refinement. The NIS remains in accordance with the details specified in the Design Flexibility (DF) Opinion (issued by An Bord Pleanála on 30th January, 2024), although certain refinements to WTG and OSP foundation type are proposed to the options detailed in the DF Opinion as a result of careful reflection and response to submissions received from public bodies during the examination process. The refinements set out in the NIS do not depart from the DF Opinion; rather, they remain within the envelope of the planning application as originally submitted and are a result of careful reflection and response to submissions received from public bodies during the examination process.

The only change required for Section 2.2.1 of the 2024 NIS is to Table 2.1. Refinements to the foundation and installation method for WTGs and the Offshore Substation (OSP) were made. Monopile foundations were removed from the design and the installation method for jacket substructures was updated to suction buckets for WTGs. For the OSP, monopile foundations were removed from the design and in the installation method for jackets was updated to either suction buckets or pin piles.

For the purposes of clarity, Table 2.1 from the 2024 NIS shall be deleted and replaced with Table A2.1.

Table A2.1 High Level Overview of the two project options for the proposed development (Replaces Table 2.1 in the 2024 NIS).

Parameter	Project Option 1	Project Option 2
Number of WTGs	49	35
WTG tip height (m above LAT)	290	316 outside aviation restricted zone 311 inside aviation restricted zone*
Rotor Diameter (m)	250	276
Foundation type	Multi-leg suction caisson jackets (hereafter referred to as 'SBJs')	SBJs
Number of OSPs	1	1
Foundation Type (OSP)	4-legged SBJ or Jacket with drilled pin piles	4-legged SBJ or Jacket with drilled pin piles
Offshore export cable length (km)	18	18
Inter-array cable length (km)	111	91

*An aviation restricted zone (of 312m LAT) has been identified by the Developer due to the partial overlap of the array area with a Dublin Airport controlled airspace meaning 8 turbines (including LOD) will have a 5m reduction in tip height due to being within the aviation restricted zone.

There are no other changes to this section. Refer to Section 2.2.1 in the 2024 NIS.

2.2.2 Offshore Wind Turbine Generators (WTGs)

The only change required to this section is due to the change of foundation type from monopiles and jackets with pin piles to SBJs, for both Project Option 1 and Project Option 2. Therefore, the only change in this section is to Table 2.2 from the 2024 NIS. For the purposes of clarity, Table 2.2 of the 2024 NIS shall be deleted and replaced with Table A2.2 below.

Table A2.2 WTG Design Parameters (Replaces Table 2.2 in 2024 NIS).

PARAMETER	PROJECT OPTION 1	PROJECT OPTION 2
Number of WTG	49	35
WTG tip height at LAT (m above lowest astronomical tide (LAT))	290	316 outside aviation restricted zone 311 inside aviation restricted zone
Hub height (m above LAT)	165	178
Rotor diameter (m)	250	276
Blade tip clearance (m above LAT)	40	40 outside aviation restricted zone 35 within aviation restricted zone
Blade Width (m)	7	7.5
Pitch (degrees)	3.6-5.6	3.6-5.6
Operational time (%)	95	95
Total swept area (m^2)	49,090	59,830
Nacelle and Hub		
Length (m)	31	35
Breadth (m)	15	18
Height (m)	15	18

PARAMETER	PROJECT OPTION 1	PROJECT OPTION 2
Tower Diameter (m)	9	10
Rotor rotational speed (rpm)	3 – 8.3	3 – 7.5
Foundation type (See sections 2.2.3 and 2.2.4 below for further details)	SBJs	SBJs

There are no other changes required to this section. Refer to Section 2.2.2 in the 2024 NIS.

2.2.3 Offshore Substation Platform

As a result of the layout refinements driven by consultation with the IRCG, the location of the OSP has been slightly amended. The following additional text shall be included in Section 2.2.3:

Accounting for the proposed limit of deviation in the final siting of the OSP, the closest it will be from shore is 14.8km for Project Option 1 and 14.7km for Project Option 2.

Due to the change in foundation from monopiles or jackets to SBJs or jacket substructure on drilled pin pile foundations in both Project Option 1 and Project Option 2, this section shall be updated.

For the purposes of clarity, the following text from Section 2.2.3 of the 2024 NIS is deleted:

"The OSP is typically unmanned, however it will be designed for temporary refuge with an emergency shelter. The dimensions of the OSP topside and substructures are listed in Table 2.3. Each project could have any of the three OSP foundation options."

And replaced by:

The OSP is typically unmanned, however it will be designed for temporary refuge with an emergency shelter. The dimensions of the OSP topside and substructures are listed in Table A2.3. Each project could have any of the two OSP foundation options i.e. SBJs or jacket substructures on drilled pin pile foundations.

In addition to the above, Table 2.3 from the 2024 NIS shall be deleted and replaced with Table A 2.3 below.

Table A2.3 OSP Design Parameters (replaces Table 2.3 in the 2024 NIS)

Item	Parameter
Number of OSP (s)	1
Height of Topside above sea level (m above lowest astronomical tide)	47
Height of Communications Mast above sea level (m above lowest astronomical tide)	67
Topside dimensions (m)	45 x 45
OSP Foundation	
Number of Jacket Legs	4
Jacket Footprint, centre distance between legs at seabed level (m)	40 x 40
Jackets with drilled pin piles	
Number of drilled pin piles	4
Pile Diameter (m)	6
Seabed Penetration (m)	60
SBJs	

Item	Parameter
Number of suction buckets per jacket	4
Suction bucket maximum diameter (per suction bucket) (m)	15
Skirt Length maximum penetration into seafloor (m)	30

There are no other changes to this section. Refer to Section 2.2.3 in the 2024 NIS.

2.2.4 Substructures and Foundations

Due to the change in foundations from monopiles or jackets to only jackets in Project Option 1 and Project Option 2, this section shall be updated. As a result, the following introductory text from Section 2.2.4 in the 2024 NIS shall be deleted:

"The foundation types that are being considered include:

- *WTG foundations:*
  - *Project Option 1: monopiles; and*
  - *Project Option 2: monopiles or jacket foundations (three or four leg configurations, with pin piles).*
- *OSP foundations (for Project Option 1 and 2):*
  - *A four-legged jacket foundation with pin piles.*
  - *One monopile; and*
  - *Two monopiles."*

And replaced with the following text:

The foundation types that are being considered include:

- WTG foundations (for Project Options 1 and 2):
  - SBJs
- OSP foundations (for Project Options 1 and 2)
  - A four-legged jacket foundation with suction buckets or drilled pin piles.

Due to the change in substructures from monopiles or jackets to jackets in Project Option 1 and Project Option 2, Table 2.4 of the 2024 NIS shall also be deleted. Additionally, Table 2.5 in Section 2.2.4 shall be replaced by Table A2.4.

Table A2.4 Jacket Design Parameters (Applicable to Project Option 1 and 2) (Replaces Table 2-5 in the 2024 NIS)

Item	WTG Parameter	OSP Parameter
Number of Jackets	35-49	1
Number of Legs per Jacket	3 or 4	4
Jacket Footprint, centre distance between legs at seabed level (m)	40 x 40	40 x 40
Number of suction caissons per Jacket	3 or 4	4
Seabed penetration (m)	5-30	5-30
Scour protection diameter (m)	98	98

Item	WTG Parameter	OSP Parameter
Number of Piles[7] per Jacket	n/a	4
Pile Diameter (m)	n/a	6

There are no other changes to this section. Refer to Section 2.2.4 in the 2024 NIS.

2.2.4.1 Foundation Installation

Monopiles are no longer included as a substructure option for the proposed development. Therefore, the following text shall be deleted:

"*Both the monopile and piled jacket foundations will require installation of piles into the seabed. The foundations will be either piled or drilled depending on the seabed conditions at the final WTG locations. The installation method will be determined following detailed site investigation surveys and detailed design. The options being considered are:*

- *Project Option 1 (monopiles):*
  - *All monopiles at all locations are fully driven.*
  - *25% of monopiles are fully driven and 75% of monopiles are a) fully drilled or b) driven until refusal then drilled and driven.*
- *Project Option 2 (monopiles):*
  - *All monopiles at all locations are fully driven.*
  - *100% of monopiles are a) fully drilled or b) driven until refusal then drilled and driven.*
- *Project Option 2 (jacket foundations):*
  - *All jackets at all locations are fully driven.*
  - *All jackets at all locations are fully drilled.*"

And replaced with the following:

The WTGs and the OSP for both project options will have jacket substructures. Jacket substructures typically consist of three or four main legs for the WTGs and four legs for the OSP, connected to a lattice structure with welded tubular steel cross-braces. The tubular steel transition piece (TP) connecting the WTG tower to the jacket, is integrated into the jacket design. Each leg is secured to the sea floor using a suction bucket for the WTGs and OSP, with the option of drilled pin-piles for the OSP.

Jacket substructures are welded to suction bucket foundations or grouted to pin piles.

The WTGs will be supported via SBJ suction-bucket foundations, which are attached to the jacket substructure before delivery to site. Once the SBJ has been towed to the designated location it will be accurately aligned using dynamic positioning systems and remotely operated vehicles (ROVs). There is potentially the need to extract seawater during the installation of the suction bucket foundations. Any seawater extraction will be carried out within the array area from the installation or support vessel through submersible or deck-mounted pumps. The extracted seawater will be entirely used for grout mixing with no release of excess water or water mixed with grout back into the marine environment.

Additionally, seabed levelling is no longer required for the proposed development. Based on the updated bathymetry from the geophysical survey campaign in 2024, it was confirmed that the seafloor across the array area is flat and uniform. Therefore, seabed levelling via dredging to create a level platform for foundation installation will not be required. The following text shall be added:

[7] Refers to the number of pin piles per jacket.

Seabed preparation will be carried out in advance of foundation construction and cable laying as required. This consists of the removal of any boulders, obstructions or seabed debris that would impact the construction works.

There are no other changes to this section. Refer to Section 2.2.4.1 in the 2024 NIS.

2.2.5 Scour Protection

Due to the introduction of SBJs, the extent and volume of scour protection on the seabed has increased. Due to the larger seabed footprint and shallower seabed penetration of SBJs, the extent and volume of scour protection required for SBJs is typically greater than other foundation types.

For the purposes of clarity, the following text, from Section 2.2.5 of the 2024 NIS shall be disregarded:

"The scour protection diameter varies by foundation type. For monopiles, a diameter of 44m will be required, a diameter of 77m will be required for jacket foundations for WTG, and a diameter of 78m for the OSP."

And replaced with the following:

The scour protection diameter for SBJs for both the WTG and OSP will be 98m. The scour protection diameter for the OSP jacket foundations with drilled pin piles will also be 98m.

Table A2.5 provides the assumed scour protection requirements for the various foundation types. Maximum volumes are presented which are assumed to be installed during initial construction and expected to be sufficient to last for the operational phase of the proposed development.

Table A2.5: Indicative Scour Protection Area/Volumes (this is an additional table in the NIS)

Infrastructure	WTG	OSP	
Foundation Type	**SBJ**	**SBJ**	**Jacket with pin piles**
Scour protection per location (m^2)	7,543	7,543	7,543
Scour protection (all foundations) (m^2) – Project Option 1	369,605	7,543	7,543
Scour protection (all foundations) (m^2) – Project Option 2	142,503	7,543	7,543

There are no other changes to this section. Refer to Section 2.2.5 in the 2024 NIS.

2.2.6 Navigation, Colour, Marking and Lighting

There are no changes to this section. Refer to Section 2.2.6 in the 2024 NIS.

2.2.7 Offshore Inter-Array Cables

There are no changes to this section. Refer to Section 2.2.7 in the 2024 NIS.

2.2.8 Offshore Export Cables

There are no changes to this section. Refer to Section 2.2.8 in the 2024 NIS.

2.2.9 Landfall Site

There are no changes to this section. Refer to Section 2.2.9 in the 2024 NIS.

2.3 Onshore Infrastructure

2.3.1 Landfall Site

The only change required to this section is to clarify what will be visible above ground at the landfall site in response to RFI Section 20(c). However, there are no changes to any of the landfall infrastructure included in the 2024 NIS.

Therefore, the following text shall be included at the end of Section 2.3.1 of the 2024 NIS:

Following construction, the only visible above ground infrastructure will be the permanent access tracks, marker posts to indicate the location of the cables, and manhole covers associated with transition joint bays, joint bays, link boxes and communication chambers. There will be no other infrastructure visible above ground at the landfall site.

There are no further changes required to this section. Refer to Section 2.3.1 in the 2024 NIS.

2.3.2 Onshore Export Cables

There are no changes to this section. Refer to Section 2.3.2 in the 2024 NIS.

2.3.3 Grid Facility

There are no changes to this section. Refer to Section 2.3.3 in the 2024 NIS.

2.3.4 Onshore Cable Route

There are no changes to this section. Refer to Section 2.3.4 in the 2024 NIS.

2.3.5 Grid Connection

There are no changes to this section. Refer to Section 2.3.5 in the 2024 NIS.

2.4 Construction

2.4.1 Offshore Construction Programme

The removal of monopile foundations necessitates a change in the construction strategy for the WTG foundations. Additionally, the original construction commencement of 2027 has been updated 2028 to reflect the revised programme information provided as part of the RFI Response. However, the duration remains the same (3 years). Therefore, Table 2.6 of the 2024 NIS shall be deleted and replaced with Table A2.6. The modified construction programme is considered in Section 6 (In-combination Assessment) of the NIS.

Table A2.6 Indicative Construction Timeline (replaces Table 2.6 in the 2024 NIS)

Activity Name	Year 1 – 2028				Year 2 – 2029				Year 3 - 2030			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Pre construction activities												
Landfall												
Offshore Export Cables Installation Period												
Foundation Installation (WTG and OSP)[8]												
Offshore Substation Topside Installation												
Array Cable Installation Period												
WTG Installation period												

[8] Should the foundation installation take longer than anticipated (e.g. due to limitations imposed by adverse weather), a remobilisation of foundation installation spread will be needed with the foundation installation completed in the subsequent year.

There are no other changes to this section. Refer to Section 2.4.1 in the 2024 NIS.

2.4.2 Offshore Construction Vessels

As noted in Section 2.1, the proposed development now includes for jacket substructures with SBJ for the WTGs and for the OSP a jacket with either pin piles or SBJ foundations. Transportation options for the SBJ foundations will include also heavy transport vessels. As both project options now only have SBJ foundations for WTG foundations, the maximum number of vessels required for Project Option 1 and Project Option 2 are the same. The vessels numbers outlined in Table A2.7 also allow for those which will be used for the installation of the OSP foundation. As dredging has now been removed as project requirements, this is also reflected in the revised vessel numbers in Table A2.7, with the removal of dredging vessels from the table. For clarity Table 2.7 in the 2024 NIS has been replaced by Table A2.7 below.

Table A2.7: Maximum construction vessel traffic numbers (replaces Table 2.7 in the 2024 NIS)

Vessel/Helicopter Requirements for WTG Installation			
Vessel / Helicopter type	**Number of vessels / helicopters**	**Number of return trips per vessel / helicopter type (Project Option 1)**	**Number of return trips per vessel / helicopter type (Project Option 2)**
Installation vessel (e.g. JUV, HLV)	2	15	10
Personnel support vessels (e.g. CTV)	6	90	70
Component transport vessels (e.g. barges, towing vessel)	2	45	30
Helicopter support	1	10	7
Vessel Requirements for Foundation Installation			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Installation vessels (e.g. JUV, HLV)	2	8	6
Personnel support vessels (e.g. CTV, SOV)	3	49	35
Component transport vessels (e.g. barges, towing vessel)	6	8	6
Scour protection vessels	2	75	50
OSP Installation Vessel Requirements			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Installation vessels (e.g. JUV, HLV)	1	2	2
Component transport vessels (e.g. barges, towing vessel)	2	2	2
Personnel support vessels (e.g. CTV, SOV)	2	250	250
Transport vessel	1	50	50

Vessel Requirements for Inter-Array Cables			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Main laying vessels	1	4	3
Main burial vessels	1	7	6
Personnel support vessels (e.g. CTV, SOV)	1	120	100
Component transport vessels	1	5	5
Vessel Requirements for Export Cable Installation			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Main laying vessels	1	2	2
Main burial vessels	1	3	3
Support vessels (e.g. CTV, SOV)	1	2	2
Work boats/ rigid inflatable boats for pull in operation - 24h	12	2	2
Work boats for landfall HDD installation	1	30	30
Small JUV for landfall HDD installation	1	2	2
Guard vessels for HDD and Cable installation	1	20	20
Guard Vessel Requirements for the Construction Phase of the Proposed Development			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Guard vessel	4	64	52
Observation vessel	5	64	52
Personnel Transport vessels (CTVs)	2	45	45

There are no other changes to this section. Refer to Section 2.4.2 in the 2024 NIS.

2.4.3 Offshore Construction Ports

There are no changes to this section. Refer to Section 2.4.3 in the 2024 NIS.

2.4.4 Onshore Construction Programme

As a result of the timeframes associated with responding to the RFI, the anticipated commencement of development has been delayed from 2026 to 2027. Subsequently, the completion of development is expected to occur in 2029. However, there is no change to the overall construction programme (circa 24 months) from what was included in the 2024 NIS.

However, there are no further changes to this section. Refer to Section 2.4.4 in the 2024 NIS.

2.5 Operation and Maintenance

2.5.1 Offshore Operation and Maintenance

There are no changes to this section. Refer to Section 2.5.1 in the 2024 NIS.

2.5.2 Onshore Operation and Maintenance

There are no changes to this section. Refer to Section 2.5.2 in the 2024 NIS.

2.5.3 Operation and Maintenance Facility

There are no changes to this section. Refer to Section 2.5.3 in the 2024 NIS.

2.6 Decommissioning

2.6.1 Offshore Decommissioning

There are no changes to this section. Refer to Section 2.6.1 in the 2024 NIS.

2.6.2 Onshore Decommissioning

There are no changes to this section. Refer to Section 2.6.2 in the 2024 NIS.

3. Screening

3.1 Approach to Screening

There are no changes to this section. Refer to Section 3.1 in the 2024 NIS.

3.2 Screening Outcomes

Following submission of the 2024 SISAA, updates to the screening process were made in response to various RFI sections. These revisions have resulted in a change to the number of SPAs screened into the NIS. Accordingly, the number of SPAs screened in has increased from 41 to 89 SPAs. The number of SACs screened in has also been reviewed. While 49 SACs were previously reported, this was due to a minor error arising from the double-counting of certain SACs across two receptor groups (i.e. Coastal and Marine QIs and Marine Mammal QIs). The total number of SACs screened in has not changed, however, the figure has been corrected to accurately reflect the 46 SACs included in the NIS. Accordingly, the following text in Section 3.2 of the 2024 NIS shall be delete:

The results of the screening process are presented in the Supporting Information for Screening for Appropriate Assessment report (SISAA).

49 SACs and 41 SPAs have been considered for the potential for LSE to arise via the identified source-receptor-pathways. Of these sites, the screening process found that it is not possible to discount LSE with respect to 44 SACs and 29 SPAs. These sites are therefore assessed within this NIS to support the Stage 2 AA.

And be replaced with:

The results of the screening process are presented in the Supporting Information for Screening for Appropriate Assessment (SISAA).

49 SACs and 92 SPAs have been considered for the potential for LSE to arise via the identified source-receptor-pathways. Of these sites, the screening process found that it is not possible to discount LSE with respect to 44 SACs and 29 SPAs. These sites are therefore assessed within this NIS to support the Stage 2 AA.

There are no other changes to this section. Refer to Section 3.2 of the 2024 NIS.

3.3 Use of Proxy Conservation Objectives

Following submission of the 2024 SISAA and 2024 NIS, site-specific Conservation Objectives (COs) have been published by NPWS for a number of European sites, superseding the need for proxy COs in these instances. Therefore, the following text shall be added to Section 3.3:

Following submission of the 2024 SISAA and NIS, NPWS published COs for several sites; consequently, proxy COs are no longer applied to those sites. The following sites are therefore considered within this NIS on the basis of their site-specific COs:

- Howth Head Coast SPA
- Irelands' Eye SPA
- Lambay Island SPA
- River Boyne and Blackwater SPA
- Dalkey Islands SPA
- The Murrough SPA
- Skerries Islands SPA
- Wicklow Head SPA
- Cliffs of Moher SPA
- Dingle Peninsula SPA
- Tory Island SPA
- Lady's Island Lake SPA
- Keeragh Islands SPA
- West Donegal Coast SPA
- Lough Sheelin SPA
- Seas off Wexford cSPA
- Clare Island SPA
- High Island, Inishshark and Davillaun SPA
- Duvillaun Islands SPA
- Cruagh Island SPA
- Kerry Head SPA
- Dingle Peninsula SPA
- Iveragh Peninsula SPA
- Blasket Islands SPA
- Deenish Island and Scariff Island SPA

- Puffin Island SPA
- Skelligs SPA
- The Bull and The Cow Rocks SPA
- Poulaphouca Reservoir SPA
- Helvick Heard to Ballyquin SPA
- Horn Head to Fanad Head SPA
- Blackwaters Callows SPA
- Lambay Island SAC
- South Dublin Bay SAC
- Belgica Mound Province SAC
- Blackwater Bank SAC
- Carnsore Point SAC
- Codling Fault Zone SAC
- Hook Head SAC
- Inishmore Island SAC
- Kilkieran Bay and Islands SAC
- Kenmare River SAC
- West Connacht Coast SAC; and
- Bunduff Lough SAC

There are no other changes to this section. Refer to Section 3.3 in the 2024 NIS.

4. Identification of Potential Impacts and Mitigation Measures

There are no changes to this section. Refer to Section 4 in the 2024 NIS.

4.1 Physical Habitat Loss and Disturbance – Coastal and Marine Habitats

There are no changes to this section. Refer to Section 4.1 in the 2024 NIS.

4.1.1 Construction

The key change to this section is to reflect design refinements arising from the RFI (see Appendix A7: Design Refinements) which necessitate updates to the description of construction activities with the potential to result in habitat loss or disturbance to Coastal and Marine Habitat QIs. Notable refinements of relevance to this impact include the removal of monopile foundations, with WTGs now proposed to be supported by SBJ foundations, and OSP to be installed using jacket foundations with either drilled pin piles or suction buckets.

In addition, dredging for seabed preparation is no longer proposed. These changes alter the nature and extent of seabed disturbance considered in the assessment. Accordingly, the following text within Section 4.1.1 of the 2024 NIS shall be deleted:

Temporary habitat disturbance has the potential to occur as a result of construction and seabed preparation prior to foundation installation, drilling, dredging at foundations, jack up and anchoring operations and the installation of inter-array and export cables and decommissioning activities. Temporary habitat loss/disturbance will be restricted to discrete areas only within the proposed development boundary

And replaced with:

Temporary habitat disturbance has the potential to occur as a result of construction activities, including WTG and OSP foundation installation, jack up and anchoring operations and the installation of inter-array and export cables and decommissioning activities. Temporary habitat loss/disturbance will be restricted to discrete areas only within the proposed development boundary.

There are no other changes to this section. Refer to Section 4.1.1 of the 2024 NIS.

4.1.2 Operation and Maintenance

There are no changes to this section. Refer to Section 4.1.2 in the 2024 NIS.

4.2 Suspended Sediment and Deposition – Coastal and Marine Habitats and Migratory Fish, Ornithology

There are no changes to this section. Refer to Section 4.2 in the 2024 NIS.

4.2.1 Construction

4.2.1.1 Offshore

There are no changes to this section. Refer to Section 4.2.1.1 in the 2024 NIS.

4.2.1.2 Onshore

There are no changes to this section. Refer to Section 4.2.1.2 in the 2024 NIS.

4.3 Accidental Pollution – Coastal and Marine Habitats, Migratory Fish, Marine Mammals, Ornithology

There are no changes to this section. Refer to Section 4.3 in the 2024 NIS.

4.3.1 Construction

4.3.1.1 Offshore

There are no changes to this section. Refer to Section 4.3.1.1 in the 2024 NIS.

4.3.1.2 Onshore

There are no changes to this section. Refer to Section 4.3.1.2 in the 2024 NIS.

4.3.2 Operation and Maintenance

There are no changes to this section. Refer to Section 4.3.2 in the 2024 NIS.

4.4 Introduction of Invasive Species – Coastal and Marine Habitats

There are no changes to this section. Refer to Section 4.4 in the 2024 NIS.

4.4.1 Construction

The key change to this section is to reflect design refinements arising from the RFI (see Appendix A7: Design Refinements) which necessitate updates to the description of construction activities with the potential to result in introduction of invasive species to Coastal and Marine Habitat QIs. Notable refinements of relevance to this impact include the removal of monopile foundations, with WTGs now proposed to be supported by SBJ foundations, and OSP to be installed using jacket foundations with either drilled pin piles or suction buckets. This change in proposed development infrastructure necessitates further consideration of the potential introduction of Invasive Non-Native Species (INNS) with regard to Coastal and Marine QIs. Therefore, the following text under Section 4.4.1 of the 2024 NIS shall be deleted:

Marine fouling communities developed on offshore wind monopiles have been found to be significantly different from the benthic communities on adjacent hard substrates (Wilhelmsson et al., 2006; Wilhelmsson and Malm, 2008)

And replaced with:

Offshore artificial hard structures, including concrete gravity base foundations and associated steel components, can become biofouled with a wide range of epibenthic organisms (Coolen et al., 2020). Within these biofouling communities, non-native species have been detected across a variety of artificial substrates associated with offshore wind farms, including steel monopiles (Kerckhof et al., 2012; Dauvin, 2024), as well as on offshore jacket structures such as oil and gas platforms (e.g. Coolen et al., 2018). While information on the presence of non-native species on wind farm jacket foundations themselves is more limited, these findings suggest that structurally similar substrates may also support such species, highlighting the potential for offshore structures to act as pathways for the introduction and establishment of INNS.

Comparisons between assemblages on submerged artificial substrates and natural rocky habitats have shown both differences (Wilhelmsson et al., 2006; Wilhelmsson and Malm, 2008) and similarities (Coolen et al., 2018), likely reflecting variation in environmental conditions and stages of biofouling succession.

There are no other changes to this section. Refer to Section 4.4.1 of the 2024 NIS.

4.4.2 Operation and Maintenance

There are no changes to this section. Refer to Section 4.4.2 in the 2024 NIS.

4.5 Changes to Physical Processes – Coastal and Marine Habitats

There are no changes to this section. Refer to Section 4.5 in the 2024 NIS.

4.5.1 Construction

There are no changes to this section. Refer to Section 4.5.1 in the 2024 NIS.

4.5.2 Operation and Maintenance

There are no changes to this section. Refer to Section 4.5.2 in the 2024 NIS.

4.5.3 Decommissioning

There are no changes to this section. Refer to Section 4.5.3 in the 2024 NIS.

4.6 Underwater Noise – Marine Mammals and Migratory Fish.

This Section has been numbered correctly in the NIS to ensure the underwater noise potential impact is clearly described in the NIS.

For migratory fish and marine mammals, the potential for underwater noise was screened in for further assessment and is considered below.

4.6.1 Construction

This section has been changed due to the revision of the foundation types for Project Option 1 and Project Option 2. In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations. Therefore, pile driving is no longer required. The potential impact of PTS and disturbance from the installation of suction caisson bucket foundations for WTGs and OSPs, and for the drilling of pin piles for the OSPs has been included within Section 5.3.2.4 Underwater Noise from Other Construction Activities. The following paragraphs within Section 4.5.4 of the 2024 NIS shall be deleted:

Underwater noise from the proposed development could arise from installation during the construction phase, primarily from piling for foundations and monopiles and other project infrastructure and seabed preparation works such as pre-construction surveys and UXO clearance

Use of underwater noise in the marine environment by mobile species includes communication, hunting and predator avoidance amongst other uses. As such, anthropogenic sound sources which overlap with the frequencies used by marine life may interrupt or alter the use of sound by marine organisms.

For marine mammals, the primary impacts are mortality, a temporary threshold shift temporary threshold shift (TTS) in hearing, and a Permanent Threshold Shift (PTS) in hearing, the latter of which is typically regarded as injury. This can occur from impulsive or non-impulsive sources. Impulsive sound sources, such as impact pile driving and UXO detonation, are transient and brief (less than a second), broadband and typically consist of high peak pressure with rapid rise time and decay, and non-impulsive sound sources, such as dredging, trenching, and shipping, can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent and typically do not have a high peak pressure with rapid rise time. There is also a risk of disturbance, which can result in the loss of access to foraging grounds and breeding grounds, impacting on the wider population viability.

For fish, effects range from behavioural changes to physiological responses, TTS, physical injury and mortality. These effects can occur from impulse sounds such as those generated during piling and UXO detonation. Non-impulse sounds are unlikely to cause mortal injuries but may result in temporal TTS in hearing and behavioural reactions.

And be replaced with:

Underwater noise from the proposed development could arise from installation during the construction phase, primarily from construction activities and seabed preparation works such as pre-construction surveys and Unexploded Ordnance (UXO) clearance.

Use of underwater noise in the marine environment by mobile species includes communication, hunting and predator avoidance amongst other uses. As such, anthropogenic sound sources which overlap with the frequencies used by marine life may interrupt or alter the use of sound by marine organisms.

For marine mammals, the primary impact is auditory injury (PTS). This can occur from impulsive or non-impulsive sources. Impulsive sound sources, such as UXO detonation, are transient and brief (less than a second), broadband and typically consist of high peak pressure with rapid rise time and decay, and non-impulsive sound sources, such as drilling of pin piles, dredging, trenching, and shipping, can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent and typically do not have a high peak pressure with rapid rise time. Based on the justification provided in the position statement on the application and assessment of TTS to marine mammals (Appendix A25: Temporary Threshold Shift Position Statement, SMRU Consulting, 2025), TTS at the TTS-onset threshold does not constitute an injury and predicted TTS-onset ranges do not warrant mitigation. This approach is aligned with regulatory and scientific frameworks in Scotland, England, Wales, France, Denmark, the United States, and Australia, all of which treat TTS as a reversible effect distinct from PTS (auditory injury), which does require mitigation. Consequently, TTS is not considered further. There is also a risk of disturbance, which can result in the loss of access to foraging grounds and breeding grounds, impacting on the wider population viability.

For fish, effects range from behavioural changes to physiological responses, TTS, physical injury and mortality. These effects can occur from impulse sounds such as those generated during UXO detonation. Non-impulsive sounds are unlikely to cause mortal injuries but may result in temporary TTS in hearing and behavioural reactions.

4.6.2 Operation and Maintenance

In Section 11 (g) of the RFI, An Bord Pleanála requested the Developer to consider the potential for disturbance to fish from underwater noise generated by wind turbines during the operational phase of the proposed development. This impact pathway has been considered and screened in within the SISAA. Therefore, Section 4.6.2 has been added to address the potential impact pathway regarding underwater noise from operational wind turbines to Marine Mammal and Migratory Fish QIs during the operational phase of the proposed development. This section does not replace any text from the 2024 NIS.

The main source of underwater noise from operational WTGs will be mechanically generated vibration from rotating turbine machinery, such as the rotor blade, the gearbox and the generator, which will be transmitted through the tower and foundation into the water column (Bellman et al., 2024). For bottom-fixed OWFs, the produced continuous sounds are low frequency, with harmonics mostly below 1kHz (Bellmann et al., 2024; Stöber and Thomsen, 2021; Wahlberg and Westerman, 2005), and as such are likely to be audible to fish and shellfish receptors.

Most studies conducted on turbine noise from bottom-fixed OWFs to date were conducted at wind farms with relatively small-sized, geared WTGs (Tougaard et al., 2020). Using data from bottom-fixed foundation WTGs of <1 to 6 MW capacity, Tougaard et al. (2020) showed that as WTG size increases, the underwater sound pressure level also increases. Stöber and Thomsen (2021) also noted a difference in underwater noise levels generated by geared versus direct-drive WTGs, with one example of the latter being 10dB quieter than the average geared WTG of equivalent capacity.

Modelling of a generic 6MW operational WTG installed on jacket, monopile and gravity foundations demonstrated strong tonal peaks close to the structures, associated with gearbox and generator components. These tonal components are strongly localised and dissipate rapidly beyond tens of metres, although this is influenced by wind speed and sea state (Marmo et al., 2013).

Considering the above, the underwater noise associated with the operational phase of the proposed development has a potential to alter the acoustic soundscape within the immediate vicinity of the WTGs. Depending on the design of the WTG (direct drive or geared), environmental conditions (e.g., wind speed, water depth) and species-specific hearing capabilities of fish, the generated underwater noise may be audible to fish at distances varying from a few metres to a few kilometres (e.g., Bergström et al., 2013; Marmo et al., 2013; Wahlberg and Westerberg, 2005).

The presence of species such as harbour porpoise, bottlenose dolphin, grey seal and harbour seal around bottom-fixed foundations has been widely documented (Scheidat et al., 2011, Delefosse et al., 2020, Fernandez-Betelu et al., 2024, Russell et al., 2014). The impact of underwater noise during the operational phase is considered to be localised to the very immediate vicinity of the WTGs and is unlikely to lead to the exclusion of animals within the array area. Due to the potential for proximity of the marine mammals species to WTG infrastructure, there is a pathway for effect for operational underwater noise.

4.7 EMF – Migratory Fish

An erratum in the 2024 NIS has been identified and corrected. The section title has been amended to remove reference to Marine Mammals within the EMF pathway, as this pathway was not screened in as a potential impact pathway for Marine Mammal QIs within the NIS. Accordingly, the following paragraph in Section 4.6 of the 2024 NIS shall be deleted:

For migratory fish and marine mammals, the potential for Electric and magnetic fields (EMF) was screened in for further assessment and is therefore considered below.

And be replaced with:

For migratory fish, the potential for electric and magnetic fields (EMF) was screened in for further assessment and is therefore considered below. For marine mammals EMF was screened out from further assessment.

There are no other changes to this section. Refer to Section 4.6 in the 2024 NIS.

4.7.1 Operation and Maintenance

An erratum in the 2024 NIS has been identified and corrected, whereby EMF was not screened in as a potential impact pathway for Marine Mammal QIs within the NIS. Accordingly, the following paragraph in Section 4.7.1 of the 2024 NIS shall be deleted:

EMF are produced as a result of power transmission in the inter array cables and the export cables to shore. These fields have the potential to affect fish and marine mammal receptors that use electric or magnetic senses for foraging, navigation, or communication. Of those species sensitive to EMF, some are electro-sensitive, some are magneto-sensitive, and some are thought able to detect both.

And be replaced with:

EMF are produced as a result of power transmission in the inter array cables and the export cables to shore. These fields have the potential to affect fish receptors that use electric or magnetic senses for foraging, navigation, or communication. Of those species sensitive to EMF, some are electro-sensitive, some are magneto-sensitive, and some are thought able to detect both.

There are no other changes to this section. Refer to Section 4.7.1 in the 2024 NIS.

4.8 Vessel Disturbance – Marine Mammals and Ornithology

There are no changes to this section. Refer to Section 4.7 in the 2024 NIS.

4.8.1 Construction, Operation and Maintenance

There are no changes to this section. Refer to Section 4.7.1 in the 2024 NIS.

4.9 Vessel Collision Risk – Marine Mammals

There are no changes to this section. Refer to Section 4.8 in the 2024 NIS.

4.9.1 Construction, Operation and Maintenance

There are no changes to this section. Refer to Section 4.9.1 in the 2024 NIS.

4.10 Changes to Prey –Marine Mammals and Ornithology

There are no changes to this section. Refer to Section 4.9 in the 2024 NIS.

4.10.1 Construction, Operation and Maintenance

There are no changes to this section. Refer to Section 4.9.1 in the 2024 NIS.

4.11 Disturbance at Haul Out – Marine Mammals (Seals)

There are no changes to this section. Refer to Section 4.10 in the 2024 NIS.

4.11.1 Construction, Operation and Maintenance

There are no changes to this section. Refer to Section 4.10.1 in the 2024 NIS.

4.12 Displacement and Barrier Effects – Ornithology

4.12.1 Construction, Operation and Maintenance

There are no changes to this section. Refer to Section 4.11.1 in the 2024 NIS.

4.12.1.1 Offshore

There are no changes to this section. Refer to Section 4.11.1.1 in the 2024 NIS.

4.12.1.2 Onshore

There are no changes to this section. Refer to Section 4.11.1.2 in the 2024 NIS.

4.13 Turbine Collision Risk – Ornithology

There are no changes to this section. Refer to Section 4.12 in the 2024 NIS.

4.13.1 Operation and Maintenance

There are no changes to this section. Refer to Section 4.12.1 in the 2024 NIS.

4.14 Air Quality Impacts and Dust Distribution – Coastal and Marine Habitats and Ornithology

There are no changes to this section. Refer to Section 4.13 in the 2024 NIS.

4.14.1 Construction

4.14.1.1 Onshore

There are no changes to this section. Refer to Section 4.13.1.1 in the 2024 NIS.

4.15 Impacts Arising from Artificial Light – Ornithology

4.15.1 Construction, Operation and Maintenance

4.15.1.1 Onshore

There are no changes to this section. Refer to Section 4.14.1.1 in the 2024 NIS.

4.16 Mitigation Measures

The changes required to this section are as follows;

In response to the RFI, due to the change of foundation type from monopiles and jackets with pin piles to SBJs, for both Project Option 1 and Project Option 2, mitigation relating to underwater noise impacts to marine mammal species caused by piling activities has been removed from Table 4.1.

Mitigation measures have been added in response to design refinements as a result of the RFI (see Appendix 7: Design Refinements). The resulting layout for Project Option 1 Project Option 2 have been refined to reduce the spatial extent of overlap within the NWIS cSPA.

The Developer has committed to use Noise Abatement Systems (NAS) to mitigate for any high order UXO detonation. Additionally, to reduce in-combination impacts on the Rockabill and Dalkey Island SAC, the Developer has committed not to carry out any high-order detonations at the same time that Codling Wind Park undertakes high-order detonations within its ECC. This has been added to Table A4.1 below.

For the purposes of clarity, Table 4.1 of the 2024 NIS shall be deleted and replaced with Table A4.1 below.

Additionally, updated references to the relevant appendices to be read in conjunction with this section, are added below. Therefore, the following text shall be deleted:

Where documents are detailed and secured in management plans, these are referenced and appended. The relevant management plans are:

- *Appendix 7: Offshore Environmental Management Plan (Offshore EMP)*
- *Appendix 8: Onshore Construction Environmental Management Plan (CEMP)*
- *Appendix 10: Marine Mammal Mitigation Protocol (MMMP); and*
- *Appendix 11: Environmental Vessel Management Plan (EVMP).*

And replaced with the following text:

Where documents are detailed and secured in management plans, these are referenced and appended. The relevant management plans are:

- Appendix A8: Offshore Environmental Management Plan (Offshore EMP)
- Appendix A9: Onshore Construction Environmental Management Plan (CEMP)
- Appendix A10: Marine Mammal Mitigation Protocol (MMMP); and
- Appendix 11 of the 2024 NIS: Environmental Vessel Management Plan (EVMP).

There are no other changes to this section. Refer to Section 4.15 of the 2024 NIS.

Table A4.1: Mitigation Measures (replaces Table 4.1 in the 2024 NIS)

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Coastal and Marine Habitats				
Adverse effects on sensitive habitats, biogenic reefs or protected species	Project Design	Construction	Presence of sensitive habitats will be identified through a review of the latest available benthic datasets. Proposed development infrastructure will avoid protected habitats wherever reasonably practicable to an extent not resulting in a hazard for marine traffic and Search & Rescue capability.	Cable installation measures included within the Offshore EMP Appendix A8.
	Pre-construction survey	Pre-construction	Where necessary, before works commence and following reinstatement, a topographical survey of the nearshore subtidal area will be carried out to identify and map the contours of the subtidal HDD exit pit to ensure a profile similar in nature to the profile recorded during the pre-construction survey is reinstated, as far as practicable.	Included, along with cable installation measures, within the Offshore EMP Appendix A8.
Indirect disturbance of benthic species from EMF generated by inter-array and export cables during operation.	EMF shielding of cables	Operation	Where practicable cables will be buried to minimise the requirement for additional cable protection. Cable burial also reduces the impacts of EMF on sensitive receptors.	Included, along with cable installation measures, within the Offshore EMP Appendix A8.
Marine Invasive Non-native Species (marine INNS) introduction/spread	Biosecurity measures	Construction, operation, and Decommissioning	Any vessels used for the delivery of materials to site will adhere to industry legislation, codes of conduct and/or best practice to reduce the risk of introduction or spread of invasive non-native species. This will be achieved through implementation of the 'International Convention for the Control and Management of Ships' Ballast Water and Sediments' (BWM Convention) and Guidelines for the Control and Management of Ships' Biofouling to Minimize the Transfer of Invasive Aquatic Species.	Included within the Offshore EMP Appendix A8.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Sediment disturbance (marine habitats)	Cable burial	Construction	Cable installation measures will minimise adverse impacts to potentially sensitive receptors. It will also set out appropriate cable burial depth in accordance with industry good practice, reducing the risk of cable exposure and based on a cable burial risk assessment. Cables will be buried to a sufficient depth to ensure that they are not exposed by sandwave movements. Where target cable burial depth cannot be achieved during the cable installation process (for any of inter-array, interconnector or export cables), cable armouring will be implemented (e.g. mattressing, or rock placement etc). The suitability of installing rock or mattresses for cable protection will be investigated, based on (inter alia) the seabed current data at the location of interest and a risk assessment of the potential for cable damage to occur. Cable installation measures are captured in the Offshore Environmental Management Plan (EMP).	Included within the Offshore EMP Appendix A8. Cable Burial Risk Assessment (CBRA).
Direct disturbance to intertidal receptors	Landfall HDD	Construction	The installation of the offshore export cables at landfall will be undertaken by HDD beneath the intertidal zone which will prevent any direct disturbance to intertidal receptors. The HDD exit pits will be located within the ECC seaward of the LWM at a point where cable installation vessels can operate.	Project design and included within the Onshore CEMP Appendix A9.
Disturbance to benthic receptors from pollution and vessel related outputs	Implementation of Environmental Management Plan	Construction	An Offshore EMP will be developed and will include details of: Marine pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below the HWM. A chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance. Marine biosecurity measures to address the risk of introduction and spread of invasive non-native species; Waste management and disposal arrangements; The appointment and responsibilities of a company fisheries liaison officer (FLO).	Included within the Offshore EMP Appendix A8.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Water pollution	Discharge protocol	Construction	For the HDD at the landfall, any ground water or rainwater that collects in the HDD drilling pit will be pumped away. It will then be discharged onto the adjacent land, not directly into a waterway, and through a filter medium. This will avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water from the trench.	Included within the Onshore CEMP Appendix A9.
Loss of onshore habitat	Pre- and post-construction surveys	Pre-construction, Operation, Decommissioning	The Developer will work with key stakeholders and regulatory authorities to identify any future monitoring programmes considered necessary. An effective monitoring programme will outline thresholds to be established for receptor indicators which, if exceeded, will trigger an appropriate and clearly documented set of actions to be taken, thus ensuring mitigation measures are measurable and working.	Included within the Onshore CEMP Appendix A9.
	Micrositing	Pre-construction, Construction	The collection of up to date data sets on the presence of ecological features and species allows micrositing of infrastructure post consent. Data will be collected from onshore topographic surveys and will facilitate micro siting as far as practical around sensitive habitats such as Annex 1 habitats.	Included within the Onshore CEMP Appendix A9.
Adverse effects on marine sediment quality	Pollution protocol for vessels	Pre-construction, Operation, Decommissioning	Vessels used for installation will be compliant with the International Convention for the Prevention of Pollution from Ships (MARPOL) regulations. These regulations cover the prevention of pollution from accidents and routine operations.	Implementation of the VMP; included within the Offshore EMP Appendix A8. and 11 of the 2024 NIS.
Downstream water quality impacts arising from surface water run-off and accidental pollution spill	Implementation of CEMP	Construction	A full suite of water quality protection measures are included in the Onshore CEMP. These will include best practice guidelines for the control of water pollution from construction sites, best practice in-stream and near-stream works, control of hydrcarbons and contaminates, protection of watercourses, protection from HDD operations and frac-out, and sets out the application of buffers to watercourses and waterbodies, where applicable.	Included within the Onshore CEMP Appendix A9.
Dust Deposition	Preparation and maintaining of the site	Construction	Plan construction compound layout so that machinery and dust causing activities are located away from receptors, as far as is possible. Erect a 2m minimum site hoarding around all construction/ contractor compounds. Keep site fencing, barriers and scaffolding clean using wet methods. Cover, seed or fence stockpiles to prevent wind whipping.	Included within the Onshore CEMP Appendix A9.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Dust Deposition	Construction Plant Operations	Construction	Ensure an adequate water supply on the working areas for effective dust/particulate matter suppression/mitigation. Use enclosed chutes where practicable and conveyors and covered skips. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate. Ensure equipment and spill kits are readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods. Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Included within the Onshore CEMP Appendix A9.
Dust Deposition	Measure Specific to Earthworks	Construction	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. Only remove the cover in small areas during work and not all at once.	Included within the Onshore CEMP Appendix A9.
Dust Deposition	Measure specific to Track-out	Construction	Ensure no mud or debris accumulates on the public road and public roads are clean of any mud, dust or debris by suitable means. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. Ensure vehicles entering and leaving sites are covered when transporting materials that are likely to generate dust to prevent escape during transport. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Included within the Onshore CEMP Appendix A9.
Dust Deposition	Measure specific to the grid facility construction activities	Construction	Dust generation and dermal exposure during site construction works will be controlled by appropriate dust control measures e.g., water sprays Where the asphalt layer is removed at the grid facility site this will occur in a phased basis and will be replaced with granular hardcore as soon as possible to prevent the generation of windblown dust.	Included within the Onshore CEMP Appendix A9.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Migratory Fish				
Mortality and potential mortal injury, recoverable injury, TTS and behavioural changes from UXO clearance	UXO detonation strategy	Pre-construction, construction	Where there may be clusters of UXO requiring detonation, these UXO would not be detonated within the same 24-hour window.	Included within the Offshore EMP Appendix A8.
Mortality and potential mortal injury, recoverable injury, TTS and behavioural changes from UXO clearance	UXO Management measures	Pre-construction, construction	The clearance of UXO will follow a mitigation hierarchy, with micro-siting of subsea infrastructure around UXO where practicable. Where avoidance is not possible, relocating the UXO to a safe place and leaving in situ will be considered. Where clearance of UXO is required (i.e. avoidance or relocation is not practicable), removal of the UXO from the site or low order clearance at the UXO location will be adopted where feasible However, removal of the UXO through low order deflagration are not always possible and are dependent upon the individual situations surrounding each UXO. Therefore, a high order detonation of the UXO might be required. A case-by-case risk assessment will be undertaken following dedicated geophysical and ROV surveys during the construction phase.	Implementation of the UXO MMMP Appendix A10. UXO measures included within the Offshore EMP Appendix A8.
Mortality and potential mortal injury, recoverable injury, TTS and behavioural changes from UXO clearance	Noise Abatement System (NAS) during high order UXO clearance	Pre-construction, construction	The Developer has committed to the use NAS (e.g. bubble curtain or similar) if high order UXO clearance is required (Appendix A.10: MMMP). This would reduce the impact of UXO clearance noise on sensitive migratory fish species.	Implementation of the UXO MMMP Appendix A10. UXO measures included within the Offshore EMP Appendix A8.
Mortality and potential mortal injury, recoverable injury, TTS and behavioural changes from UXO clearance	UXO detonation strategy during high order UXO clearance	Pre-construction, construction	To reduce in-combination impacts on harbour porpoise protected within the Rockabill and Dalkey Island SAC, the Developer has committed not to carry out any high-order UXO detonations at the proposed development at the same time Codling Wind Park undertakes high-order detonations within its Offshore Export Cable Corridor (offshore ECC).	UXO measures included within the Offshore EMP Appendix A8 Implementation of the UXO MMMP.
Accidental Pollution	Marine pollution contingency measures	Pre-construction, construction, operation, decommissioning	Marine pollution prevention and contingency measures will be implemented as part of the Offshore Environmental Management Plan (Offshore EMP) to manage the risk of accidental pollution from offshore operations relating to the proposed development The Marine Pollution Contingency Procedure will include the following control measures and procedures:	Included within the Offshore EMP Appendix A8.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
			A chemical risk review with information regarding how and when chemicals (including vessel fuels) are to be used, stored and transported in accordance with recognised best practice guidance and national and international regulations and commitments; Navigational safety measures (e.g., guard vessels, safety buoys, lighting of active working zones) to reduce the likelihood of collision events; and Emergency response methods and procedures to deal with any spills and collision incidents. Implementation of these measures will reduce the likelihood of potentially harmful pollutants to be released into the marine environment, thereby reducing the likelihood of pollution impacts on potentially sensitive migratory fish species.	
Accidental Pollution	Offshore Waste Management Procedure	Pre-construction, construction, operation, decommissioning	An Offshore Waste Management Procedure setting out waste management and disposal procedures will be implemented as part of the Offshore EMP. The Waste Management Procedure will include the following measures: Application of the waste hierarchy (prevention, re-use, recycle, recovery, and disposal) to minimise the amount of waste produced, and reduce, as far as possible, the amount of waste that is disposed of in landfill; Waste disposal procedures, ensuring all waste that cannot be reused, recycled or recovered will be kept onboard vessels and safely disposed of onshore in a suitable licensed waste facility; and Code of conduct for vessel operators with respect to the discharge of wastewater and handling and storing of hazardous materials. Implementation of these measures will reduce the likelihood of potentially harmful pollutants to be released into the marine environment, thereby reducing the likelihood of pollution impacts on potentially sensitive migratory fish species.	Included within the Offshore EMP Appendix A8.
EMF	Proposed development design - cable specifications	Operation	Where practicable cables will be buried to minimise the requirement for additional cable protection. Cable burial also reduces the impacts of EMF on sensitive receptors.	Included within the design of Project Option 1 and Project Option 2.
EMF	Cable protection measures	Operation	Cable installation will make two passes where practicable to bury cables before cable protection is used. Where cables cannot be buried due to ground conditions, additional cable protection measures such as rock placement or mattressing will be applied to achieve adequate cable protection.	Included within the design of Project Option 1 and Project Option 2.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
			Up to 20% of cable length is expected to need protection either during initial installation, or throughout the operational phase of the proposed development. Surface-laid cable protection will move the cables further from electro- and magneto-sensitive receptors, thereby reducing the EMF field strengths receptors will be subjected to.	
General	Assessment of impacts and best practice environmental management	Decommissioning	Prior to decommissioning a study of the potential environmental impacts to fish and shellfish receptors from the proposed decommissioning activities will be undertaken, taking into account the baseline environment at the pre-decommissioning stage. All measures will be captured within a Rehabilitation Schedule and the Offshore EMP.	Rehabilitation Schedule included within the Offshore EMP Appendix A8.
Marine Mammals				
Auditory PTS from Unexploded Ordnance (UXO)/drilled pin piles clearance on harbour porpoise, etc	Acoustic Deterrent Devices (ADDs)	Construction	When an ADD is used during UXO detonation, one ADD will be deployed from the vessel, with the control unit and power supply on board in safe positions. Verification of ADD operations will be required before pre-detonation activation. The deployment procedure will be determined with the UXO contractor and will adhere to safe, standard practices, using experienced/trained staff to ensure proper ADD equipment use within varying vessel layouts. The duration of ADD deployment will be calculated based on assumed swimming speeds to ensure that marine mammals are safely outside the mitigation zone when UXO works begin. A trained and dedicated ADD operator will be responsible for ADD maintenance, operation, and reporting.	Implementation of the UXO MMMP. UXO measures included within the Offshore EMP Appendix A8.
Auditory PTS from Unexploded Ordnance (UXO).	Noise Abatement System	Construction	The Developer has committed to the use of NAS (e.g. bubble curtain or similar) if high order UXO clearance is required (Appendix A10: MMMP).	Implementation of the UXO MMMP. UXO measures included within the Offshore EMP Appendix A8.
Auditory PTS from Unexploded Ordnance (UXO).	UXO detonation strategy during high order UXO clearance	Pre-construction, construction	To reduce in-combination impacts on harbour porpoise protected within the Rockabill and Dalkey Island SAC, the Developer has committed not to carry out any high-order UXO detonations at the proposed development at the same time Codling Wind Park undertakes high-order detonations within its Offshore Export Cable Corridor (offshore ECC).	UXO measures included within the Offshore EMP Appendix A8.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
				Implementation of the UXO MMMP.
Collision with vessels	Marine Mammal Observers (MMO)	Construction, Operation, Decommissioning	The MMO will undertake visual marine mammal observations within the defined mitigation zone around the piling location from a suitable elevated platform. The marine mammal observer will record all periods of marine mammal observations, including start and end times. Details of environmental conditions (sea state, weather, visibility, etc.) and any sightings of marine mammals around the piling vessel will also be recorded as per JNCC marine mammal recording forms and guidelines. In addition, any obvious responses of animals to the ADD activation will be recorded (e.g. a change in behaviour from milling or bottling to directed travel away from the ADD at the onset of ADD activation). If, during the marine mammal observer pre-piling watch, a marine mammal is detected within the mitigation zone, the ADD will be checked to ensure correct operation, and soft-start will be delayed until it is assessed by the MMO that the marine mammal has vacated the mitigation zone. The marine mammal observer will continue to note detections and observations on animal behaviour during the soft-start period.	Implementation of the Environmental Vessel Management Plan (EVMP) Appendix 11 of the 2024 NIS.
Ornithology				
Collision risk to bird species	Raised air draft	Construction and Operation (Design consideration)	All turbines in Project Option 1 will have an air draft of 40m LAT. Turbines in Project Option 2 will have an air draft of 40m LAT except where they are in the aviation restriction zone where the air draft will be 35m LAT. The number of birds at collision risk height at 40m is considerably reduced compared to 22m. For example, the number of common tern flying at collision risk height is reduced by 90.6% between 22m and 40m. Likewise, kittiwake have a reduction of birds at collision risk height of 82.2% between 22m and 40m, and gulls show a reduction of approximately 65%.	Included within the design of Project Option 1 and Project Option 2.
Disturbance and displacement of offshore seabirds	WTG layout refinement	Construction, Operation, Decommissioning	The Developer has carried out design refinements having regard to: • The recent designation of the North-west Irish Sea candidate Special Protection Areas (cSPA), with the proposed development site located within the NWIS cSPA site area; • The criteria that avoidance of designated sites is typically an important parameter in a site selection process, as highlighted in Appendix A7:Design Refinements; and	Included within the design of Project Option 1 and Project Option 2.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
			• The proximity of Rockabill SPA, in addition to 10 SPAs and 9 SACs in the wider area, which are all within the envelope of the NWIS cSPA and/or are ecologically connected. In addition, following the RFI and engagement with NPWS, the WTG layouts for Project Option 1 and Project Option 2 were refined to reduce the spatial extent of overlap within the NWIS cSPA (Figure A2.2 of the NIS). Further, the permanent footprint of infrastructure for the proposed development takes up only 0.02% of the NWIS cSPA. Accordingly, the Developer maintains that the site remains suitable for the proposed development. Further rationale and justification for site selection is provided, to respond to this RFI, in Appendix A7: Design Refinements.	
Disturbance from vessels	Vessel routing	Construction, Operation, Decommissioning	Use of established navigation routes, especially in the nearshore environment - Vessel movements will follow, where practicable, existing navigation routes enroute to the array area and offshore export cable, where the densities of divers and seaducks are typically relatively low due to regular vessel presence compared to the wider inshore area.	Included within the EVMP Appendix 11 of the 2024 NIS.
	Environmental Vessel Management Plan (EVMP)	Pre-construction, construction, operation and decommissioning	During all phases of the proposed development, an EVMP will be adhered to which will reduce any potential disturbance responses to ornithological receptors (as outlined predominantly in Section 9).	Included within the EVMP Appendix 11 of the 2024 NIS.
	Vessels to avoid rafting birds where practicable	Pre-construction, construction, operation and decommissioning	Vessels accessing the offshore development area during construction are where practicable to seek to avoid 'rafts' of birds and feeding aggregates to minimise disturbance and displacement.	Included within the EVMP Appendix 11 of the 2024 NIS.
	Avoidance of over-revving engines	Pre-construction, construction, operation and decommissioning	Vessels will seek to avoid over-revving engines, where practicable, in order to minimise noise disturbance.	Included within the EVMP Appendix 11 of the 2024 NIS.
	Briefing of vessel crew	Pre-construction, construction, operation and decommissioning	Vessel crew will be briefed on the purpose and implications of the vessel management practices outlined.	Included within the EVMP Appendix 11 of the 2024 NIS.
	Reduction of vessel activity in sensitive months	Operation	During the operational phase the proposed development will reduce vessel activity in the ECC during the most sensitive months for coastal divers (November to March 1st inclusive), where practicable.	Included within the EVMP Appendix 11 of the 2024 NIS.

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
			Outside of the period November to March 1st, disturbance within the nearshore environments will continue to be minimised as far as practicable during maintenance work, as these areas are where density of seaducks and divers are highest. Potential effects on designated sites (e.g. North-west Irish Sea cSPA) have been avoided through early consideration of vessel movements and project design including disregarding Operation and Maintenance Facility (OMF) options inshore of the array area.	
Disturbance to wintering waterbirds from noise impacts	Noise attenuation barriers and implementation of CEMP for onshore works at the landfall site and HDD compound	Construction, Decommissioning	There will be noise barriers on the northerly, easterly and southerly perimeters of the landfall HDD compound, to reduce noise levels in these directions. For construction activities occurring above the HWM, the use of noise-attenuation barriers, solid hoarding or other acoustic barriers will reduce in-air noise propagation and conceal human activity. Disturbance to important populations of non-breeding birds along the onshore cable route, grid facility and at the onshore infrastructure (landfall site and Malahide Estuary) will be reduced. Where practical, in areas where disturbance to significant numbers of non-breeding waterbirds may occur, fencing/ hoarding will be used during the winter months to provide visual and acoustic screening of active working areas. Toolbox talks will be delivered by the appointed ECoW to all construction staff on the sensitivity of wintering waterbirds at the landfall site and at Malahide Estuary.	Included within the Onshore CEMP Appendix A9
	Noise attenuation barriers and implementation of CEMP for onshore works at Malahide Estuary and Estuary Road	Construction, Decommissioning	Avoid works along the Estuary Road during the period September to March when wintering birds are present Where this is not practicable, for works at Malahide Estuary during the period September to March, noise barriers will line the works area within the Estuary Road on the estuary side to protect wintering waterbirds utilising the nearest estuarine habitats. Toolbox talks will be delivered by the appointed ECoW to all construction staff on the sensitivity of wintering waterbirds at the landfall site and at Malahide Estuary. The temporary noise barriers at the landfall site and along the Estuary Road will act as a visual barrier and reduce disturbance impacts and potential likely effects on wintering waterbirds. An ECoW will be present during all works along the Estuary Road.	Included within the Onshore CEMP Appendix A9

Impact	Measure	Phase	Mitigation measure details	How the measure will be secured
Disturbance to wintering waterbirds from lighting impacts	Code of construction protocol and implementation of CEMP	Construction, decommissioning	Construction lighting used during months August to March will be reviewed by the project ECoW. Construction lighting in areas at the landfall site and Malahide Estuary will be kept to a minimum where practicable and will be directed away from habitats utilised by wintering waterbirds to minimise light spill and avoid disturbance. Mitigation measures will be employed to reduce light spill where necessary, including: The use of sensor / timer triggered lighting. LED luminaires to be used where practicable due to their sharp cut-off, lower intensity, good colour rendition and dimming capability. Column heights to be considered to minimise light spill. Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed; and Where night-time works are required, the appointed contractor will liaise with the ECoW and implement measures outlined in the bullet points above to mitigate the impact of such works on wintering birds.	Included within the Onshore CEMP Appendix A9
Indirect water quality impacts on wintering waterbirds	Code of construction protocol and implementation of CEMP	Construction, decommissioning	Water quality mitigation measures mentioned under coastal and marine habitats are also relevant to wintering waterbirds.	Included within the Onshore CEMP Appendix A9
Impact to wintering waterbirds during sensitive periods	Timing of works to remove or reduce impact in sensitive periods and implementation of CEMP	Construction, decommissioning	Scheduling of work, where practicable, to avoid works along the Estuary Road during the period September to March when wintering birds are present. Where this is not practicable, see measures set out for disturbance from noise.	Included within the Onshore CEMP Appendix A9

5. Stage 2 Appropriate Assessment – Alone

There are no changes to the introductory text in this section. Refer to Section 5 of the 2024 NIS.

5.1 Coastal and Marine Habitats

5.1.1 Approach

Table 5.1 of the NIS has been amended to correct an errata for Baldoyle Bay SAC, the impacts screened in for assessment are from the onshore development area only. For clarity, Table 5.1 of the 2024 NIS is replaced with Table A5.1.

Table A5.1 Sites Screened in for Coastal and Marine Habitats QIs for the Proposed Development Alone (replaces Table 5.1 of the 2024 NIS)

European site name	Qualifying Interest	Impacts screened in for construction and decommissioning	Impacts screened in for operation
Malahide Estuary SAC	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore and offshore suspended sediment / deposition; Onshore and offshore accidental pollution; Marine INNS; and Onshore Dust deposition.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.
Rogerstown Estuary SAC	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore and offshore suspended sediment / deposition; Onshore and offshore accidental pollution; Marine INNS; and Onshore Dust deposition.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.
Baldoyle Bay SAC	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore suspended sediment / deposition; and Onshore accidental pollution.	None
Rockabill to Dalkey Island SAC	Annex I habitats: Reefs.	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.

European site name	Qualifying Interest	Impacts screened in for construction and decommissioning	Impacts screened in for operation
Boyne Coast and Estuary SAC	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; and Atlantic salt meadows	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.
Lambay Island SAC	Annex I habitats: Reefs.	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.

There are no other changes to the introductory text in this section. Refer to Section 5.1 of the 2024 NIS.

5.1.1.1 Project Option 1 and Project Option 2 Determination of Greatest Effects

In the 2024 NIS, WTG monopile foundations and jackets with pin piles were considered alongside OSP monopile and jacket foundations with pin piles. Following further design refinements to Project Options 1 and 2 in response to the RFI (See Appendix A7: Design Refinements), WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations - the key changes required in this section are related to this refinement in project design.

Therefore, Table 5.2 within the 2024 NIS shall be deleted and replaced with Table A5.2.

Table A5.2: Potential impacts and Project Option with the greatest potential for AEoI on Coastal and Marine Habitats. The Project Option that has the greatest potential for AEoI is Identified in Blue (replaces Table 5.2 of the 2024 NIS).

Potential impact	Project 1 (49 WTG)	Project 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI on designated sites
Construction			
Increase in Suspended sediment and deposition from offshore construction activities and inputs from onshore construction activities	**Total volume of suspended sediment and sediment deposition 455,139 m^3.** **OSP Foundation** Drill cutting for OSP pin piles = 10,179m^3 **Cable trenching:** Installation of 111km of array cables = 333,000m^3 Cable crossing preparation = 5,188m^3 Installation of two export cables each of 18km length = 108,000m^3 **Subtidal HDD:** Exit pits total volume = 3,960m^3 Release of drilling muds (i.e. bentonite) during exit pit punch-out = 30 tonnes Onshore works associated with near-stream works, and in-stream works will generate the greatest volume of suspended sediment and deposition.	**Total volume of suspended sediment and sediment deposition 395,139 m^3.** **OSP Foundation** Drill cutting for OSP pin piles = 10,179m^3 **Cable trenching:** Installation of 91km of array cables = 273,000m^3 Cable crossing preparation = 5,188m^3 Installation of two export cables each of 18km length = 108,000m^3 **Subtidal HDD:** Exit pits total volume = 3,960m^3. Release of drilling muds (i.e. bentonite) during exit pit punch-out = 30 tonnes Onshore works associated with near-stream works, and in-stream works will generate the greatest volume of suspended sediment and deposition.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** The greatest potential for AEoI on designated sites in relation to this impact for foundation installation results from the largest volume of suspended sediment and deposition from seabed preparation. For cable installation, greatest potential for AEoI on designated sites in relation to this impacts associated with SSC will result from installation using energetic means (CFE). This also assumes the largest number of cables and the greatest burial depth. A maximum of one OSP will be constructed within the proposed development area for both proposed development options. Project Option 1 has a higher total volume than Project Option 2 (60,000m^3 more volume of materials) and presents the greatest potential for AEoI on designated sites. Onshore works for both project options will result in the same potential for AEoI on designated sites in relation to this impact.
Accidental Pollution	Total volume of suspended sediment and sediment deposition 455,139m^3	Total volume of suspended sediment and sediment deposition 395,139m^3.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** Project Option 1 represents greatest potential for AEoI on designated sites in relation to this impact with regard to the maximum total seabed disturbance and therefore the maximum amount of contaminated sediment that may be released into the water column during construction activities.
Introduction of Marine Invasive Non-Native Species (Marine INNS)	3,032 round trips to port by construction vessels.	2,504 round trips to port by construction vessels.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** This scenario represents the greatest potential for AEoI on designated sites in relation to this impact with regard to maximum number of vessel movements during construction activities.

Potential impact	Project 1 (49 WTG)	Project 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI on designated sites
Dust deposition	No dust will be generated from the offshore works. Dust generation and deposition will arise from the onshore works associated with the onshore infrastructure.	No dust will be generated from the offshore works. Dust generation and deposition will arise from the onshore works associated with the onshore infrastructure.	No dust will be generated from the offshore works, therefore Project Option 1 and Project Option 2 will result in the same potential for AEoI on designated sites in relation to this impact.
Operation and Maintenance			
Increase in Suspended sediment and deposition	The volume of sediment released during the operation and maintenance phase and associated bed level changes would be less to those experienced during the construction phase (as listed under Impact 1). **Repair and maintenance of WTG and OSP components** Once every 5 years per turbine **Repair and maintenance of scour protection for WTG and OSP foundations** Once every 10 years **Inter-array cable replacement, repair and reburial** Once every 5 years **Export cable repair and reburial** Once every 5 years	The volume of sediment released during the operation and maintenance phase and associated bed level changes would be less to those experienced during the construction phase (as listed under Impact 1). **Repair and maintenance of WTG and OSP components** Once every 5 years per turbine **Repair and maintenance of scour protection for WTG and OSP foundations** Once every 10 years **Inter-array cable replacement, repair and reburial** Once every 5 years **Export cable repair and reburial** Once every 5 years	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** The Project Option with the greatest potential for AEoI is defined by the largest volume of sediments released into the water column during maintenance activities. The volume of sediment that could be suspended during maintenance activities has not been calculated but will be of much smaller quantity compared with that generated by construction and decommissioning activities. There is more infrastructure to maintain for Project Option 1, and therefore, the increase of SSC from operational activities will be greater from Project Option 1.
Accidental Pollution	The magnitude of the impact represents the maximum volume of sediments released during the operation and maintenance phase, as listed under Temporary increase in SSC and sediment deposition arising during maintenance activities.	The magnitude of the impact represents the maximum volume of sediments released during the operation and maintenance phase, as listed under Temporary increase in SSC and sediment deposition arising during maintenance activities.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** The greatest potential for AEoI on designated sites is defined by the maximum volume of sediment that are predicted to be released into the water column during the operation and maintenance phase. The risk of accidental pollution as a result of spillages or collisions will be managed through the implementation of an Offshore EMP, and therefore no design scenarios are presented for accidental contamination.
Introduction of Marine Invasive Non-Native Species	Total surface area of introduced hard substrate in the water column: 899,964m^2 1,261 vessel round trips annually.	Total surface area of introduced hard substrate in the water column: 672,468m^2. 1,055 vessel round trips annually.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.**

Potential impact	Project 1 (49 WTG)	Project 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI on designated sites
			This scenario has the greatest potential for AEoI on designated sites with regards to maximum number of vessel movements during operational activities.
Changes to Physical Processes	The effect of flow blockage due to the array of foundations with effects at a very small sca1e (generally less than 0.02m/s relative to baseline conditions).	The effect of flow blockage due to the array of foundations with effects at a very small scale (generally less than 0.02m/s relative to baseline conditions).	**Project Option 1 has the greatest potential for AEoI on integrity of designated sites due to the larger number of WTG causing the potential blockage effect.**
Decommissioning			
Increase in Suspended sediment and deposition	The impacts are expected to be equivalent to impacts for construction apart from the structures that may remain (e.g. cables and cable protection measures).	The impacts are expected to be equivalent to impacts for construction apart from the structures that may remain (e.g. cables and cable protection measures)..	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** The greatest potential for AEoI on designated sites in relation to this impact is assumed to be as per the construction phase, with all infrastructure removed in reverse-construction order. The removal of cables is considered, however the necessity to remove cables will be reviewed at the time of decommissioning.
Accidental pollution	The impacts are expected to be equivalent to those outlined for construction above.	The impacts are expected to be equivalent to those outlined for construction above.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** This scenario has the greatest potential for AEoI on designated sites with regards to the maximum total seabed disturbance and therefore the maximum amount of contaminated sediment that may be released into the water column during decommissioning activities.
Introduction of Marine Invasive Non-Native Species	The impacts are expected to be equivalent to those outlined for construction above.	The impacts are expected to be equivalent to those outlined for construction above.	**Project Option 1 represents the greatest potential for AEoI on designated sites in relation to this impact.** This scenario has the greatest potential for AEoI on designated sites with regard to maximum number of vessel movements during construction activities.

5.1.2 Malahide Estuary SAC

5.1.2.1 Qualifying Interests of Malahide Estuary SAC

There are no changes to this section. Refer to Section 5.1.2.1 in the 2024 NIS.

5.1.2.1.1 Conservation Objectives and Description of Qualifying Interest: Tidal Mudflats and Sandflats

There are no changes to this section. Refer to Section 5.1.2.1.1 in the 2024 NIS.

5.1.2.1.2 Conservation Objectives and Description of Qualifying Interest: Salicornia and Other Annuals Colonising Mud and Sand

There are no changes to this section. Refer to Section 5.1.2.1.2 in the 2024 NIS.

5.1.2.1.3 Conservation Objectives and Description of Qualifying Interest: Atlantic salt meadows

It was noted that in the 2024 NIS the COs were described as 'maintain' instead of 'restore' therefore, the following sentence of Section 5.1.2.1.3 shall be deleted:

'*The COs to maintain the favourable conservation condition of Atlantic salt meadows as defined by the following list of attributes and targets:*

And replaced with:

The COs to restore the favourable conservation condition of Atlantic salt meadows as defined by the following list of attributes and targets:

There are no changes to this section. Refer to Section 5.1.2.1.3 in the 2024 NIS.

5.1.2.1.4 Conservation Objectives and Description of Qualifying Interest: Mediterranean Salt Meadows

There are no changes to this section. Refer to Section 5.1.2.1.4 in the 2024 NIS.

5.1.2.1 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements) have necessitated changes to this section. Notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Furthermore, dredging activities across the site have also been removed from the proposed development design. These refinements to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in Appendix A11: Marine Physical Processes Numerical Modelling.

Due to these refinements in the proposed development design, Project Option 1 now represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. This has been amended and reflected where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: no AEoI on the COs of QIs designated in the Malahide Estuary SAC.

To reflect these changes, the following text from Section 5.1.2.1 of the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning.

The onshore works for both project options are the same. Suspended material from onshore construction works may enter the estuary and marine environment through near stream or in-stream works resulting in freshwater run-off arising from the nearest onshore works. Increased suspended sediment arising from onshore works and reaching Malahide Estuary SAC via surface water will be localised to the immediate downstream area of the works, and at watercourse crossing Seapoint Stream and Greenfields Stream where near stream works are adjacent to the SAC.

As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore, during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation, cable installation works and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

There are no further changes to this section. Refer to Section 5.1.2.1 in the 2024 NIS.

5.1.2.1.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP. The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.2.1.1 in the 2024 NIS.

5.1.2.1.2 Assessment

In response to RFI Sections 1 (b) and 7(r), the changes in this section are due to incorporating revised sediment plume modelling to reassess the effects on SSC and deposition. The updated modelling is presented in Appendix A11: Marine Physical Processes Numerical Modelling. Seabed levelling is also no longer a requirement for Project Option 2. Accordingly, Section 5.1.2.1.2 of the 2024 NIS shall be deleted and replaced with text herein.

Malahide Estuary SAC lies 16.2km from the offshore ECC at the landfall and 20.3km from the array area, and is immediately adjacent to the onshore infrastructure works along the Estuary Road for 2.3km.

Sediment plumes caused by works within the array area and ECC are anticipated to be restricted to one tidal excursion as indicated by Figures A5.1 to Figure A5.10 which show the extent of the modelled sediment plumes and deposition as a result of OSP foundation drilling and cabling.

The sediment plume and deposition modelling does not extend into any SACs beyond trace levels with subsequent deposition being undetectable above background levels. No sediment plume or deposition extends into the Malahide Estuary SAC. Similarly, with the implementation of mitigation measures the amount of sediment entering the estuary and marine environment from freshwater run-off from onshore activities will be negligible.

5.1.2.1.3 Conclusion of AEoI

Section 5.1.2.1.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of increased SSC and deposition from offshore activities will not result in an AEoI of the Malahide Estuary SAC, in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

Similarly, it is concluded beyond reasonable scientific doubt that the impacts of sedimentation entering watercourses through freshwater run-off from the onshore activities will not result in an AEoI of the Malahide Estuary SAC, in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

The figures following this section within the 2024 NIS have either been deleted or replaced. The updates are described below.

- **Seabed levelling is no longer a requirement for Project Option 2; therefore Figures 5.2 and 5.3 in the 2024 NIS no longer apply and shall be deleted.**
- **In response to RFI Section 1 (b), the change in this section is due to incorporating results of additional numerical modelling provided in Appendix A11: Marine Physical Processes Numerical Modelling, therefore Figures 5.4 to 5.11 of the 2024 NIS are also updated:**
  - **Figure 5.4 shall be replaced with Figure A5.1;**
  - **Figure 5.5 shall be replaced with Figure A5.2;**
  - **Figure 5.6 shall be replaced with Figure A5.3;**
  - **Figure 5.7 shall be replaced with Figure A5.4;**
  - **Figure 5.8 shall be replaced with Figure A5.5;**
  - **Figure 5.9 shall be replaced with Figure A5.6;**
  - **Figure 5.10 shall be replaced with Figure A5.7; and**
  - **Figure 5.11 shall be replaced with Figure A5.8.**

  In addition, Figures A5.9 and A5.10 have been added.

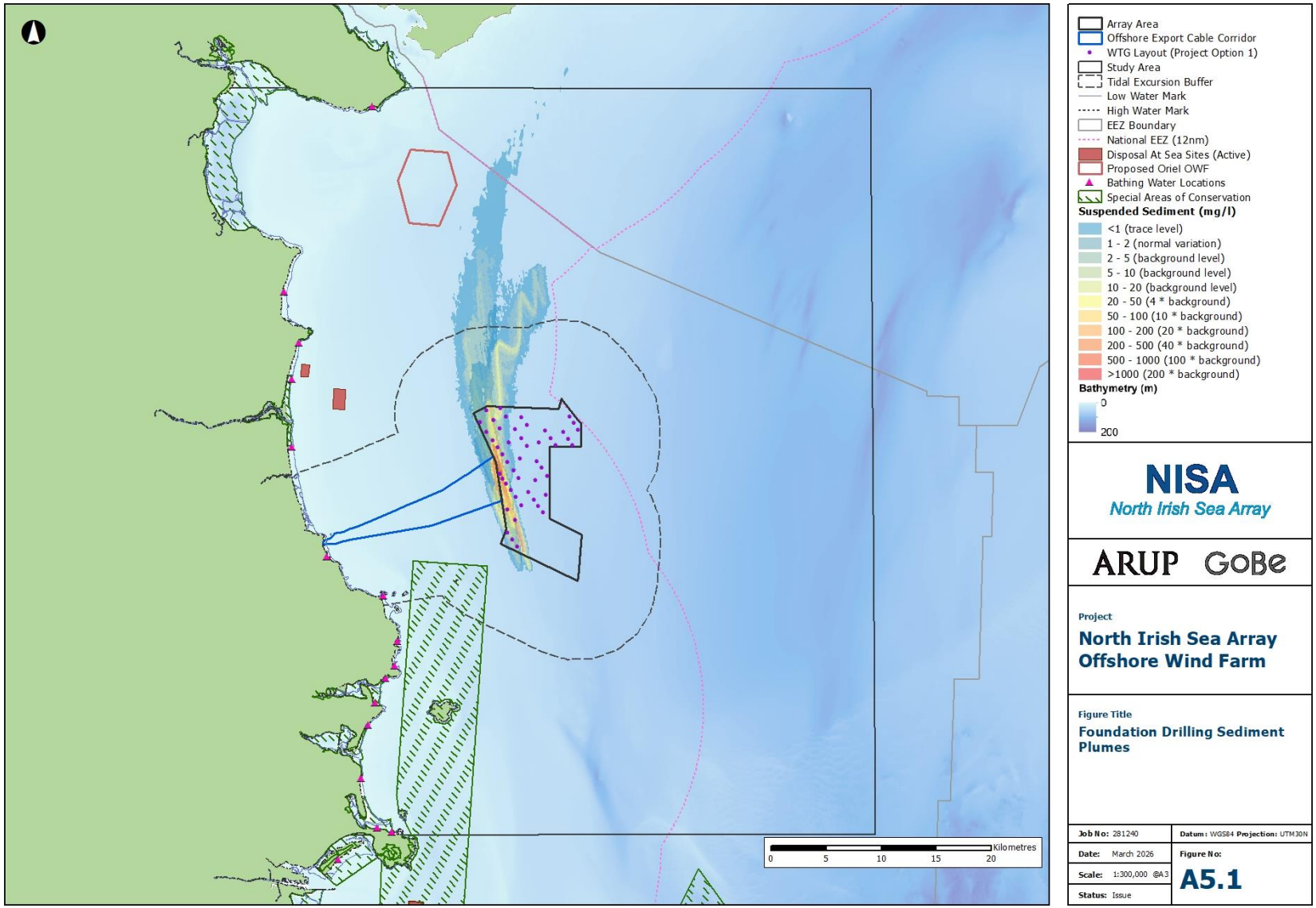


Figure A5.1: Foundation Drilling Sediment Plumes (replaces Figure 5.4 in the 2024 NIS)

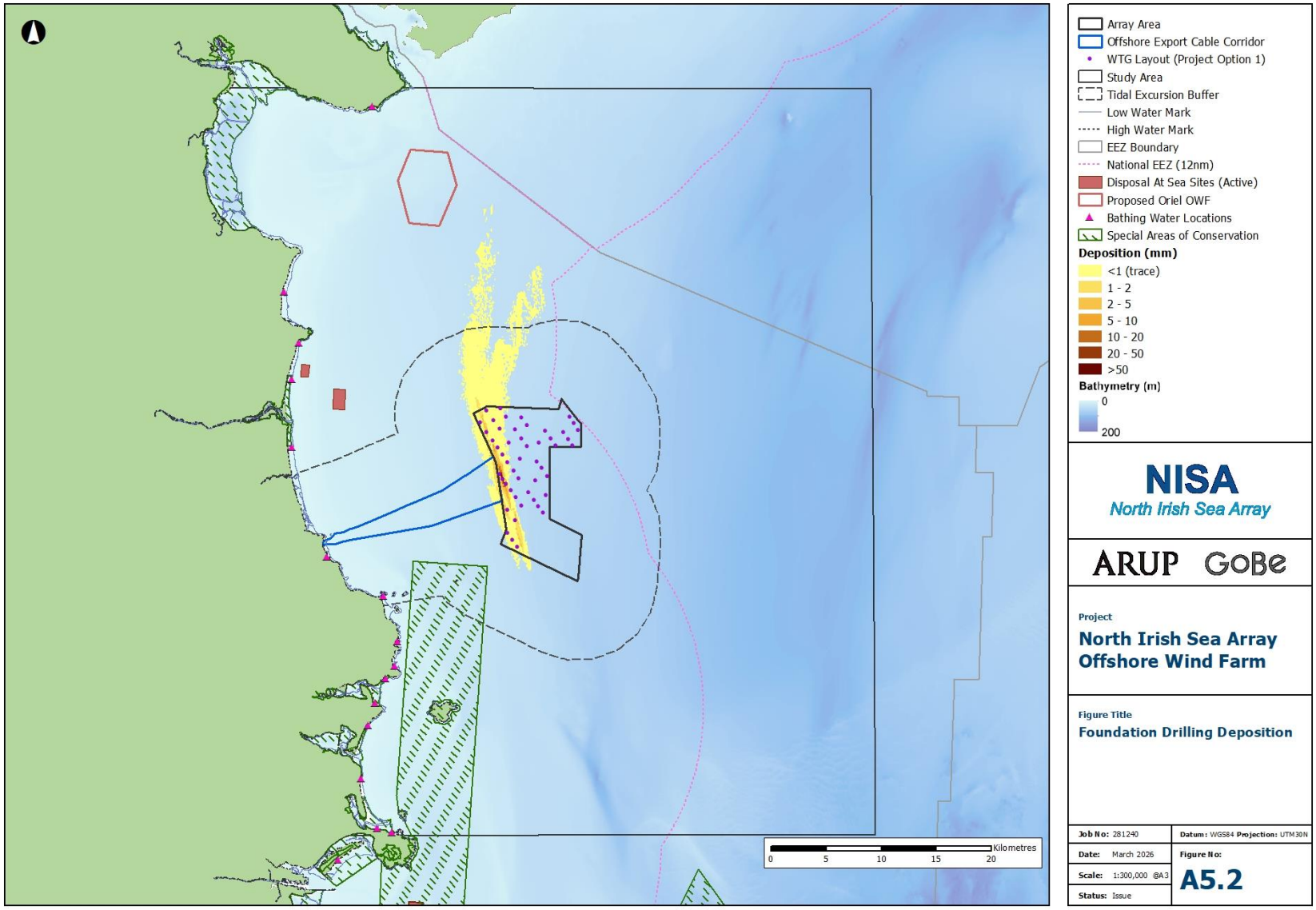


Figure A5.2: Foundation Drilling Deposition (replaces Figure 5.5 in the 2024 NIS)

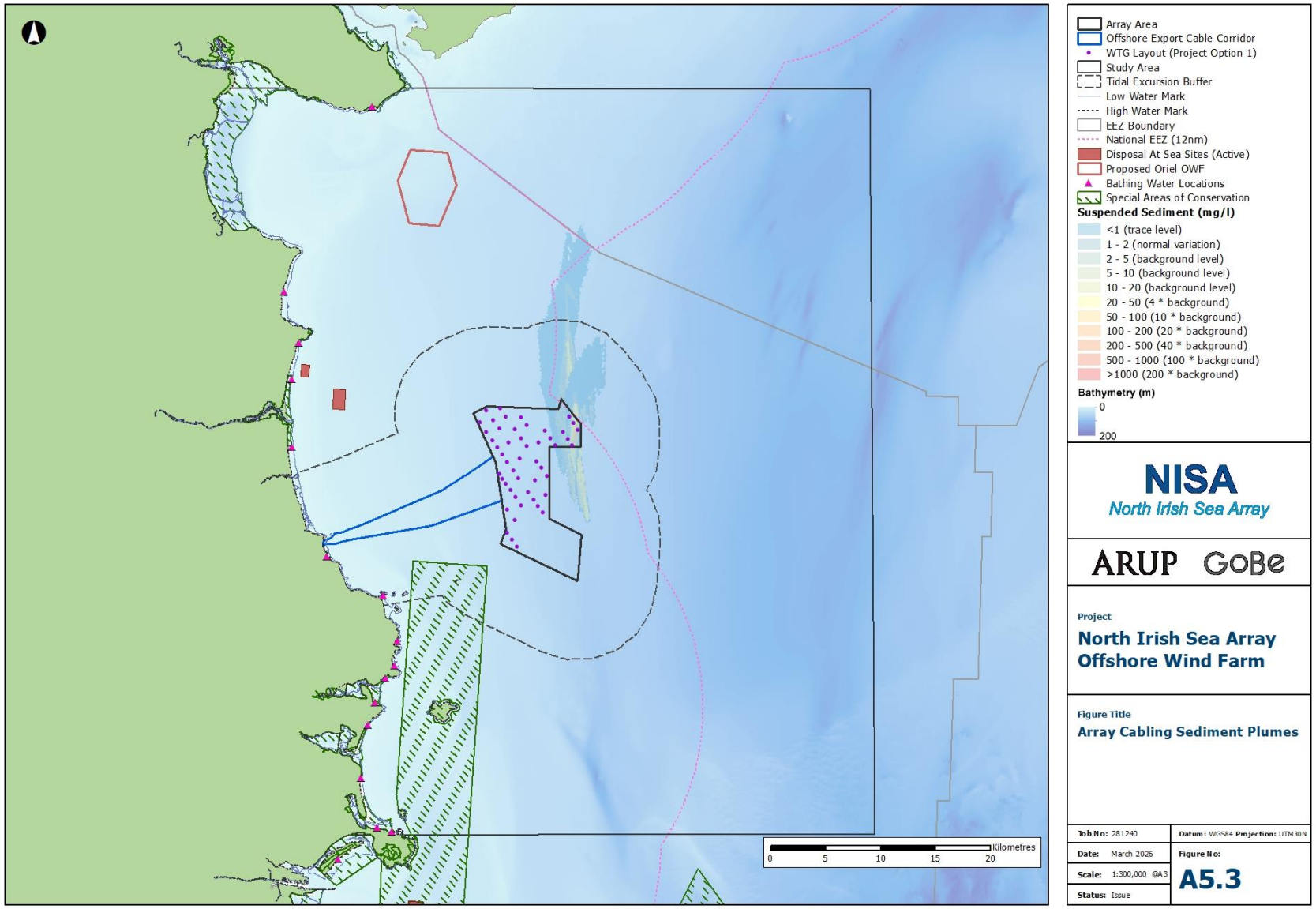


Figure A5.3: Array Cabling Sediment Plumes (replaces Figure 5.6 in the 2024 NIS)

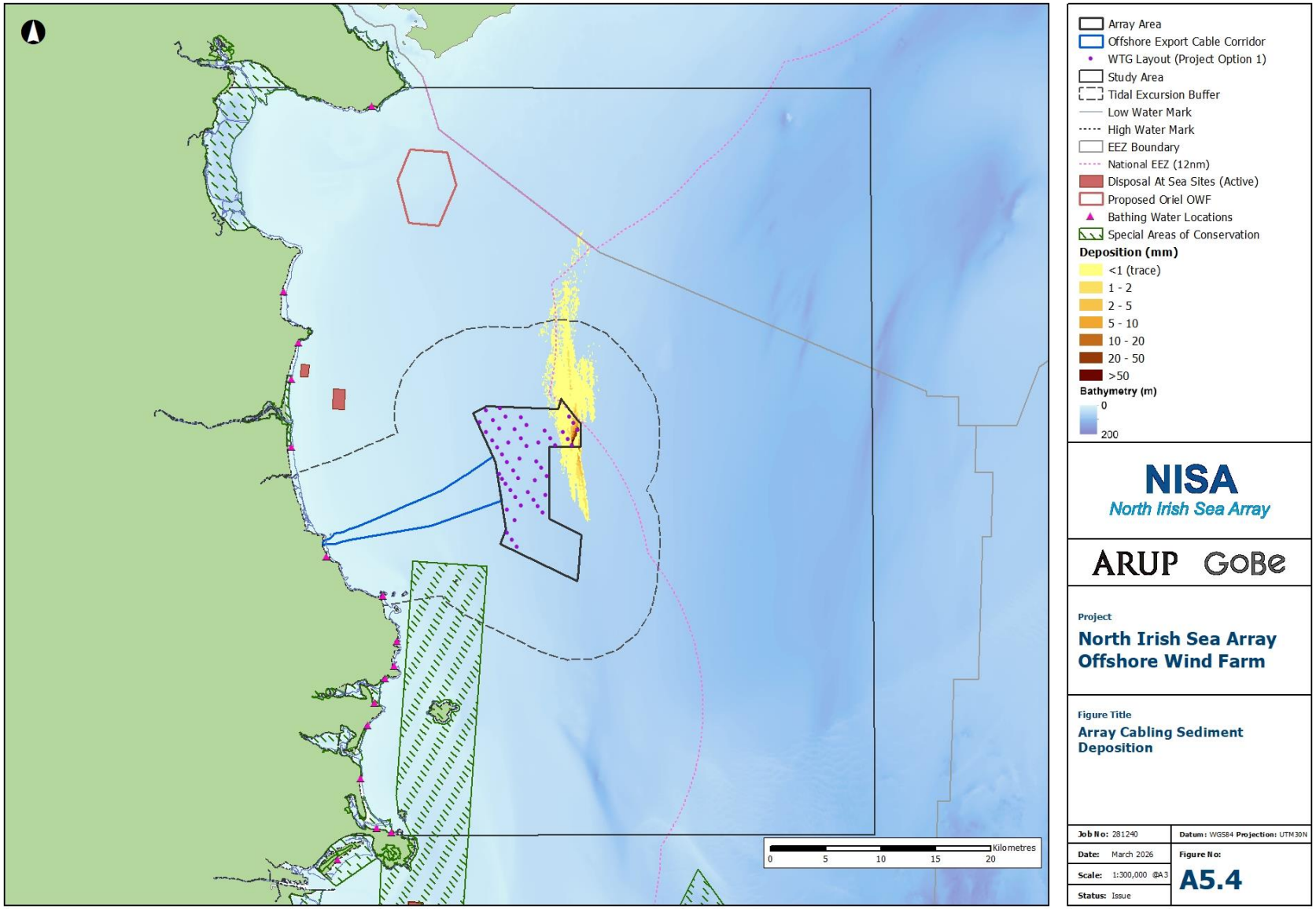


Figure A5.4: Array Cabling Deposition (replaces Figure 5.7 in the 2024 NIS)

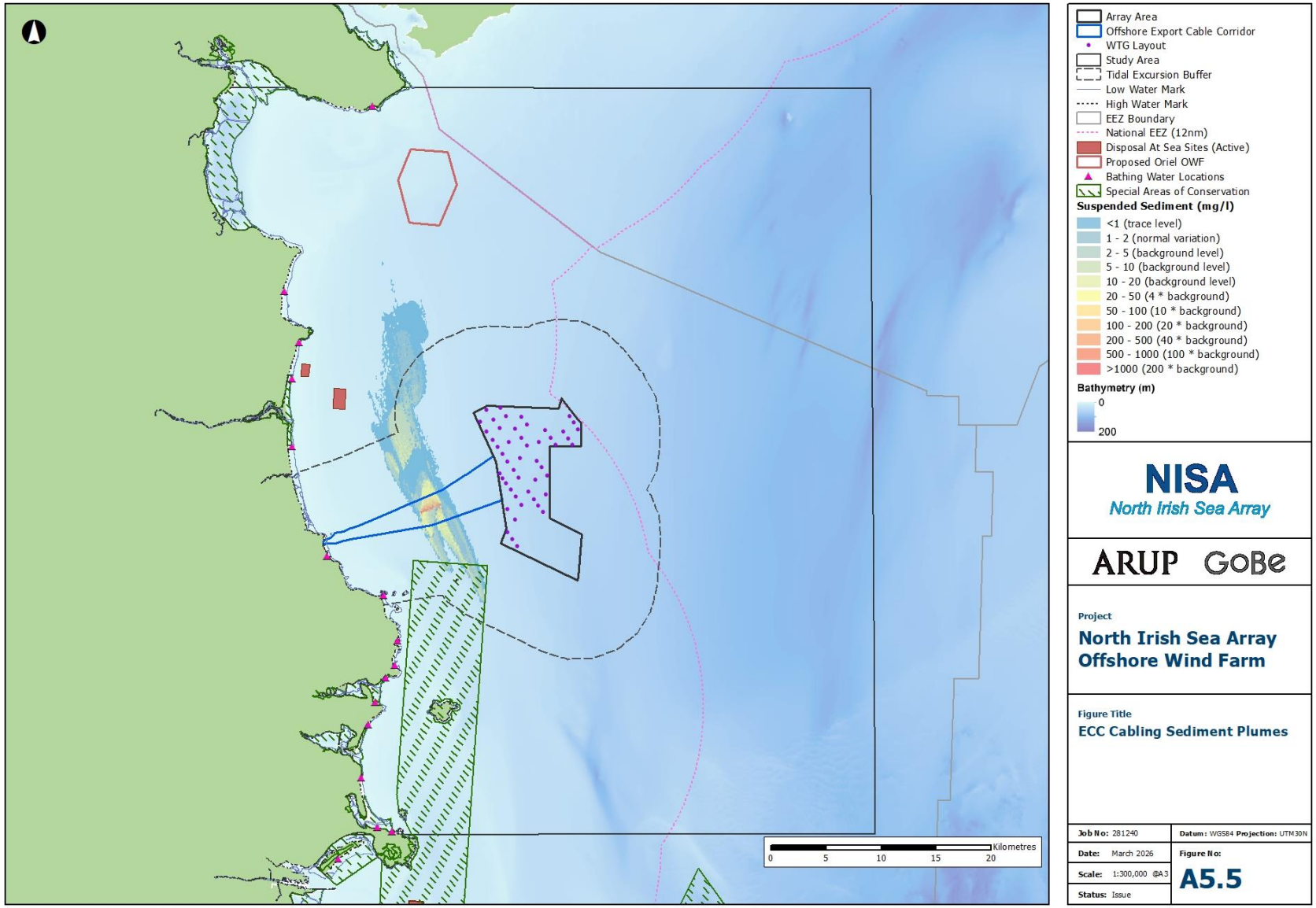


Figure A5.5: ECC Cabling Sediment Plumes (replaces Figure 5.8 in the 2024 NIS)

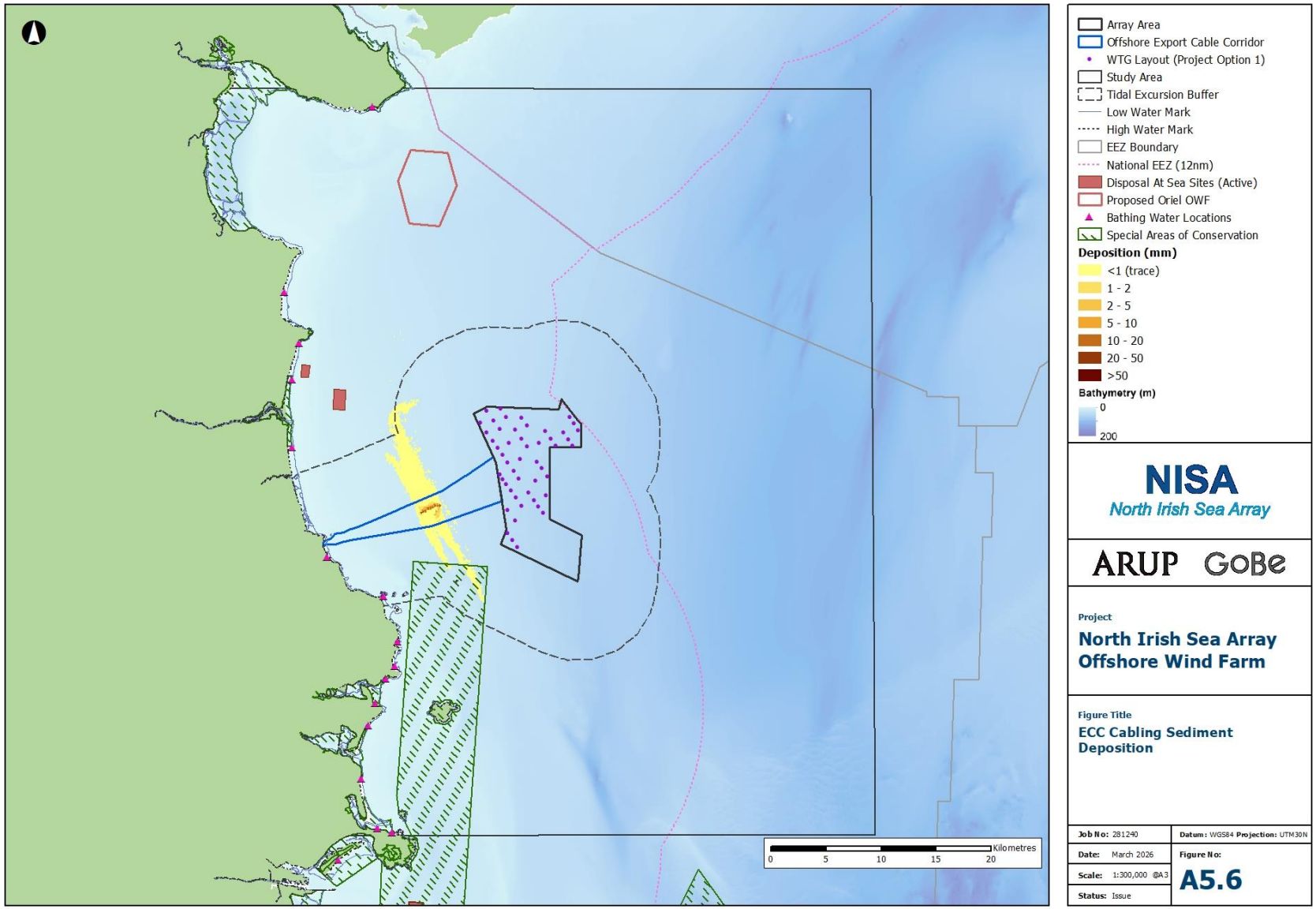


Figure A5.6: ECC Cabling Sediment Deposition (replaces Figure 5.9 in the 2024 NIS)

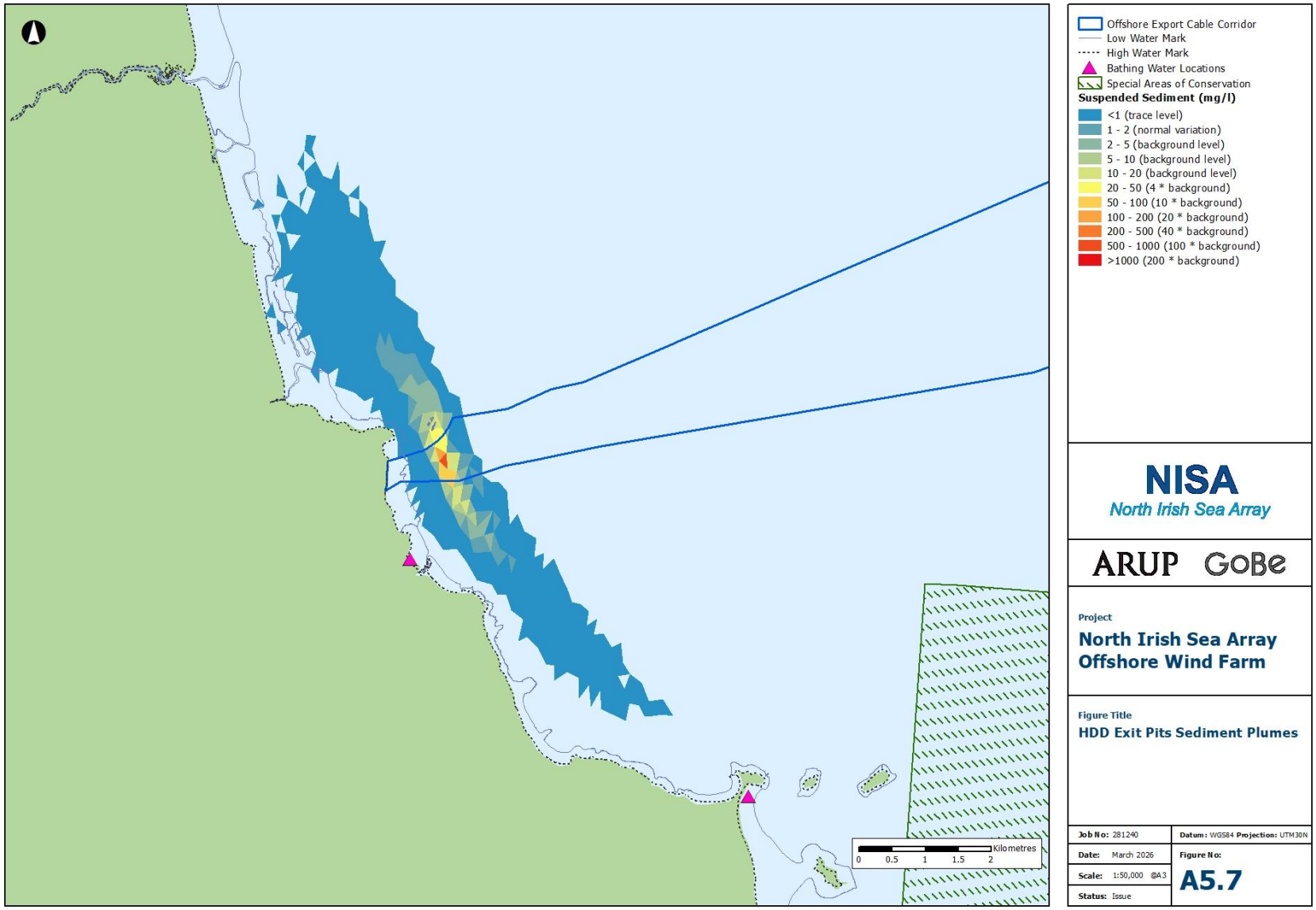


Figure A5.7: HDD Exit Pits Sediment Plumes (replaces Figure 5.10 in the 2024 NIS)

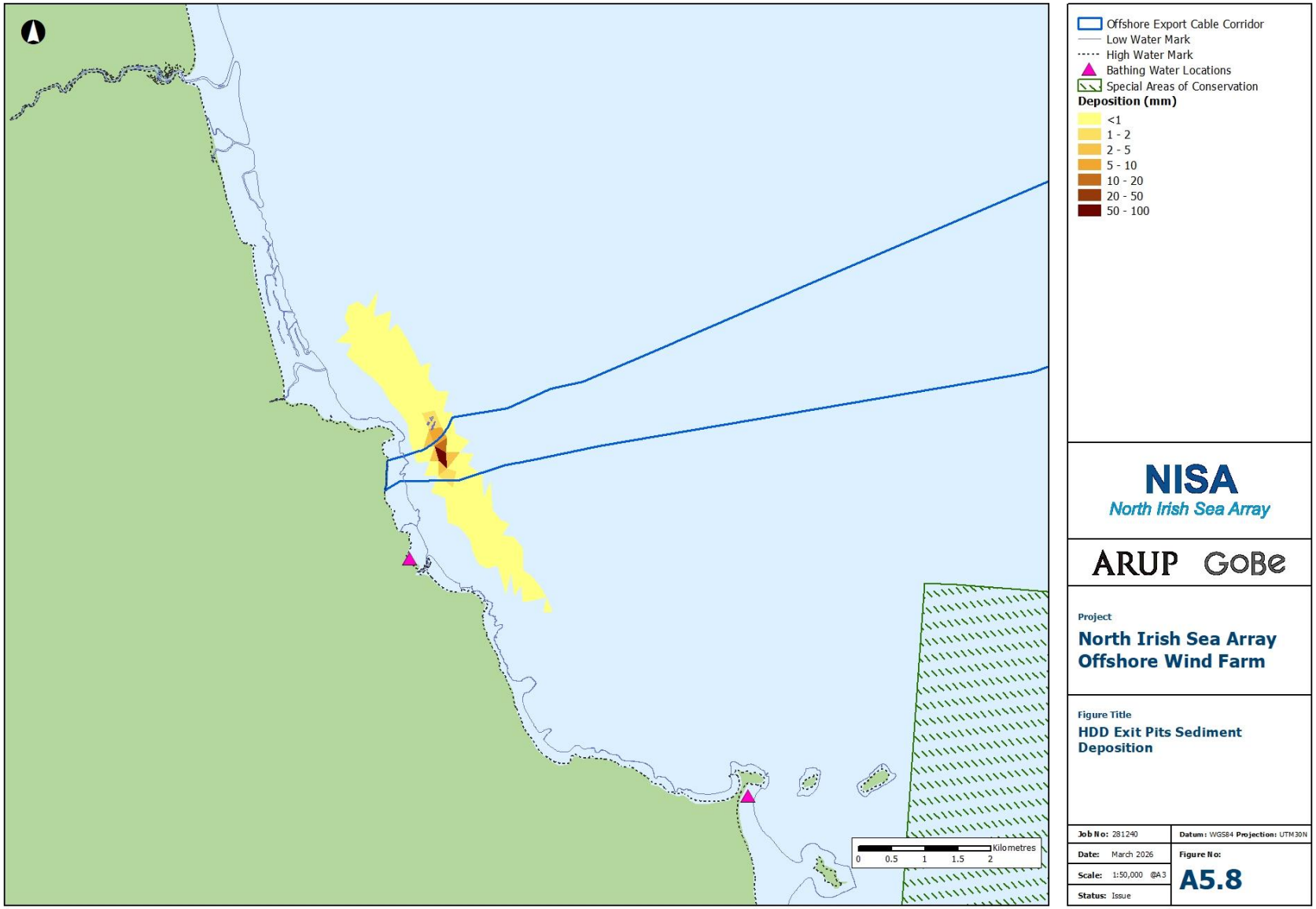


Figure A5.8: HDD Exit Pits Sediment Deposition (replaces Figure 5.11 in the 2024 NIS)

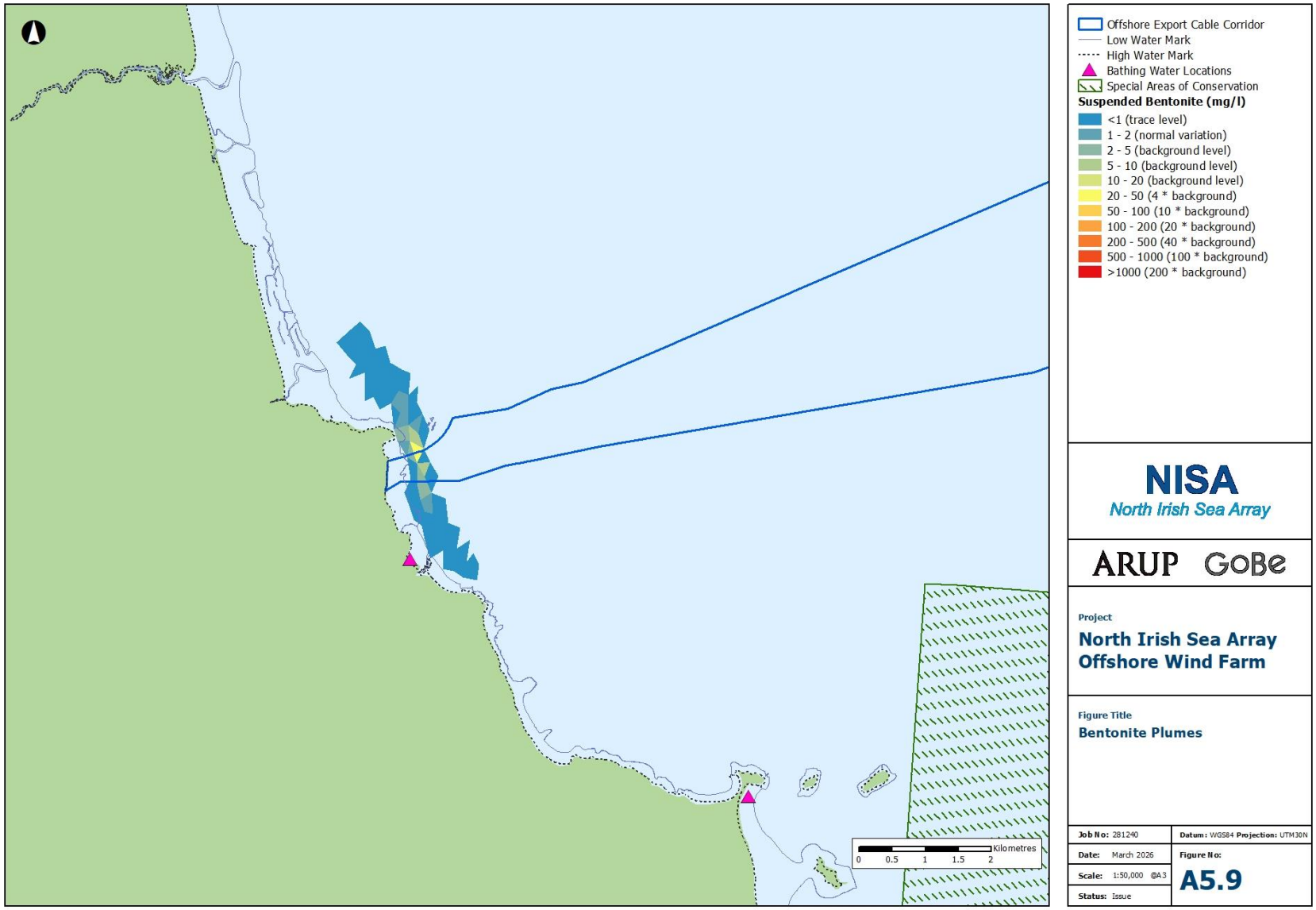


Figure A5.9: Bentonite Plumes

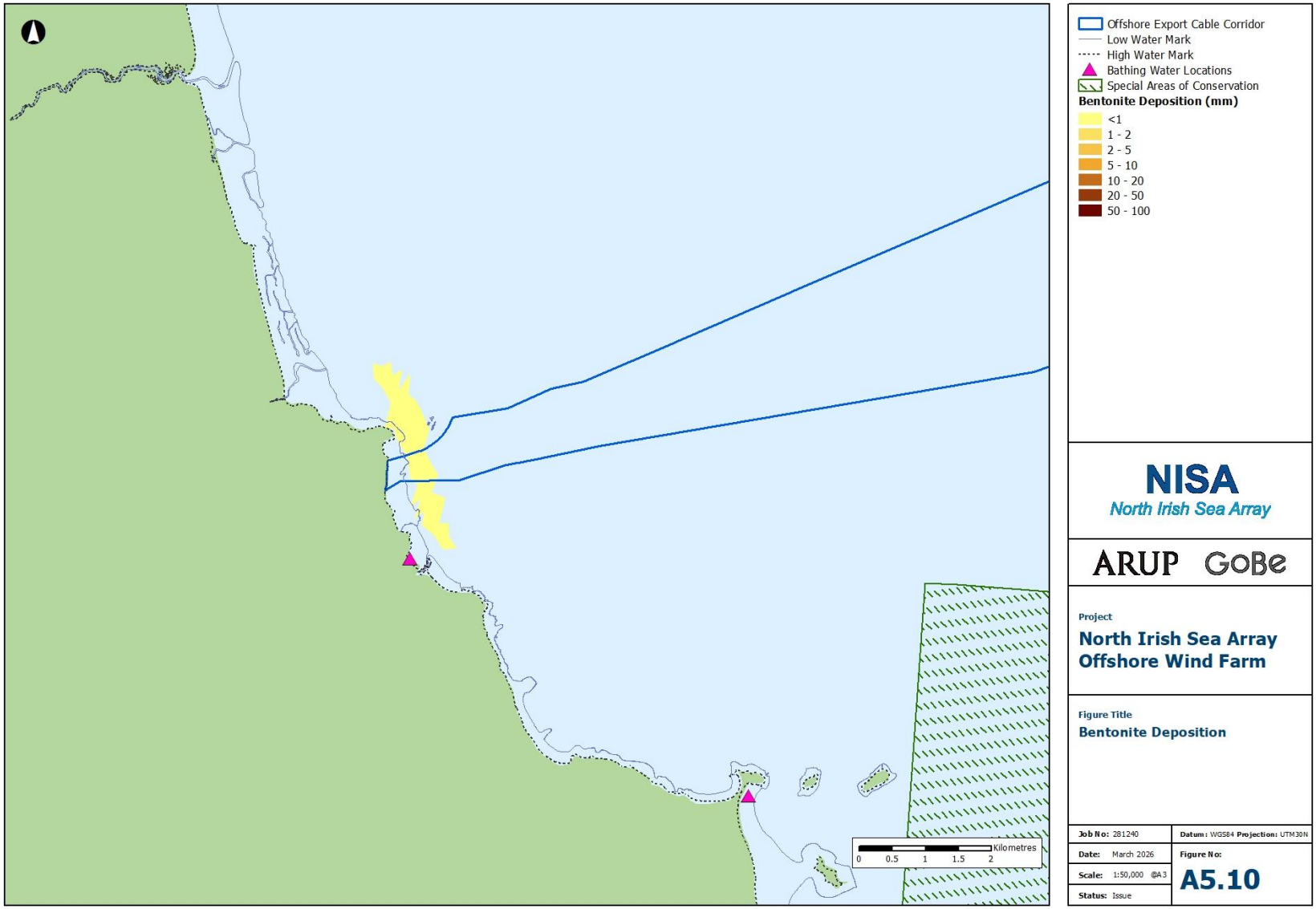


Figure A5.10: Bentonite Deposition

5.1.2.2 Accidental Pollution (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from Section 5.1.2.2 of the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

There are no other changes to this section. Refer to Section 5.1.2.2 in the 2024 NIS.

5.1.2.2.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP. The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.2.2.1 in the 2024 NIS.

5.1.2.2.2 Assessment

There are no changes to this section. Refer to Section 5.1.2.2.2 in the 2024 NIS.

5.1.2.2.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

Section 5.1.2.2.3 shall be deleted and replaced with text herein.

It is therefore concluded beyond reasonable scientific doubt that the impacts of accidental pollution from offshore activities will not result in an AEoI of the Malahide Estuary SAC, in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

Similarly, it is therefore concluded beyond reasonable scientific doubt that the impacts of accidental pollution entering watercourses through freshwater run off from onshore activities will not result in an AEoI of the Malahide Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.2.3 Introduction of Marine Invasive Non-Native Species (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from Section 5.1.2.3 of the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for the Introduction of Non-native Species.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for Introduction of Marine INNS.

There are no other changes to this section. Refer to Section 5.1.2.3 in the 2024 NIS.

5.1.2.3.1 Mitigation

There are no changes to this section. Refer to Section 5.1.2.3.1 in the 2024 NIS.

5.1.2.3.2 Assessment

There are no changes to this section. Refer to Section 5.1.2.3.2 in the 2024 NIS.

5.1.2.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is therefore concluded beyond reasonable scientific doubt that the impacts of the introduction of marine INNS will not result in an AEoI of the Malahide Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.2.4 Changes to Physical Processes (Operation)

To reflect changes to Table 5.2, the following text from Section 5.1.2.3 of the 2024 NIS shall therefore be deleted:

'*As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes*.'

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

There are no other changes to the introductory text of this section. Refer to Section 5.1.2.4 in the 2024 NIS.

5.1.2.4.1 Assessment

In response to RFI Sections 1(b) and 7(r), the changes to this section are based on the revised physical processes modelling presented in Appendix A11: Marine Physical Processes Numerical Modelling and Appendix A12: Supporting Assessment Sensitivity Studies.

Section 5.1.2.4.1 shall be deleted and replaced with text herein.

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

The presence of foundations and scour protection introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways and associated effects on benthic ecology. Scour and increases in flow rates can change the characteristics of the sediment potentially making the habitat less suitable for some species. However, modelling as detailed in Appendix A11, indicates that changes in flow dynamics and associated scour effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects and no evident pathways to benthic QIs designated in Malahide Estuary SAC.

5.1.2.4.2 Conclusion of AEoI

Section 5.1.2.4.2 shall be deleted and replaced with text herein.

It is therefore concluded beyond reasonable scientific doubt that the impacts of the changes to physical processes will not result in any AEoI on the Malahide Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.2.5 Dust Deposition (Construction and Decommissioning)

There are no changes to the introductory text in this section. Refer to Section 5.1.2.5 in the 2024 NIS.

5.1.2.5.1 Mitigation

There are no changes to this section. Refer to Section 5.1.2.5.1 in the 2024 NIS.

5.1.2.5.2 Assessment

There are no changes to this section. Refer to Section 5.1.2.5.2 in the 2024 NIS.

5.1.2.5.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is therefore concluded beyond reasonable scientific doubt that the impacts of the dust deposition will not result in an AEoI of the Malahide Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.3 Rogerstown Estuary SAC

5.1.3.1 Qualifying Interests of Rogerstown Estuary SAC

There are no changes to the introductory text in this section. Refer to Section 5.1.3.1 in the 2024 NIS.

5.1.3.1.1 Conservation Objectives and Description of Qualifying Interests: Estuaries

There are no changes to this section. Refer to Section 5.1.3.1.1 in the 2024 NIS.

5.1.3.1.2 Conservation Objective and Description of Qualifying Interest: Mudflats and Sandflats Not Covered by Seawater at Low Tide

There are no changes to this section. Refer to Section 5.1.3.1.2 in the 2024 NIS.

5.1.3.1.3 Conservation Objective and Description of Qualifying Interest: Salicornia and Other Annuals Colonising Mud and Sand

There are no changes to this section. Refer to Section 5.1.3.1.3 in the 2024 NIS.

5.1.3.1.4 Conservation Objectives and Description of Qualifying Interest: Atlantic Salt Meadows (Glauco-Puccinellietalia maritimae)

There are no changes to this section. Refer to Section 5.1.2.1.4 in the 2024 NIS.

5.1.3.1.5 Conservation Objectives and Description of Qualifying Interest: Mediterranean Salt Meadows (Juncetalia maritimi)

There are no changes to this section. Refer to Section 5.1.2.1.5 in the 2024 NIS.

5.1.3.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements), have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Furthermore, dredging activities across the site have also been removed from the proposed development design. These changes to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in Appendix A11: Marine Physical Processes Numerical Modelling.

Due to these refinements in the proposed development design in Table A.5.2, Project Option 1 remains the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: that beyond reasonable scientific doubt there is no AEoI of QIs designated in the Rogerstown Estuary SAC.

To reflect these changes, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off.

As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore, during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation and cable installation works and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

There are no further changes to this section. Refer to Section 5.1.3.2 in the 2024 NIS.

5.1.3.2.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP. The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.3.2.1 in the 2024 NIS.

5.1.3.2.2 Assessment

In response to RFI Sections 1(b) and 7(r), the changes in this section are due to incorporating revised sediment plume modelling to reassess the effects on SSC and deposition. The updated modelling is presented in Appendix A11: Marine Physical Processes Numerical Modelling. Seabed levelling is also no longer a requirement for Project Options 1 and 2. Accordingly, Section 5.1.3.2.2 shall be deleted and replaced with text herein.

Rogerstown Estuary SAC lies 15.7km from the offshore ECC at the landfall and lies 12.5km from the array area, while the onshore cable corridor is directly adjacent to the site. Sediment plumes caused by works within the array area and ECC are anticipated to be restricted to one tidal excursion as indicated in Figures A5.1 to A5.10 which show the extent of the modelled sediment plumes and deposition as a result of foundation drilling and cabling. The sediment plume and deposition modelling does not extend into any SACs beyond trace levels with subsequent deposition being undetectable above background levels.

No sediment plume or deposition extends into the Rogerstown Estuary SAC. Similarly, with the implementation of mitigation measures the amount of sediment from onshore activities entering the estuary and marine environment from freshwater run-off will be imperceptible.

5.1.3.2.3 Conclusion of AEoI.

Section 5.1.3.2.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of increased SSC and deposition from offshore activities will not have an AEoI on Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for both Project Option 1 and Project Option 2.

Similarly, it is concluded beyond reasonable scientific doubt the impacts of sedimentation entering watercourses through freshwater run-off from the onshore activities will not have an AEoI on Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for both Project Option 1 and Project Option 2.

5.1.3.3 Accidental Pollution (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

There are no other changes to this section. Refer to Section 5.1.3.3 in the 2024 NIS.

5.1.3.3.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP. The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

There are no other changes to this section. Refer to Section 5.1.3.3.1 in the 2024 NIS.

5.1.3.3.2 Assessment

There are no changes to this section. Refer to Section 5.1.3.3.2 in the 2024 NIS.

5.1.3.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of accidental pollution from offshore activities will not have an AEoI on Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for both Project Option 1 and Project Option 2.

Similarly, it is concluded beyond reasonable scientific doubt that the impacts of accidental pollution entering watercourses through freshwater run off from onshore activities will not have an AEoI on Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for both Project Option 1 and Project Option 2.

5.1.3.4 Introduction of Marine Invasive Non-Native Species (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for the Introduction of Non-native Species.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for Introduction of Marine INNS.

There are no other changes to this section. Refer to Section 5.1.3.4.in the 2024 NIS.

5.1.3.4.1 Mitigation

There are no changes to this section. Refer to Section 5.1.3.4.1 in the 2024 NIS.

5.1.3.4.2 Assessment

There are no changes to this section. Refer to Section 5.1.3.4.2 in the 2024 NIS.

5.1.3.4.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of the introduction of marine INNS will not result in an AEoI on the Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.3.5 Changes to Physical Processes (Operation)

In response to RFI Sections 1(b) and 7(r), the changes to this section are based on the revised physical processes modelling presented in Appendix A11: Marine Physical Processes Numerical Modelling and Appendix A12: Supporting Assessment Sensitivity Studies.

Section 5.1.3.5 shall be deleted and replaced with text herein.

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

The presence of foundations and scour protection introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways and associated effects on benthic ecology. Scour and increases in flow rates can change the characteristics of the sediment potentially making the habitat less suitable for some species. However, modelling as detailed in Appendix A11, indicates that changes in flow dynamics and associated scour effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects and no evident pathways to benthic QIs designated in Rogerstown Estuary SAC.

5.1.3.5.1 Assessment

There are no changes to this section. Refer to Section 5.1.3.5.1 in the 2024 NIS.

5.1.3.5.2 Conclusion of AEoI

Section 5.1.3.5.2 shall be deleted and replaced with text herein.

It is concluded beyond reasonable doubt that the impacts of the changes to physical processes will not result in an AEoI on the Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.3.6 Dust Deposition (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.1.3.6 in the 2024 NIS.

5.1.3.6.1 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the introduction of dust deposition arising from the onshore development will not result in an AEoI on the Rogerstown Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.4 Baldoyle Bay SAC

5.1.4.1 Qualifying Interests and Conservation Objectives

There are no changes to the introductory text in this section. Refer to Section 5.1.4.1 in the 2024 NIS.

5.1.4.1.1 Conservation Objectives and Description of Qualifying Interest: Tidal Mudflats and Sandflats

There are no changes to this section. Refer to Section 5.1.4.1.1 in the 2024 NIS.

5.1.4.1.2 Conservation Objectives and Description of Qualifying Interest: Salicornia and Other Annuals Colonising Mud and Sand

There are no changes to this section. Refer to Section 5.1.4.1.2 in the 2024 NIS.

5.1.4.1.3 Conservation Objectives and Description of Qualifying Interest: Atlantic Salt Meadows

There are no changes to this section. Refer to Section 5.1.4.1.3 in the 2024 NIS.

5.1.4.1.4 Conservation Objectives of and Description of Qualifying Interest: Mediterranean Salt Meadows

There are no changes to this section. Refer to Section 5.1.4.1.4 in the 2024 NIS.

5.1.4.2 Suspended Sediment/Deposition (Construction and Decommissioning)

Baldoyle Bay SAC lies 0.9km east of the onshore cable route, 26.1km inshore of the array area and 22.5km from the ECC. Therefore, it is screened out for effects from the offshore development as it is considered that there is no potential for the effect to reach the SAC within which the QIs are located. Onshore infrastructure is hydrologically connected and therefore the alone assessment is corrected to consider the onshore proposed development area effects only.

To reflect these changes, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Due to the distance of the proposed development and the array area and ECC (over 20km, no inputs of SSC or accidental pollution are expected into the SAC in relation to offshore activities. Suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

There are no further changes to this section. Refer to Section 5.1.4.2 in the 2024 NIS.

5.1.4.2.1 Mitigation

To make an amendment to the alone assessment, the following text shall be deleted:

'However, as outlined in the CEMP (Appendix 8) standard best practice methods will be adopted to protect downstream water quality, these include control of surface water run-off, control of release of hydrocarbons and contaminates, protocols for storage of materials, refuelling restrictions and protocols for HDD operations and frac-out. Implementation of mitigation measures detailed in the Offshore EMP and the CBRA will minimise release of sediments from Offshore activities into the water column. Use of HDD to entirely avoid any direct impact from cable corridor preparation and laying within the intertidal zone will decrease the release of material into the water column and the magnitude of associated impacts on coastal and marine receptors to negligible.'

And replaced with:

However, as outlined in the CEMP (Appendix A9 standard best practice methods will be adopted to protect downstream water quality, these include control of surface water run-off, control of release of hydrocarbons and contaminants, protocols for storage of materials, refuelling restrictions and protocols for HDD operations and frac-out. Use of HDD to entirely avoid any direct impact from cable corridor preparation and laying within the intertidal zone will decrease the release of material into the water column and the magnitude of associated impacts on coastal and marine receptors to negligible.

However, there are no other changes to this section. Refer to Section 5.1.4.2.1 in the 2024 NIS.

5.1.4.2.2 Assessment

To reflect the changing focus of the assessment to effects from the onshore development area only, the following text shall be deleted;

'*Baldoyle Bay Estuary SAC lies 22.5km from the offshore ECC at the landfall and lies 26.1km from the array area. Sediment plumes caused by works within the array area and ECC are anticipated to be restricted to one tidal excursion as indicted by Figures 5.2 to 5.11 which show the extent of the modelled sediment plumes and depositions as a result of foundation drilling and cabling. The sediment plume and deposition modelling does not extend into any SACs beyond trace levels with subsequent deposition being undetectable above background levels. No sediment plume or deposition extends into the Baldoyle Bay SAC. While the SAC is 0.9km from the onshore cable corridor at the nearest point it is expected that with the implementation of mitigation measures the amount of sediment entering the marine environment from freshwater run-off will be negligible'*.

And replaced with:

Baldoyle Bay Estuary SAC lies 22.5km from the offshore ECC at the landfall and lies 26.1km from the array area. The SAC Is outside of the ZoI from the offshore proposed development and while the SAC is 0.9km from the onshore cable corridor at the nearest point it is expected that with the implementation of mitigation measures the amount of sediment entering the marine environment from freshwater run-off will be negligible.

5.1.4.2.3 Conclusion of AEoI

Section 5.1.4.2.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of sedimentation entering watercourses through freshwater run-off from the onshore activities will not have an AEoI on the Baldoyle Bay SAC in view of the site's COs with respect to all QIs for the proposed development.

5.1.4.3 Accidental Pollution (Construction and Decommissioning)

Baldoyle Bay SAC lies 0.9km east of the onshore cable route, 26.1km inshore of the array area and 22.5km from the ECC. Therefore it is screened out for impacts from the offshore development area as it is considered that there is no potential for any suspended sediment or accidental pollution to reach the SAC within which the QIs are located. Onshore infrastructure is hydrologically connected and therefore the alone assessment is corrected to consider the onshore proposed development area potential impacts only. The following text shall be deleted:

'As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

There is the potential for sediment bound contaminants, such as metals, hydrocarbons and organic pollutants as a result of sediment mobilisation from offshore activities to be released into the water column, leading to an effect on coastal and marine habitat receptors.

As detailed in Section 4.3, site-specific contaminants sampling undertaken and provided confirmation that the levels of sediment bound contaminants are generally low within the array and ECC (for both project options) when compared to background concentrations. For works in high risk areas such as refuelling or the use of chemicals, a Risk Assessment and Method Statement (RAMS) will be carried out detailing specific methods to reduce any pollution incidents and protocols to deal with accidental spills.

In addition, due to the proximity of the onshore cable route to the estuary, there is potential for an accidental spill to reach the estuary via surface waters and, albeit limited, potential for hydrogeological connectivity via groundwater discharge to the SAC. As groundwater flow is slow, the infiltration capacity of the soil will limit how much of an accidental spill can enter the ground. Groundwater contamination plumes develop over years of sustained release (e.g. from unlined landfills or brownfield sites).'

And replaced with:

As determined in Table A.5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

Due to the proximity of the onshore cable route to the estuary, there is potential for an accidental spill to reach the estuary via surface waters and, albeit limited, potential for hydrogeological connectivity via groundwater discharge to the SAC. As groundwater flow is slow, the infiltration capacity of the soil will limit how much of an accidental spill can enter the ground. Groundwater contamination plumes develop over years of sustained release (e.g. from unlined landfills or brownfield sites).

There are no other changes to this section. Refer to Section 5.1.4.3 in the 2024 NIS.

5.1.4.3.1 Mitigation

To make an amendment to the alone assessment, the following text shall be deleted:

'The adoption of pollution management controls as outlined in the CEMP (Appendix 8) and Offshore EMP (Appendix 7) will minimise and manage accidental spills. For works in high risk areas such as refuelling or the use of chemicals, restrictions will be in place and a Risk Assessment and Method Statement (RAMS) will be carried out detailing specific methods to reduce any pollution incidents and protocols to deal with accidental spills'.

And replaced with:

The adoption of pollution management controls as outlined in the CEMP (Appendix A9) will minimise and manage accidental spills. For works in high risk areas such as refuelling or the use of chemicals, restrictions will be in place and a Risk Assessment and Method Statement (RAMS) will be carried out detailing specific methods to reduce any pollution incidents and protocols to deal with accidental spills.

There are no other changes to this section. Refer to Section 5.1.4.3.1 in the 2024 NIS.

5.1.4.3.2 Assessment

To reflect the changing focus of the assessment to effects from the onshore development area only, the following text shall be deleted;

'Modelling indicates no sediment plume or deposition will extend into the Baldoyle Bay SAC beyond trace levels. This, allied to the low levels of site-specific sediment bound contaminants throughout the development site and the adoption of mitigation measures, indicates that no detectable levels of contaminants will enter the Baldoyle Bay Estuary SAC.

Similarly, with the implementation of mitigation measures no detectable levels of contaminants from onshore activities will enter the Baldoyle Bay SAC through freshwater run-off or through accidental spillages'.

And replaced with:

With the implementation of mitigation measures no detectable levels of contaminants from onshore activities will enter the Baldoyle Bay SAC through freshwater run-off or through accidental spillages.

There are no other changes to this section. Refer to Section 5.1.4.3.2 in the 2024 NIS.

5.1.4.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below is presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of accidental pollution entering watercourses through freshwater run-off from the onshore activities will not have an AEoI on the Baldoyle Bay SAC in view of the site's COs with respect to all QIs for the proposed development.

5.1.5 Rockabill to Dalkey Island SAC

5.1.5.1 Qualifying Interests of Rockabill to Dalkey Island SAC

There are no changes to the introductory text in this section. Refer to Section 5.1.5.1 in the 2024 NIS.

5.1.5.1.1 Conservation Objectives and Description of Qualifying Interest: Reefs

There are no changes to this section. Refer to Section 5.1.5.1.1 in the 2024 NIS.

5.1.5.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements), have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Furthermore, dredging activities across the site have also been removed from the proposed development design. These refinements to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in Appendix A11.

Due to these refinements in the proposed development design, Project Option 1 now represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. This has been amended and reflected where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: no AEoI of QIs designated in the Rockabill to Dalkey Island SAC.

To reflect these changes, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In

addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore, during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation and cable installation works and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. In addition, suspended material from onshore construction works may enter the marine environment through freshwater run-off. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

There are no further changes to this section. Refer to Section 5.1.5.2 in the 2024 NIS.

5.1.5.2.1 Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

There are no other changes to this section. Refer to Section 5.1.5.2.1 in the 2024 NIS.

5.1.5.2.2 Assessment

In response to RFI Sections 1 (b) and 7(r), the changes in this section are due to incorporating revised sediment plume modelling to reassess the effects on SSC and deposition. The updated modelling is presented in Appendix A11. Seabed levelling is also no longer a requirement for Project Option 2.

To reflect these changes the following text Section 5.1.2.1.2 shall be deleted:

The Rockabill to Dalkey Island SAC lays 2.4km from the array area and 2.9km from the ECC. Figure 5.2 through Figure 5.11 show the extent of the modelled sediment plumes and depositions as a result of seabed levelling, foundation drilling and cabling. The sediment plume and deposition modelling does not extend into any SACs beyond trace levels. Figure 5.8 shows that trace levels (of suspended sediment may travel into the northern portion of the Rockabill to Dalkey SAC however, the sediment will likely disperse in the next tidal cycle.

And replaced with:

The Rockabill to Dalkey Island SAC is 2.4km from the array area and 2.9km from the ECC. Figures A5.1 through Figure A5.10 show the extent of the modelled sediment plumes and deposition as a result of foundation drilling and cabling.

The sediment plume and deposition modelling indicates that only southerly ebb flows on spring tides have the capacity to carry the sediment plume as far as the northern limit of the Rockabill to Dalkey Island SAC with concentrations generally in the range 2 to 10mg/l, but as high as 20mg/l in a limited area and for a short period. These concentrations are regarded as equivalent to ambient concentrations. The modelling indicates that all levels of deposition above 1mm remain within the ECC boundary with only trace levels (<1mm spreading further afield. For high flow conditions, the ebb distribution of the plume has the potential to develop some settlement in the northern part of the Rockabill to Dalkey Island SAC, however, the magnitude of deposition is considered to be insignificant in the range 0.01 to 0.1mm, but typically around 0.02mm. The sediment plume and deposition modelling indicates the sediment plumes and associated deposition resulting from works within the Array Area or HDD at landfall will not impinge on the Rockabill to Dalkey Island SAC.

The results of plume and deposition modelling are shown in Figure A5.1 to A5.10 and full details of modelling are provided in the Appendix A11.

There are no further changes to this section. Refer to Section 5.1.5.2.2 in the 2024 NIS.

5.1.5.2.3 Conclusion of AEoI

Section 5.1.5.2.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of increased SSC and deposition from offshore activities will not result in an AEoI on the Rockabill to Dalkey Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.5.3 Accidental Pollution (Construction, Operation and Decommissioning)

There are no changes to the introductory text to this section. Refer to Section 5.1.5.3 in the 2024 NIS.

5.1.5.3.1 Mitigation

There are no changes to this section. Refer to Section 5.1.5.3.1 in the 2024 NIS.

5.1.5.3.2 Assessment

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.5.3.2 in the 2024 NIS.

5.1.5.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of accidental pollution from offshore activities will not result in an AEoI on Rockabill to Dalkey Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.5.4 Introduction of Marine Invasive Non-Native Species (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for the Introduction of Non-native Species.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for Introduction of Marine INNS.

There are no other changes to this section. Refer to Section 5.1.5.4 in the 2024 NIS.

5.1.5.4.1 Mitigation

There are no changes to this section. Refer to Section 5.1.5.4.1 in the 2024 NIS.

5.1.5.4.2 Assessment

There are no changes to this section. Refer to Section 5.1.5.4.2 in the 2024 NIS.

5.1.5.4.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below is presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts from marine INNS will not result in an AEoI on Rockabill to Dalkey Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.5.5 Changes to Physical Processes (Operation)

In response to RFI Sections 1(b) and 7(r), the changes to this section are based on the revised physical processes modelling presented in Appendices A11 and A12. Section 5.1.5.5 shall be deleted and replaced with text herein.

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

The presence of foundations and scour protection introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways and associated effects on benthic ecology. Scour and increases in flow rates can change the characteristics of the sediment potentially making the habitat less suitable for some species. However, modelling as detailed in Appendix A11, indicates that changes in flow dynamics and associated scour effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects and no evident pathways to benthic QIs designated in Rockabill to Dalkey Island SAC.

5.1.5.5.1 Assessment

There are no changes to this section. Refer to Section 5.1.5.5.1 in the 2024 NIS.

5.1.5.5.2 Conclusion of AEoI

Section 5.1.5.5.2 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of the changes to physical processes will not result in an AEoI on Rockabill to Dalkey Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.6 Boyne Coast and Estuary SAC

5.1.6.1 Qualifying Interests and Conservation Objectives

There are no changes to the introductory text in this section. Refer to Section 5.1.6.1 in the 2024 NIS

5.1.6.1.1 Conservation Objectives and Description of Qualifying Interest: Estuaries

There are no changes to this section. Refer to Section 5.1.6.1.1 in the 2024 NIS.

5.1.6.1.2 Conservation Objectives and Description of Qualifying Interest: Tidal Mudflats and Sandflats

There are no changes to this section. Refer to Section 5.1.6.1.2 in the 2024 NIS.

5.1.6.1.3 Conservation Objectives and Description of Qualifying Interest: Salicornia and Other Annual Colonising Mud and Sand

There are no changes to this section. Refer to Section 5.1.6.1.3 in the 2024 NIS.

5.1.6.1.4 Conservation Objectives and Description of Qualifying Interest: Atlantic Salt Meadows

There are no changes to this section. Refer to Section 5.1.6.1.4 in the 2024 NIS.

5.1.6.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements), have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets, furthermore dredging activities across the site have also been removed from the proposed development design. These refinements to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in Appendix A11.

Due to these refinements in the proposed development design, Project Option 1 now represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. This has been amended and reflected where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: It is concluded beyond reasonable scientific doubt for Suspended Sediment and Deposition impacts will not result in an AEoI on the of Boyne Coast and Estuary SAC in view of the site's COs with respect to all Qis for either Project Option 1 or Project Option 2.

To reflect these changes, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning.. As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

Due to distance from potential hydrological pathways no inputs of SSC are expected into the SAC in relation to onshore activities and this onshore related potential impact was screened out for this site.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore, during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation, cable installation works and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

Due to distance from potential hydrological pathways no inputs of SSC are expected into the SAC in relation to onshore activities and this onshore related potential impact was screened out for this site.

There are no further changes to this section. Refer to Section 5.1.6.2 in the 2024 NIS.

5.1.6.2.1 Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.6.2.1 in the 2024 NIS.

5.1.6.2.2 Assessment

In response to RFI Sections 1(b) and 7(r), the changes in this section are due to incorporating revised sediment plume modelling to reassess the effects on SSC and deposition. The updated modelling is presented in Appendix A11. Seabed levelling is also no longer a requirement for Project Option 2. Accordingly, Section 5.1.2.1.2 shall be deleted and replaced with text herein.

Boyne Coast and Estuary SAC lies 7.9km from the offshore ECC at the landfall and lies 16.4km from the array area. Sediment plumes caused by works within the array area and ECC are anticipated to be restricted to one tidal excursion as indicated by Figures A.5.1 through A.5.10 which show the extent of the modelled sediment plumes and deposition as a result of foundation drilling and cabling. The sediment plume and deposition modelling does not extend into any SACs beyond trace levels with subsequent deposition being undetectable above background levels. No sediment plume or deposition extends into the Boyne Coast and Estuary SAC.

5.1.6.2.3 Conclusion of AEoI

Section 5.1.6.2.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of increased SSC and deposition from offshore activities will not result in an AEoI on the Boyne Coast and Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.6.3 Accidental Pollution (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

There are no other changes to this section. Refer to Section 5.1.6.3 in the 2024 NIS.

5.1.6.3.1 Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.6.3.1 in the 2024 NIS.

5.1.6.3.2 Assessment

There are no changes to this section. Refer to Section 5.1.6.3.2 in the 2024 NIS.

5.1.6.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of accidental pollution from offshore activities will not result in an AEoI on the Boyne Coast and Estuary SAC view of the sites COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.6.4 Introduction of Marine Invasive Non-Native Species (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for the Introduction of Non-native Species.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for Introduction of Marine INNS.

There are no other changes to this section. Refer to Section 5.1.6.4 in the 2024 NIS.

5.1.6.4.1 Mitigation

There are no changes to this section. Refer to Section 5.1.6.4.1 in the 2024 NIS.

Assessment

There are no changes to this section. Refer to Section 5.1.6.4.2 in the 2024 NIS.

5.1.6.4.2 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of the introduction of marine INNS will not result in an AEoI on the Boyne Coast and Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.6.5 Changes to Physical Processes (Operation)

In response to RFI Sections 1(b) and 7(r), the changes to this section are based on the revised physical processes modelling presented in Appendices A11 and A12.

Section 5.1.6.5 shall be deleted and replaced with text herein.

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

The presence of foundations and scour protection introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways and associated effects on benthic ecology. Scour and increases in flow rates can change the characteristics of the sediment potentially making the habitat less suitable for some species. However, modelling as detailed in Appendix A11, indicates that changes in flow dynamics and associated scour effects will remain within the array area with small-scale

changes around individual foundations having no perceived far-field effects and no evident pathways to benthic QIs designated in Boyne Coast and Estuary SAC.

5.1.6.5.1 Assessment

There are no changes to this section. Refer to Section 5.1.6.5.1 in the 2024 NIS.

5.1.6.5.2 Conclusion of AEoI

Section 5.1.6.5.2 shall be deleted and replaced with text herein.

It is concluded that the impacts of the changes to physical processes will not result in an AEoI on the Boyne Coast and Estuary SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.7 Lambay Island SAC

5.1.7.1 Qualifying Interests of Lambay Island

There are no changes to the introductory text in this section. Refer to Section 5.1.7.1 in the 2024 NIS.

5.1.7.1.1 Conservation Objectives and Description of Qualifying Interest: Reefs

The content of this section should be read in the context of the updated CO documentation for Lambay Island SAC (NPWS, 2024). No changes have been made to the COs for the Reef QI at this site.

Therefore, there are no changes required to this section. Refer to Section 5.1.7.1.1 in the 2024 NIS.

5.1.7.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements) have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets. Furthermore, dredging activities across the site have also been removed from the proposed development design. These changes to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in Appendix A11: Marine Physical Processes Numerical Modelling.

Despite these refinements in the proposed development design, Project Option 1 still represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. Text has been amended to reflect changes where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: It is concluded beyond reasonable scientific doubt that suspended sediment and deposition impacts will not result in an AEoI on the of Lambay Island SAC in view of the site's COs with respect to all Qis for either Project Option 1 or Project Option 2.

To reflect these changes, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation works (including sandwave clearance) in addition to foundation and cable installation and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning.. As detailed in paragraph 4.2, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

Due to distance from potential hydrological pathways no inputs of SSC are expected into the SAC in relation to onshore activities and this onshore related potential impact was screened out for this site.

And be replaced with:

As determined in Table A5.2, Project Option 1 has the greater potential for adverse effects on coastal and marine habitats compared to Project Option 2 for increased suspended sediment and deposition.

Offshore, during construction, temporary localised increases in SSC and associated sediment deposition are expected from seabed preparation, cable installation works and HDD. Similarly, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and any removal of infrastructure during decommissioning. As detailed in Section 4.2 of the 2024 NIS, increased turbidity can lead to impacts on sessile filter feeders resulting from smothering, suspension and redistribution of sediment can lead to smothering of sensitive benthic organisms.

Due to distance from potential hydrological pathways no inputs of SSC are expected into the SAC in relation to onshore activities and this onshore related potential impact was screened out for this site.

There are no further changes to this section. Refer to Section 5.1.7.2 in the 2024 NIS.

5.1.7.2.1 Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.7.2.1 in the 2024 NIS.

5.1.7.2.2 Assessment

In response to RFI Sections 1 (b) and 7(r) the changes in this section are due to incorporating revised sediment plume modelling to reassess the effects on SSC and deposition. The updated modelling is presented in Appendix A11. Seabed levelling is also no longer a requirement for Project Options 1 or Project Option 2. Accordingly, Section 5.1.2.1.2 shall be deleted and replaced with text herein.

Lambay Island SAC lies 15.7km from the offshore ECC at the landfall and lies 14.8km from the array area. Sediment plumes caused by works within the array area and ECC are anticipated to be restricted to one tidal excursion as indicated by Figures A5.1 to Figure A5.10 which show the extent of the modelled sediment plumes and deposition as a result of foundation drilling and cabling. The sediment plume and deposition modelling does not extend into any SACs beyond trace levels with subsequent deposition being undetectable above background levels. No sediment plume or deposition extends into the Lambay Island SAC.

5.1.7.2.3 Conclusion of AEoI

Section 5.1.7.2.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of increased SSC and deposition from offshore activities will not result in an AEoI on the Lambay Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.7.3 Accidental Pollution (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for accidental pollution.

There are no other changes to this section. Refer to Section 5.1.7.3 in the 2024 NIS.

5.1.7.3.1 Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.1.7.3.1 in the 2024 NIS.

5.1.7.3.2 Assessment

There are no changes to this section. Refer to Section 5.1.7.3.2 in the 2024 NIS.

5.1.7.3.3 Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below is presented again for clarity.

It is concluded beyond reasonable scientific doubt that the impacts of accidental pollution from offshore activities will not have an AEoI on the Lambay Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.7.4 Introduction of Marine Invasive Non-Native Species (Construction, Operation and Decommissioning)

To reflect changes to Table 5.2, the following text from the 2024 NIS shall therefore be deleted:

As determined in Table 5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for the Introduction of Non-native Species.

And be replaced with:

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for Introduction of Marine INNS.

There are no other changes to this section. Refer to Section 5.1.7.4 in the 2024 NIS.

5.1.7.4.1 Mitigation

There are no changes to this section. Refer to Section 5.1.7.4.1 in the 2024 NIS.

5.1.7.4.2 Assessment

There are no changes to this section. Refer to Section 5.1.7.4.2 in the 2024 NIS.

5.1.7.4.3 Conclusion of AEoI

Section 5.1.7.4.3 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of the introduction of marine INNS will not result in an AEoI on Lambay Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.1.7.5 Changes to Physical Processes (Operation)

In response to RFI Sections 1(b) and 7(r), the changes to this section are based on the revised physical processes modelling presented in Appendices A11 and A12.

Section 5.1.7.5 shall be deleted and replaced with text herein.

As determined in Table A5.2, Project Option 1 has a greater potential for adverse effects on coastal and marine habitats than Project Option 2 for changes to physical processes.

The presence of foundations and scour protection introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways and associated effects on benthic ecology. Scour and increases in flow rates can change the characteristics of the sediment potentially making the habitat less suitable for some species. However, modelling as detailed in Appendix A11, indicates that changes in flow dynamics and associated scour effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects and no evident pathways to benthic QIs designated in Lambay Island SAC.

5.1.7.5.1 Assessment

There are no changes to this section. Refer to Section 5.1.7.5.1 in the 2024 NIS.

5.1.7.5.2 Conclusion of AEoI

Section 5.1.3.6.1 shall be deleted and replaced with text herein.

It is concluded beyond reasonable scientific doubt that the impacts of the changes to physical processes will not result in an AEoI on the Lambay Island SAC in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

5.2 Migratory Fish Species

5.2.1 Approach

In response to RFI Section 11 (g), operational WTG noise has been screened into the assessment. In addition, following design refinements, piling is no longer included in the construction strategy for the WTG and OSP foundations, and consequently impacts from impulsive sound generated during piling are no longer considered in the assessment. Therefore, Table 5.3 of the 2024 NIS requires amendments and is replaced with Table A5.3 below. Amendments are indicated by the grey shading in Table A5.3.

There are no further changes to this section, including no amendments required to Figure 5.12. Refer to Section 5.2.1 and Figure 5.12 in the 2024 NIS.

Table A5.3 European Sites Screened in for Migratory Fish Species (replaces Table 5.3 of the 2024 NIS).

European site name	Qualifying Interest	Impacts screened in for construction and decommissioning	Impacts screened in for the operational phase
River Boyne and River Blackwater SAC	Annex II species: River lamprey; and Atlantic salmon.	Underwater noise from UXO clearance and other noise sources; Offshore suspended sediment /deposition; and Offshore accidental pollution.	Offshore suspended sediment/deposition; Offshore accidental pollution; Electro-magnetic fields (EMF); Operational WTG noise.

5.2.1.1 Project Option 1 and Project Option 2 Determination of Greatest Effects

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements) WTGs are now proposed to be installed on jacket foundations with suction buckets (hereafter SBJs), while the OSP will be mounted on jacket foundations with either drilled pin piles or suction buckets. Consequently, piling is no longer included in the construction strategy. Seabed preparation activities have been restricted to boulder clearance and UXO clearance activities only, with no dredging activities now required. These changes have altered several design parameters, resulting in updates to the relevant characteristics of Project Option 1 and Project Option 2 for several impacts relevant to migratory fish QIs. Furthermore, in response to RFI Section 11(g), operational WTG noise has also been screened into the assessment. To reflect these amendments, the following text from Section 5.2.1.1 of the 2024 NIS shall be deleted:

The piling of foundations it anticipated to take place over a period of up to 9 months between spring and autumn 2028. Piling is expected to be split into individual piling events, with each event lasting a couple of days, which is followed by several piling free days. The duration of the impact would therefore be temporary (less than one year), and it would occur intermittently during the proposed piling activities.

In addition, to reflect the design amendments as detailed above, Table 5.4 of the 2024 NIS shall be updated and replaced with Table A5.4 below. Amendments are indicated by grey shading in Table A5.4

Table A5.4 Potential impacts and the Project Option which has the greatest potential for AEoI on Migratory Fish Receptors. The Projects Option that has the greatest potential for AEoI is Identified in Blue (replaces Table 5.4 of the 2024 NIS)

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of migratory fish
Construction			
Introduction of underwater noise during offshore construction activities	**UXO clearance** Pre-construction surveys have not yet been completed; therefore, it is not possible at this time to determine how many items of UXO will require clearance. **Pre-construction surveys** A series of pre-construction surveys will be undertaken in the array area and along the ECC. Geophysical surveys will utilise towed equipment such as side scan sonar, sub bottom profiler, multibeam echosounder, USBL and magnetometer. **Installation of WTG and OSP foundations** Two days per foundation = 100 installation days. WTG and OSP foundation installation Q1-Q4 2028. **Other construction noise** Noise emitted from construction vessels and arising during construction activities (e.g., seabed preparation, cable installation, and placement of scour and cable protection). IAC cable installation duration = 240 days. Export cable installation duration = 180 days. Total construction vessels = 70. Total number of return trips during construction = 3,032. Maximum vessels simultaneously onsite during construction = 50.	**UXO clearance** Pre-construction surveys have not yet been completed; therefore, it is not possible at this time to determine how many items of UXO will require clearance. **Pre-construction surveys** A series of pre-construction surveys will be undertaken in the array area and along the ECC. Geophysical surveys will utilize towed equipment such as side scan sonar, sub bottom profiler, multibeam echosounder, USBL and magnetometer. **Installation of WTG and OSP foundations** Two days per foundation = 72 installation days. WTG and OSP foundation installation Q1-Q4 2028. **Other construction noise** Noise emitted from construction vessels and arising during construction activities (e.g., seabed preparation, cable installation, and placement of scour and cable protection). IAC cable installation duration = 240 days. Export cable installation duration = 180 days. Total construction vessels = 70. Total number of return trips during construction = 2,504. Maximum vessels simultaneously onsite during construction = 47.	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The magnitude of the impact is defined by spatial and temporal extents of noise propagation resulting from pre-construction surveys, UXO clearance operations and construction activities including the installation of foundations and cables. Project Option 1 is considered to have the greatest temporal extent as more infrastructure will be installed, which will take longer to be installed. Note the construction programme is indicative at this stage as it is dependent on the contractor selected at construction stage.
Temporary increase in suspended sediment concentration (SSC) and	**Total volume of suspended sediment and sediment deposition 455,139m^3** **Drilling of OSP foundation**	**Total volume of suspended sediment and sediment deposition 395,139m^3** **Drilling of OSP foundation**	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.**

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of migratory fish
sediment deposition from offshore construction activities	Drill cuttings released during drilling of pin piles = 10,179m^3. **Cable trenching:** Installation of 111km of array cables = 333,000m^3. Installation of two export cables = 108,000m^3 (excluding the part of the export cable within the array area). **Subtidal HDD:** Exit pits total volume = 3,960m^3. Release of drilling muds (i.e. bentonite) during exit pit punch-out = 30 tonnes.	Drill cuttings released during drilling of pin piles = 10,179m^3. **Cable trenching:** Installation of 91km of array cables = 273,000m^3. Installation of two export cables = 108,000m^3 (excluding the part of the export cable within the array). **Subtidal HDD:** Exit pits total volume = 3,960m^3. Release of drilling muds (i.e. bentonite) during exit pit punch-out = 30 tonnes.	The magnitude of the impact is defined by the largest volume of sediments released during construction activities including seabed preparation activities, cable installation and drilling of OSP foundations. The greatest magnitude of impact for foundation installation results from the largest volume suspended relating to the drilling of pin piles during the installation of the OSP jacket foundations. One OSP will be constructed within the order limits. For cable installation, the greatest magnitude of impact results from the greatest volume installation using energetic means (CFE). This also assumes the largest number of cables and the greatest burial depth. Project Option 1 has a higher total volume than Project Option 2 (60,000m^3 more volume of materials) and presents the greatest magnitude of impact.
Accidental pollution from offshore construction activities	**Total volume of suspended sediment and sediment deposition 455,139m^3.** The impact considers the largest volume of sediments released during construction activities.	**Total volume of suspended sediment and sediment deposition 395,139m^3.** The impact considers the largest volume of sediments released during construction activities.	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by the largest volume of sediments that may be released into the water column during construction activities. Project Option 1 represents the option with the largest volumes of sediments released during construction and therefore the largest amount of contaminated sediment that may be released into the water column. The risk of accidental pollution as a result of spillages or collisions will be managed through the implementation of an Offshore EMP, and therefore no design scenarios are presented for accidental contamination.
Operational and Maintenance Phase			
Temporary increase in SSC and sediment deposition from	The volume of sediment released during the operational and maintenance phase and associated bed level changes would be less to	The volume of sediment released during the operational and maintenance phase and associated bed level	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.**

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of migratory fish
offshore maintenance activities	those experienced during the construction phase. **Repair and maintenance of WTG and OSP components** Once every 5 years per turbine **Repair and maintenance of scour protection for WTG and OSP foundations** Once every 10 years **Inter-array cable replacement, repair and reburial** Once every 5 years **Export cable repair and reburial** Once every 5 years	changes would be less to those experienced during the construction phase. **Repair and maintenance of WTG and OSP components** Once every 5 years per turbine **Repair and maintenance of scour protection for WTG and OSP foundations** Once every 10 years **Inter-array cable replacement, repair and reburial** Once every 5 years **Export cable repair and reburial** Once every 5 years	The Project Option with the greatest potential of AEoI is defined by the largest volume of sediments released into the water column during maintenance activities. The volume of sediment that could be suspended during maintenance activities has not been calculated but will be of much smaller quantity compared with that generated by construction and decommissioning activities. There is more infrastructure to maintain for Project Option 1, and therefore, the increase of SSC from operational activities will be greater from Project Option 1.
Accidental pollution from offshore maintenance activities	The impact considers the largest volume of sediments released during the operational and maintenance phase. Temporary increases in SSC will result from periodic jack-up vessel deployment, and cable repair, replacement and reburial activities (as listed above for 'Temporary increase in SSC and sediment deposition').	The impact considers the largest volume of sediments released during the operational and maintenance phase. Temporary increases in SSC will result from periodic jack-up vessel deployment, and cable repair, replacement and reburial activities (as listed above for 'Temporary increase in SSC and sediment deposition').	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by the largest volume of contaminated sediments released into the water column during maintenance activities. There is more infrastructure to maintain for Project Option 1, and therefore, the increase of SSC from operational activities will be greater from Project Option 1. The risk of accidental contamination as a result of spillages or collisions will be managed through the implementation of an offshore EMP, and therefore no design scenarios are presented for accidental contamination.
Potential barriers to movement through the presence EMF from inter-array and export cables	**Inter-array cables** Total length = 111km Nominal operating voltage 66kV or 132kV **Export cables** Two export cables, each with a length of 18km Nominal voltage of 220kV with High Voltage Alternating Current (HVAC) Target burial depth of all cables = 1m-3m	**Inter-array cables** Total length = 91km Nominal operating voltage 66kV or 132kV **Export cables** Two export cables, each with a length of 18km Nominal voltage of 220kV with High Voltage Alternating Current (HVAC) Target burial depth of all cables = 1m-3m	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by the total length of cables and the type and strength of currents to be applied.

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of migratory fish
Introduction of underwater noise and vibration leading to mortality, recoverable injury, TTS (Temporary Threshold Shift) and/or behavioural effects during the operational phase	**Operation of wind turbines** Noise generated by 49 WTGs. **Geophysical surveys to monitor the condition of WTGs and the OSP** Twice yearly for 1st year then annually for remaining lifetime. **Geophysical surveys to monitor the condition of IACs and export cables** Annually for first 3 years then every 3 years. **Maintenance activities** Noise generated during maintenance activities including noise from vessels. Total O&M vessels = 12. Total number of annual return trips during O&M = 1,261. Maximum vessels simultaneously onsite during O&M = 12.	**Operation of wind turbines** Noise generated by 35 WTGs. **Geophysical surveys to monitor the condition of WTGs and the OSP** Twice yearly for 1st year then annually for remaining lifetime. **Geophysical surveys to monitor the condition of IACs and export cables** Annually for first 3 years then every 3 years. **Maintenance activities** Noise generated during maintenance activities including noise from vessels. Total O&M vessels = 12. Total number of annual return trips during O&M = 1,055. Maximum vessels simultaneously onsite during O&M = 12.	**Project Option 1 represents the greatest magnitude of impact in relation to this impact.** The magnitude of the impact is defined by spatial and temporal extents of noise propagation resulting from O&M activities. Project Option 1 is considered to have the greatest temporal extent as more infrastructure will need to be maintained and the number of annual return vessel trips is higher, resulting in a longer period of noise exposure. In addition, Project Option 1 is considered to have the greatest spatial extent of noise propagation from operational turbines as more WTGs will be installed.
Decommissioning			
Introduction of underwater noise during offshore decommissioning activities	It is anticipated that the activities resulting in the impact will be similar to the construction phase excluding the removal of UXO. Therefore, it is expected that the potential for AEoI will be less than that during construction.	It is anticipated that the activities resulting in the impact will be similar to the construction phase excluding the removal of UXO. Therefore, it is expected that the potential for AEoI will be less than that during construction.	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by spatial and temporal extents of noise propagation resulting from the decommissioning of infrastructure. Under Project Option 1, more infrastructure will require decommissioning, with a similar indicative methodology for both project options. Therefore, Project Option 1 has the greatest magnitude of impact.
Temporary increase in SSC and sediment deposition from offshore decommissioning activities	It is anticipated that the activities resulting in the impact will be similar to the construction phase apart from seabed preparation works and excluding the removal of structures that may remain. Therefore, it is expected that the volume of sediments released during decommissioning activities and associated bed	It is anticipated that the activities resulting in the impact will be similar to the construction phase apart from seabed preparation works and excluding the removal of structures that may remain. Therefore, it is expected that the volume of sediments released during decommissioning activities and associated bed level	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by the largest volume of sediments released into the water column during the removal of

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of migratory fish
	level changes would be comparable or less to the amounts released during the construction phase.	changes would be comparable or less to the amounts released during the construction phase.	offshore infrastructure including foundations, cables, and scour and cable protection. The project option with the greatest potential for AEoI is assumed to be as per the construction phase, with all infrastructure removed in reverse-construction order.
Accidental pollution from offshore decommissioning activities	The impact considers the largest volume of sediments released during offshore decommissioning activities. The impacts are expected to be equivalent to those outlined for construction above.	The impact considers the largest volume of sediments released during offshore decommissioning activities. The impacts are expected to be equivalent to those outlined for construction above.	**Project Option 1 represents the greatest potential for AEoI of migratory fish in relation to this impact.** The Project Option with the greatest potential of AEoI is defined by the largest volume of contaminated sediments that may be released into the water column during the decommissioning phase. The risk of accidental contamination as a result of spillages or collisions will be managed through the implementation of an offshore EMP, and therefore no design scenarios are presented for accidental contamination.

There are no further changes to this section. Refer to Section 5.2.1.1 of the 2024 NIS.

5.2.2 Underwater Noise and Migratory Fish

As a result of project design refinements in response to the RFI(See Appendix A7: Design Refinements), piling is no longer included in the construction strategy for the WTG and OSP foundations. In addition, the Developer has committed to the use of NAS (e.g. bubble curtains or similar) as noise abatement if high order UXO clearance is required.

For clarity, Figure 5.13 and Figure 5.14 of the 2024 NIS shall be deleted as piling is no longer included in the construction strategy for WTG and OSP foundations.

Therefore, Section 5.2.2 of the 2024 NIS shall be deleted and replaced with the text herein:

Effects from underwater noise on migratory fish are most likely to occur during the construction phase with any effects during decommissioning and operation and maintenance activities expected to be less. As detailed in the SISAA, there are several activities that have the potential to introduce an effect receptor pathway for underwater noise, primarily from geophysical survey, UXO clearance, seabed preparation works, cable installation activities, and vessel operations. The largest impact ranges would result from the controlled explosion of UXO. High order UXO clearance would generate impulsive sounds, which are characterised by high acoustic energy levels with rapid rise time followed by rapid decay (Popper and Hawkins, 2019), though any UXO detonation would represent a short-term (i.e., seconds) increase in underwater noise. Construction noise arising, for example, from WTG foundation installation, vessel movements, and cable installation works would intermittently generate lower levels of non-impulsive sounds, which typically do not have a high peak pressure with rapid rise time.

Fish species can perceive underwater sounds by detecting either the acoustic pressure, or the particle motion element of a sound field. Acoustic pressure is the stress (or energy) level imposed on an individual through the sound and is measured in terms of force per unit area, typically either in Newton per square meter (N/m^2) or Pascal (Pa). In contrast, particle motion describes the back-and forth movement of water, substrate or other media as a sound wave passes; it contains information on the directionality of the sound wave and can be measured as the displacement (m), velocity (m/s), or acceleration (m/s^2) of particles in the sound field (Popper et al., 2014).

All fish species can sense particle motion, while only some groups can also detect sound pressure. Particle motion is primarily detected by fish via sensory organs within the inner ear called the otolith organs. These contain numerous mechanosensory hair cells that are in close contact with a dense calcium-carbonate structure, the otolith. Mechanical energy such as particle motion leads to differential motion between the otolith and the sensory hairs cells, resulting in the deformation of the hair cells and the subsequent release of neurotransmitters, which initiates the transmission of the sound signal to the brain (Popper and Hawkins, 2019; Putland et al., 2019). A secondary means by which fish can detect particle motion is the lateral line (Popper and Hawkins, 2019). Lateral lines run along the body and are comprised of sensory epithelial cells that can detect vibration and pressure changes over shore ranges. Lateral lines are known to be used to detect prey and for predator avoidance in the near field. The lateral line is considered to be most effective in the detection of particle motion over short ranges (Higgs and Radford, 2016).

Based on their sound detection mechanism and hearing capabilities, fish receptors are grouped by Popper et al. (2014) into the following functional hearing groups:

- Group 1: Fishes with no swim bladder or other gas filled chambers, which include all lamprey species. Group 1 species are sensitive only to particle motion and show sensitivity to a narrow band of frequencies. Some barotrauma may occur from the exposure to sound pressure (Popper et al., 2014);
- Group 2: Fishes with swim bladders or other gas filled body cavities that do not appear to play a role in hearing. This group includes salmonids, such as Atlantic salmon. Hearing in the species only involves particle motion, not sound pressure, but some barotrauma may occur from the exposure to sound pressure (Popper et al., 2014);
- Group 3: Fishes with swim bladders that are close but not intimately connected to the ear. These species can detect both particle motion and sound pressure across a wider frequency range than Group 1 and Group 2 species. These species are susceptible to barotrauma (Popper and Hawkins, 2019); and

- Group 4: Fishes in which hearing involves a swim bladder or other gas filled chambers and that have special structures mechanically linking the swim bladder to the ear. This group includes clupeids such as shad species, including twaite shad. These species are primarily sensitive to sound pressure, although they also detect particle motion. Group 4 species are susceptible to barotrauma and can sense sounds over a wider frequency range than the remaining groups (Popper and Hawkins, 2019).

The qualifying migratory fish interests screened into the assessment belong to hearing Group 1 (river lamprey) and hearing Group 2 (Atlantic salmon).

The range of potential effects from intense impulsive sound sources, such as underwater explosions, includes immediate death, permanent or temporary tissue damage, temporary shifts in hearing, and behavioural changes and masking effects (Popper et al., 2014). Tissue damage can result in eventual death or may make the fish less fit until healing occurs, resulting in lower survival rates. Hearing loss can also lower fitness until hearing recovers. The extent to which underwater sound might cause an adverse impact in a particular fish species is dependent upon the level of sound pressure or particle motion, its frequency, duration and/or repetition (Hastings and Popper, 2005). In general, physical injuries as a result of underwater noise are either related to a sudden, large pressure change (barotrauma) or to the total quantity of sound energy received by a receptor over a period of time.

To assess the likely significance of effects from underwater sounds on fish, potential effects are typically divided into the following categories:

- Mortality and potential mortal injury
  - Exposure to sound may result in instantaneous or delayed mortality. The potential for mortality or mortal injury is likely to only occur in extreme proximity to intense sounds, such as those emitted during UXO detonation.
- Recoverable injury
  - Recoverable injury is a survivable injury with full recovery occurring after exposure, although decreased fitness during the recovery period may result in increased susceptibility to predation or disease (Popper et al., 2014).
- Temporary threshold shift (TTS)
  - TTS is a temporary reduction in hearing sensitivity caused by exposure to intense sound or sounds of long duration (e.g., tens of minutes to hours). TTS has been demonstrated in some fishes, resulting from the loss or damage of sensory hair cells of the inner ear and/or damage to auditory nerves. However, sensory hair cells are constantly added to fishes and are replaced when damaged, and therefore the extent of TTS is of variable duration and magnitude. Normal hearing ability returns following cessation of the noise causing TTS, though this period is variable between species, lasting between a few hours to several days. When experiencing TTS, fish may have decreased fitness due to a reduced ability to communicate, detect predators or prey, and/or assess their environment (Popper et al., 2014; Popper and Hawkins, 2019).
- Behavioural effects
  - Behavioural effects as a result of construction related underwater noise include a wide variety of responses including startle responses (C-turn), strong avoidance behaviour, changes in swimming or schooling behaviour, or changes of position in the water column (e.g., Hawkins et al., 2014). Depending on the intensity, timing and duration of exposure there is the potential for some of these responses to lead to significant effects at an individual level (e.g., reduced fitness, increased susceptibility to predation) or at a population level (e.g., interference with foraging, avoidance or delayed migration to key spawning grounds) (e.g., Popper and Hawkins, 2019). Some behavioural responses may only be short-term with no wider effects for the individual or population, particularly once acclimatisation to the sound has taken place (Popper and Hawkins, 2019). There is also evidence that behavioural responses can vary depending on the activity in which the receptors are engaged during sound emission (Skaret et al., 2005).

- For example, Wardle et al. (2001) have shown that the interaction between hearing and vision can alter the response to a noise source, with fish responses to a seismic airgun being greater when the airgun was visible. Even when disturbed by a noise source, fish rapidly returned to the swimming track they were on prior to the noise source within seconds or minutes following exposure (Wardle et al., 2001). As such, the context in which a fish is exposed to underwater noise might be as important if not more so than the received sound level.

Quantitative and qualitative noise thresholds for the onset of mortality, recoverable injury and TTS in fish have been recommended by Popper et al. (2014) for a range of noise sources. Table 2.5 and Table 2.6 of the 2024 Underwater Noise Modelling Report (Appendix 6:Underwater Noise Modelling of the 2024 NIS) list the respective thresholds for continuous noise (emitted during activities such as drilling, foundation installation, cable laying and vessel operation) and explosions (UXO clearance). These thresholds represent current best practice sound exposure criteria for fish and have consequently been applied in the impact assessment.

For single impulse sound events, such as triggered explosions during the clearance of UXO, Popper et al. (2014) recommend the use of unweighted peak Sound Pressure Levels (SPLpeak) impact thresholds. SPL_{peak} represents the maximum sound energy level of individual impulse sounds measured as differential pressure from positive to zero. Thresholds for continuous sounds (e.g., from shipping) are presented as root-mean-square sound pressure levels (SPL_{rms}) measured over a specific time interval.

It is important to note that all impact thresholds in the Popper et al. (2014) guidelines are based on received sound pressure levels. However, as discussed previously, many species of fish only detect particle motion rather than acoustic pressure (e.g., Popper and Hawkins, 2019). Research into the effects of particle motion on fish is scarce, with no criteria for assessment currently available. Research on particle motion is continuing, with recent publications calling for updated criteria and guidelines on how to assess the risk of effects from changes in particle motion. In the absence of this, the Popper et al. (2014) guidance is still recommended as the most suitable reference source for assessing impacts of underwater noise including particle motion on fish (Popper and Hawkins, 2019). In this respect, it should also be noted that particle motion dominates the acoustic information within the area close to the sound source, while at larger distances from the sound source most of the acoustic information is dominated by the propagating pressure wave (Radford et al., 2012). This indicates that particle motion effects are contained within the sound pressure impact ranges, and therefore the lack of quantitative thresholds for particle motion is not expected to alter the conclusions of the assessment.

It should also be acknowledged that, where insufficient data exist (explosions, or continuous noise sources), Popper et al. (2014) recommend the use of qualitative thresholds. These categorise the risks of effects in relative terms as ‘high’, ‘moderate’ or ‘low’ at three distances from the sound source: near (10s of metres), intermediate (100s of metres), and far (1000s of metres), respectively. The assessment of migratory fish follows this approach and draws upon relevant guidance identified throughout. The largest concern for migratory fish (in offshore waters) relating to underwater noise, aside from injury and death, is underwater noise acting as a barrier to fish migration.

The two screened in migratory species that are QIs of the River Boyne and River Blackwater SAC, river lamprey and Atlantic salmon, are both true anadromous species and therefore have the potential to be present within the area affected by underwater noise from the proposed development whilst undertaking migrations or living at sea. The sensitivity of these QIs to impacts from underwater noise scoped in for the construction, operational and maintenance, and decommissioning phases are detailed in the following sections.

5.2.2.1 Underwater Noise from Piling

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements) piling is no longer included in the construction strategy for the WTG and OSP foundations. Therefore, Section 5.2.2.1 shall be deleted from the 2024 NIS.

5.2.2.2 Underwater Noise from UXO Clearance

The key change required to this section is the commitment from the Developer to use a NAS (e.g. bubble curtains or similar) as noise abatement if high-order UXO clearance is required. Reference to NAS has been included in relevant sections of the NIS, as requested in RFI Section 11(d). Therefore, the following text from Section 5.2.2.2 of the 2024 NIS shall be deleted:

High order clearance requires an external 'donor charge' initiator to detonate the explosive material in the UXO, producing a blast wave equivalent to the full detonation of the device. High order clearance of UXO would represents the greatest impact and has consequently been used for underwater noise modelling and the impact assessment for migratory fish species.

And be replaced with:

High order clearance requires an external 'donor charge' initiator to detonate the explosive material in the UXO, producing a blast wave equivalent to the full detonation of the device. High order clearance of UXO would represent the greatest impact for fish species and has consequently been used for underwater noise modelling and the impact assessment for the qualifying migratory fish species. If high-order clearance is required, NAS (e.g., bubble curtains or similar), will be deployed in accordance with the commitments set out in Appendix A10 Marine Mammal Mitigation Protocol (MMMP). These systems will reduce the transmission of underwater noise and therefore lessen potential impacts on migratory fish species.

There are no further changes to this section. Refer to Section 5.2.2.2 of the 2024 NIS.

5.2.2.3 Underwater Noise from Other Noise Sources

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements), underwater noise from the installation of SBJs is also given due consideration in the assessment. Therefore, the following text from Section 5.2.2.3 of the 2024 NIS shall be deleted:

Besides piling and the detonation of UXO, there will be several other construction activities that will produce underwater noise, namely dredging, drilling, cable laying, rock placement, geophysical and geotechnical surveys, and vessel noise. These activities produce non-impulse (continuous) sounds and may occur either alongside piling or separately.

Sound levels associated with construction activities have received considerably less attention and very little monitoring data is available. Among the construction activities, suction dredging is predicted to generate the largest sound levels of 186dB re 1µPa at 1m SELRMS (Underwater Noise Modelling Report). Rock placement is generally considered to be the nosiest external protection method, since the rocks fall down a fall pipe from the rock placement vessel, which may result in underwater noise. Other external protection measures such as mattresses and grout bags are typically placed onto the seabed using an ROV or crane, and as such these are unlikely to result in any significant underwater noise. Nedwell and Edwards (2004) found that the noise of rock placement was not detectable over the vessel noise, since there was no determinable difference between measurements taken when rock placement was ongoing, and when the vessel was holding station without placing rock. The estimated source levels of underwater noise from rock placement at the proposed development is 172dB re 1 µPa at 1m, and the noise emitted from large vessels is estimated at 168dB re 1µPa at 1 m (Underwater Noise Modelling Report). Vessel noise would occur from jack-up vessels during the piling of foundations and WTG installations and from other large and medium sized vessels that carry out other construction tasks and anchor handling. Additional small vessels will be required for crew transport and maintenance on site.

And be replaced with:

Besides the detonation of UXO, there will be several other construction activities that will produce underwater noise, namely the installation of suction bucket foundations, drilling of foundations, cable laying, the installation of cable and scour protection, geophysical surveys, and vessel noise. These activities all produce non-impulse (continuous) sounds.

Sound levels associated with construction activities have received considerably less attention and very little monitoring data is available. Among the construction activities associated with the proposed development, trenching and rock placement (for cable or scour protection) are predicted to generate the largest sound levels of potentially 172dB re 1µPa at 1m SEL_{RMS} (Appendix 6 of the 2024 NIS).

Rock placement using a fall pipe is generally considered to be the nosiest external protection installation method, since the rocks fall down a fall pipe from the rock placement vessel, which may result in underwater noise. Other external protection measures such as mattresses and grout bags are typically placed onto the seabed using an ROV or crane, and as such these are unlikely to result in any significant underwater noise. Nedwell and Edwards (2004) found that the noise of rock placement was not detectable over the vessel noise, since there was no determinable difference between measurements taken when rock placement was ongoing, and when the vessel was holding station without placing rock. The estimated source levels of underwater noise from rock placement at the proposed development is 172dB re 1 µPa at 1m, and the noise emitted from large vessels is estimated at 168dB re 1µPa at 1 m (Appendix 6 of the 2024 NIS). Vessel noise would occur from jack-up vessels during WTG installations and from other large and medium sized vessels that carry out other construction tasks and anchor handling. Additional small vessels will be required for crew transport and maintenance on site.

WTG foundations will be installed with multi-leg SBJs, and the OSP will be installed on jacket foundations with either pin piles (using drilling) or suction buckets. Underwater noise of a continuous nature will be generated from the installation of SBJ through the use of vacuum pumps to extract water from within the buckets, which creates a pressure to force the foundations into the seabed. As detailed in Appendix A13: Underwater Noise Modelling Report, there is limited empirical evidence on the underwater noise generated during the installation of SBJ foundations. Koschinsky and Lüdemann (2020) provided monitoring data for the installation of SBJs at the Borkum Riffgrund 2 OWF in Germany. The study reported no detectable noise 750m from the vacuum pumps above a background noise level of 137dB $L_{eq,50}$ (equivalent to $L_{p,RMS}$), however, it was noted that background noise recorded during the installation was influenced by other construction activities.

More recently, 114 WTGs were installed on three-legged steel jackets using suction bucket caissons at Seagreen between 2021 and 2023. Underwater noise monitoring within the Seagreen array area detected a 3-5 dB median increase in the 0.1-1 kHz frequency band during hours of suction compared to baseline (Chudzinska et al., 2026). However, the data also showed that when comparing suction and non-suction hours within a construction day, the differences were relatively minor, suggesting that vessel traffic, mobilisation, and ancillary operations contribute substantially to the overall increase in underwater noise on construction days.

Weilgart (2023) provides a review of best available technologies and environmental practices for mitigating the noise from pile driving. This includes a section on SBJs which states that SBJ installation noise "barely exceeds background levels". Based on the presented evidence, it is concluded that the noise produced by the suction bucket pumps is not considered a significant UWN source during SBJ installation, with vessel operations considered the main contributor (Appendix A13: Underwater Noise Modelling Report).

Drilling of piles for the OSP will also produce continuous underwater noise generated by rotating equipment such as the drill string, pumps and generators. Field data from various drilling operations including pile installation suggest that sound levels during these activities may potentially reach 169dB re 1µPa @ 1 m (RMS) (Appendix 6 of the 2024 NIS).

There are no further changes to this section. Refer to Section 5.2.2.3 of the 2024 NIS.

5.2.2.4 Underwater Noise Generated by Wind Turbines (Operational)

In Section 11 (g) of the RFI, An Bord Pleanála requested the Developer to consider the potential for disturbance to fish from underwater noise generated by wind turbines during the operational phase of the proposed development.

This impact has been screened into the NIS as detailed in the SISAA, and subsequently this impact has been added to the Stage 2 assessment as a new Section (Section 5.2.2.4). The below text does not replace any text from the 2024 NIS.

The main source of underwater noise from operational WTGs will be mechanically generated vibration from rotating turbine machinery, such as the rotor blade, the gearbox and the generator, which will be transmitted through the tower and foundation into the water column (Bellman et al., 2023).

For bottom-fixed OWFs, the produced continuous sounds are low frequency, with harmonics mostly below 1kHz (Bellmann et al., 2023; Stöber and Thomsen, 2021; Wahlberg and Westerman, 2005), and as such are likely to be audible to fish and shellfish receptors.

Most studies conducted on turbine noise from bottom-fixed OWFs to date were conducted at wind farms with relatively small-sized, geared WTGs (Tougaard et al., 2020). Using data from bottom-fixed foundation WTGs of <1 to 6 MW capacity, Tougaard et al. (2020) showed that as WTG size increases, the underwater sound pressure level also increases. Stöber and Thomsen (2021) also noted a difference in underwater noise levels generated by geared versus direct-drive WTGs, with one example of the latter being 10dB quieter than the average geared WTG of equivalent capacity. Modelling of a generic 6MW operational WTG installed on jacket, monopile and gravity foundations demonstrated strong tonal peaks close to the structures, associated with gearbox and generator components. These tonal components are strongly localised and dissipate rapidly beyond tens of metres, although this is influenced by wind speed and sea state (Marmo et al., 2013).

A recent study of wind farms in German waters provides the most comprehensive assessment to date of operational noise from bottom-fixed foundation WTGs (Bellmann et al., 2024). Results draw upon noise measurements from 24 operational wind farms with WTGs of 2.3 to 8.4MW capacity and including multiple foundation types. Background noise measurements were also collected. The authors noted the low-frequency dominance of noise emitted from operational WTGs, with tonal elements in the 25-160Hz range and, in some case, harmonics up to a few hundred Hz. These low frequency sounds were only dominating the broadband sound pressure level in the immediate vicinity of the WTGs (approx. 100m) and when the WTGs were operating close to their nominal power. Mean sound pressure levels at nominal power varied between 112 and 131dB (mean across study of 120dB).

Bellmann et al. (2024) did not find a strong correlation between WTG capacity and noise levels. Contrary to previous studies (Tougaard et al., 2020), there was a tendency for lower noise emissions from WTGs with higher nominal capacity. The authors suggested that this observation may be explained by larger, newer WTG designs generally featuring direct-drive instead of a gearbox, with direct-drive tending to be 'quieter' and with the frequency of noise emissions lower ($\leqslant$80Hz) than that of geared WTGs. Estimates of operational noise levels from larger WTGs were provided for the Rampion 2 OWF development (located in UK waters) to inform the EIA of the project, by extrapolating existing *in situ* data (Rampion 2 Wind Farm, 2024). For representative WTGs of 10 and 18 MW, this resulted in estimated source noise levels of 151.6 and 162.7 dB re 1 μPa (SPL_{RMS}) at 1 m, respectively. The maximum rotor diameter proposed for Rampion 2 (295 m) is comparable to the maximum rotor diameter proposed for NISA at 250 m for Project Option 1 and 276 m for Project Option 2; however, it should be noted that the extrapolated fit is speculative and does not take account of potential noise reductions when using larger, direct-drive (gearbox-less) designs noted above. From a broader spatial perspective, Bellmann et al. (2024) reported that tonal, low-frequency components of WTG noise could usually be measured up to a few kilometres outside of wind farm arrays, albeit mixing with general background noise which was mostly dominated by non OWF related shipping traffic.

Considering the above, the underwater noise associated with the operational phase of the proposed development has a potential to alter the acoustic soundscape within the immediate vicinity of the WTGs. Depending on the design of the WTG (direct drive or geared), environmental conditions (e.g., wind speed, water depth) and species-specific hearing capabilities of fish, the generated underwater noise may be audible to fish at distances varying from a few metres to a few kilometres (e.g., Bergström et al., 2013; Marmo et al., 2013; Wahlberg and Westerberg, 2005).

The potential responses of fish to operational turbine noise are poorly documented. The sound levels generated by WTGs during operation are below levels known to cause physical injury to fish (Bergström et al., 2013; Mooney et al., 2020; Wahlberg and Westerberg, 2005) but lie within the range that may cause TTS in some species (Mooney et al., 2020). Tougaard et al. (2020) present a formula, based on the published data for the operational wind farms, that allows broadband noise level to be estimated based on the application of wind speed, WTG size (by nominal power output) and distance from the WTG.

Application of this formula against the Popper et al. (2014) sound exposure criteria for continuous noise suggest that the threshold for the onset of TTS in the most hearing-sensitive fish (fish hearing group 3 and 4) would be reached less than 50m from the noise source (Appendix 6 of the 2024 NIS). However, for TTS to occur, an animal would have to stay within the immediate vicinity of the turbine for 12 hours continuously.

Moreover, the formula by Tougaard et al. (2020) is largely derived from data from geared WTGs, and therefore it can be anticipated that the operation of a direct drive WTG will result in smaller disturbance ranges.

Whilst limited, the available data provide an indicator that operational wind WTGs have the potential to disturb fish within very close proximity of the WTG structures, as postulated by Wahlberg and Westerberg (2005). However, the available measurement data is mostly for smaller WTGs (up to 6MW), and it would be expected that larger wind WTGs would result in different acoustic characteristics, with foundation type also having an influence on the acoustic characteristics of the noise radiated from the structure.

In situ studies on potential behavioural effects of fish receptors are limited, with the few available studies indicating that responses vary depending on both the species and individuals within a species (reviewed in Mooney et al., 2020). For example, Bergström et al. (2013) examined the relationship between fish distribution patterns and the local acoustic environment at the Lillgrund wind farm in Swedish waters. The authors found a lower degree of aggregation close to the wind turbines at higher noise levels for eelpout *Zoarces viviparus* and European eel but not for cod. The study also concluded that noise levels within some 100m from the turbine were high enough to potentially cause direct escape behaviour or possible masking of communication. A study by Westerberg (1994, reviewed in Mooney et al., 2020) recorded decreased catch rates of Atlantic cod and roach *Rutilis rutilus* within 100m of an operating wind turbine compared to when the turbine was stopped. In contrast, cod tagged within a Dutch OWF did not display significant changes in behaviour or avoidance during the operation of turbines when compared to periods when turbines were out-of-order (Winter et al., 2010). Long-term *in situ* measurements at ~10 m from an operational turbine in Taiwan (from 2017–2018) found no detectable influence on seasonal fish chorusing patterns, indicating no observed alteration of seasonal vocalisation behaviour at close range (Siddagangaiah et al., 2024), although it should be acknowledged that these findings were based on the operation of a single turbine.

Underwear noise from operational turbines is predicted to be continuous and of long-term duration (during the lifetime of the proposed development). Considering the information presented above, it is concluded that there is potential for operational turbine noise to affect a small proportion of some receptor populations within the vicinity of the WTGs, predominantly through disturbance; however, any disturbance effects are unlikely to lead to the exclusion of fish within the array area, and as discussed above, would, at most, affect a small proportion of receptor populations within the immediate vicinity of infrastructure and potentially within the near-field for the most hearing-sensitive species.

5.2.3 River Boyne and River Blackwater SAC

5.2.3.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.2.3.1 of the 2024 NIS.

5.2.3.2 River lamprey

Underwater Noise from Piling (Construction)

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements), piling is no longer included in the construction strategy for the WTG and OSP foundations. Section 5.2.3.2.1 shall therefore be removed from the 2024 NIS.

Underwater Noise from UXO Clearance (Construction)

Mitigation

The key change required to this section is the commitment from the Developer to use a NAS (e.g. bubble curtains or similar) as noise abatement if high-order UXO clearance is required. Reference to NAS has been included in relevant sections of the NIS, as requested in RFI Section 11(d). Therefore, the following text in Section 5.2.3.3.3 of the 2024 NIS shall be deleted:

Given the high intensity nature of sounds generated during UXO detonation and their potential for adverse effects on marine species, mitigation is included by implementation of specific measures should UXO clearance be required.

The clearance of UXO will follow a mitigation hierarchy with high order detonation of UXO only taken place where avoidance, relocation, removal or low order deflagration is not possible. To minimise the area affected by underwater noise and the sound levels received by marine species at any one time, any UXO detonations will not occur within the same 24-hour window as piling operations, and where there may be clusters of UXO requiring detonation, these UXO will not be detonated at the same time.

In addition, where auditory injury impact ranges for marine mammals from the use of high order detonations are greater than what can be mitigated using MMP/PAM watch and ADD (e.g., 120kg UXO charge weight plus donor weight), noise abatement will be used to attenuate the sound emitted by a detonation. While the primary driver for the use of noise abatement systems is to mitigate effects on marine mammals, their use will also reduce the likelihood of potential lethal or recoverably physical injuries in fish, including river lamprey. In addition, use of NAS will also likely reduce the number of individuals at risk of TTS or behavioural reactions, through a reduction in the potential impact zones.

And be replaced with:

Given the high intensity nature of sounds generated during UXO detonation and their potential for adverse effects on marine species, mitigation is included by implementation of specific measures should UXO clearance be required. The clearance of UXO will follow a mitigation hierarchy with high order detonation of UXO only taken place where avoidance, relocation, removal or low order deflagration is not possible. To minimise the area affected by underwater noise and the sound levels received by marine species at any one time, where there may be clusters of UXO requiring detonation, these UXO will not be detonated at the same time. If high order clearance is required, NAS (e.g., bubble curtains or similar) will be deployed to attenuate the sound emitted by a high order detonation (Appendix A10: MMMP). While the primary driver for the use of noise abatement systems is to mitigate effects on marine mammals, their use will also reduce the likelihood of potential lethal or recoverably physical injuries in fish, including river lamprey. In addition, use of NAS will also likely reduce the number of individuals at risk of TTS or behavioural reactions, through a reduction in the potential impact zones.

The MMMP has been updated and is presented in Appendix A10:MMMP.

Assessment

There are no changes to this section. Refer to Section 5.2.3.2.2 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.2.2 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that underwater noise from UXO clearance will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the river lamprey QI for either Project Option 1 or Project Option 2.

Underwater Noise from Other Noise Sources (Construction and Decommissioning)

Assessment

There are no changes to this section. Refer to Section 5.2.3.2.3 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.2.3 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that underwater noise from other noise sources will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the river lamprey QI for either Project Option 1 or Project Option 2.

Underwater Noise Generated by Wind Turbines (Operation)

In Section 11 (g) of the RFI, An Bord Pleanála requested the Developer to consider the potential for disturbance to fish from underwater noise generated by wind turbines during the operational phase of the proposed development. Therefore, this impact has been added to the assessment (as Section 5.2.3.2.4) and does not replace any text from the 2024 NIS.

Assessment

There is currently no evidence that non-impulsive (i.e., continuous) sounds such as those generated by operational wind turbines cause mortality or potential mortal injury in fish (Popper et al., 2014). The risk of recoverable injuries in Group 1 fish (e.g. lamprey) from continuous noise is also considered to be low, at all distances from the noise source, while the risk of TTS is likely to be moderate, near (10s of meters) to the noise source and low at intermediate (100s of meters) and far (1,000s meters) distances. These risk estimates align with the modelled estimates (Appendix 6 of the 2024 NIS) for fish receptors of higher sensitivity to underwater noise (Groups 3 and 4) which suggest the potential for fish to experience recoverable injury and TTS at less than 50m from the noise source, if the receptor remained in the immediate vicinity of the turbine for 48 hours (recoverable injury) and 12 hours (TTS) continuously. The likelihood of behavioural responses is considered to be moderate at near and intermediate distances and low at far field distances from the noise source (Popper et al., 2014).

The River Boyne and River Blackwater SAC is located 20.9km from the array area. Based on current evidence (Popper et al., 2014) and factoring in the lower noise levels compared to piling, no mortality or potential mortal injury, recoverable injury and TTS are predicted for river lamprey within the SAC from underwater noise from operational turbines, with the risk of behavioural reactions considered to be at most low. Therefore, the species is considered in the context of its presence and distribution when out at sea rather than in the site itself.

River lamprey have restricted hearing abilities (given their lack of a swim bladder) and, given their preference for estuarine areas during their marine stage (Maitland, 2003), they are unlikely to occur in areas where TTS or behavioural responses might be triggered. Underwater noise from operational turbines is predicted to be long-term (over the lifetime of the proposed development) and continuous , but any effects on river lamprey would be indirect and limited to very close proximity to individual turbines within the array area. Given their mobility and tendency to occupy coastal and estuarine waters rather than offshore turbine locations, river lamprey are unlikely to remain within any near-field noise zone for durations sufficient to result in auditory effects or sustained behavioural disruption.

Conclusion of AEoI

Based on the above, it is concluded beyond reasonable scientific doubt that underwater noise from operational WTGs will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the river lamprey QI for either Project Option 1 or Project Option 2.

Increase in SSC and Sediment Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (see Appendix A7:Design Refinements) have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets, furthermore dredging activities across the site have also been removed from the proposed development design. These changes to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in NIS Appendix A11: Marine Physical Processes Numerical Modelling.

Due to these refinements in the proposed development design, Project Option 1 now represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. This has been amended and reflected where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: no AEoI of river lamprey designated in the River Boyne and River Blackwater SAC.

To reflect these changes, the following text from Section 5.2.3.2.4 of the 2024 NIS shall therefore be deleted:

As determined in Table 5.4, Project Option 2 has a greater potential for increases in SSC and associated sediment deposition compared to Project Option 1 during construction and decommissioning activities.

During the operational phase, Project Option 1 has a greater potential for increases in SSC and sediment deposition; however, the volume of sediment released during the operational and maintenance phase and associated bed level changes would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 2 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 1 when considering increases in SSC and sediment deposition. Temporary increases in SSCs and associated sediment deposition are expected from offshore construction activities that disturb the seabed (e.g. seabed preparation works, foundation and cable installation) and from the release of dredged material and drill cuttings. In addition, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and during the removal of infrastructure during decommissioning. Increased turbidity and sediment deposition may lead to smothering of sensitive fish receptors, or barrier effects, which may impede migration.

And be replaced with:

As determined in Table A5.4, Project Option 1 has a greater potential for increases in SSC and associated sediment deposition compared to Project Option 2 during construction and decommissioning activities. During the operational phase, Project Option 1 also has a greater potential for increases in SSC and sediment deposition, as there is more infrastructure to maintain; however, the volume of sediment released during the operational and maintenance phase and associated bed level changes would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 1 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 2 when considering increases in SSC and sediment deposition.

Temporary increases in SSCs and associated sediment deposition are expected from offshore construction activities that disturb the seabed (e.g. cable installation) and from the release of drill cuttings during the drilling of pin-piles for jacket foundations. In addition, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and during the removal of infrastructure during decommissioning. Increased turbidity and sediment deposition may lead to smothering of sensitive fish receptors, or barrier effects, which may impede migration.

The installation of the suction buckets will involve the lowering of the foundation through the water column until touch down onto the seabed, where self-weight penetration will allow embedment of the buckets into the soil. The lowering of the SBJ is a carefully controlled process, whereby the buckets are vented on the top to allow escape of water, both in the lowering through the water column and the self-penetration phase. The suction installation will involve the pumping out water during the installation of the suction buckets (for the WTG foundations) has the potential to draw out fine sediments from the seabed, although this effect is generally most pronounced in highly permeable coarser-grained deposits. In the case of low permeability finer-grained sediments, (which are evident in the shallow soil layers that underlie the proposed development site), the consequence of seepage flow is anticipated to be minimal. Accordingly, the installation of SBJ across the offshore array area is not expected to lead to any locally elevated levels of turbidity. Therefore, this pathway has not been considered further in the assessment.

Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.2.3.2.4 of the 2024 NIS.

Assessment

To reflect the outputs of the revised sediment plume modelling, undertaken to reassess the effects on SSC and deposition from the changes to the proposed development design, the following text from the 2024 NIS shall be deleted:

Sediment plumes are expected to quickly dissipate after cessation of the construction activities due to settling and wider dispersion, with SSCs reducing to background levels within a couple of tidal cycles The highest SSCs would be confined to the points of discharge, such as around WTG locations and cable trench lines.

In addition, construction activities are largely expected to be carried out on a sequential basis with minimal opportunity for successive periods of sediment disturbance to develop overlapping sediment plumes (i.e., plumes are expected to fully disperse with material settling out of suspension prior to the occurrence of a subsequent sediment disturbance event).

And be replaced with:

Sediment plumes are expected to quickly dissipate after cessation of the construction activities due to settling and wider dispersion, with SSCs reducing to background levels within a couple of tidal cycles The highest SSCs (500-1,800mg/l) would be confined to the points of discharge, such as around drilled pin piles (should these be used for the OSP) and cable trench lines. Sediment deposition would consist of coarser material deposited close to the source (i.e., around the area of disturbance), with the deposition of finer material decreasing from the point of release. In addition, construction activities are largely expected to be carried out on a sequential basis with minimal opportunity for successive periods of sediment disturbance to develop overlapping sediment plumes (i.e., plumes are expected to fully disperse with material settling out of suspension prior to the occurrence of a subsequent sediment disturbance event due to a different activity).

Conclusion of AEoI

The key change to this section is the amendment of the design option with the greatest magnitude of impact with respect to impacts from increased SSC and deposition. The following text from the 2024 NIS shall therefore be deleted:

Given the temporary, intermittent and localised increases in SSCs and considering the river lamprey's adaptation to naturally turbid estuarine conditions, any local changes in the species' distributions resulting from avoidance behaviour while at sea are expected to be temporary and not discernible from baseline conditions. It is therefore concluded that increases in SSC and associated sediment deposition will have no AEoI of river lamprey designated in the River Boyne and River Blackwater SAC for Project Option 2.

Based on the increased risk of effects of Project Option 2, it is considered that the same conclusion of no AEoI would apply to Project Option 1.

And be replaced with:

Given the temporary, intermittent and localised increases in SSCs and considering the river lamprey's adaptation to naturally turbid estuarine conditions, any local changes in the species' distributions resulting from avoidance behaviour while at sea are expected to be temporary and not discernible from baseline conditions.

It is therefore concluded beyond reasonable scientific doubt that increases in SSC and associated sediment deposition will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the lamprey QI for either Project Option 1 or Project Option 2.

Accidental Pollution (Construction, Operation and Decommissioning)

As a result of design refinements in response to the RFI(See Appendix A7: Design Refinements), Project Option 1 now represents the greatest magnitude of impact with regards to accidental pollution during all phases of the development. Therefore, the following text in Section 5.2.3.2.5 of the 2024 NIS shall be deleted:

As determined in Table 5.4, Project Option 2 has the greater potential for adverse effects on migratory fish species compared to Project Option 1 with regards to accidental pollution during construction and decommissioning activities. During the operational phase, Project Option 1 has a greater potential for the release of contaminated sediments; however, the volume of sediment released during the operational and maintenance phase would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 2 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 1 with regards to accidental pollution.

And be replaced with:

As determined in Table 5.4, Project Option 1 has the greater potential for adverse effects on migratory fish species compared to Project Option 2 with regards to accidental pollution during construction, operational and decommissioning activities.

Mitigation
The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.2.3.2.5 of the 2024 NIS.

Assessment
The key change required to this section is the inclusion of new site-specific survey data. Updates have been made to reflect the outputs of the 2025 site-specific benthic ecology survey across the array area and ECC (Appendix A4: Benthic Ecology Survey Report 2025), which included contaminants sampling. Therefore, the following paragraphs within Section 5.2.3.2.5 of the 2024 NIS shall be deleted:

Site-specific contaminants sampling provided confirmation that the levels of sediment-bound contaminants are low within the array area and ECC when compared to background concentrations. Sediment-bound contaminants are likely to be rapidly diluted by tidal currents, and increased bioavailability that could potentially result in adverse eco-toxicological effects in fish is therefore not expected. In addition, very small concentrations of contaminants enter the dissolved phase, with the majority adhering to sediment particles when temporarily entering suspension in the water column. Partition coefficients may be applied to estimate the concentration of the contaminants entering the dissolved phase, which will result in a reduction of several orders of magnitude than the concentrations associated with suspended sediments. As such, it is considered highly unlikely that the Maximum Allowable Concentration Environmental Quality Standards threshold, as prescribed by the Irish Action Levels (Marine Institute, 2006, 2009), will be exceeded for any of the substances as a result of disturbing sediments during construction, maintenance and decommissioning activities. In addition, modelling indicates no sediment plume, or deposition will extend into the River Boyne and River Blackwater SAC beyond trace levels.

And be replaced with:

Site-specific contaminants sampling undertaken in 2022, 2023 (Natural Power, 2022, 2023) and 2025 (AQUAFACT, 2025) provided confirmation that the levels of sediment-bound contaminants are low within the array area and ECC when compared to background concentrations. None of the samples taken in the array area exceeded the Irish Lower Action Levels in all surveys. In the ECC, in the 2023 survey, the Lower Irish Action Levels were exceeded for cadmium in two samples and for zinc in one sample. Levels of Polycyclic Aromatic Hydrocarbon (PAH) and Total Hydrocarbon (THC) were below the Irish Lower Action Levels for all sampling sites. No exceedances were recorded at any stations along the ECC in the 2025 survey.

Sediment-bound contaminants are likely to be rapidly diluted by tidal currents, and increased bio-availability that could potentially result in adverse eco-toxicological effects in fish is therefore not expected. In addition, very small concentrations of contaminants enter the dissolved phase, with the majority adhering to sediment particles when temporarily entering suspension in the water column. Partition coefficients may be applied to estimate the concentration of the contaminants entering the dissolved phase, which will result in a reduction of several orders of magnitude than the concentrations associated with suspended sediments. As such, it is considered highly unlikely that the Maximum Allowable Concentration Environmental Quality Standards threshold, as prescribed by the Irish Action Levels (Marine Institute, 2006, 2009), will be exceeded for any of the substances as a result of disturbing sediments during construction, maintenance and decommissioning activities. In addition, modelling indicates no sediment plume or deposition will extend into the River Boyne and River Blackwater SAC beyond trace levels.

Conclusion of AEoI

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements), Project Option 1 now represents the greatest magnitude of impact with regards to accidental pollution during all phases of the development. Therefore, the following text of Section 5.2.3.2.5 of the 2024 NIS shall be deleted:

Given the fates of the sediment plumes, the low concentrations of sediment-bound contaminants in the offshore development area, and the low likelihood of increased bio-availability of contaminants in the water column, it is concluded that the release of sediment-bound contaminants during construction, maintenance and decommissioning activities will have no AEoI of river lamprey designated in the River Boyne and River Blackwater SAC for Project Option 2.

Based on the increased risk of effects of Project Option 2, it is considered that the same conclusion of no AEoI would apply to Project Option 1.

And be replaced with:

Given the fates of the sediment plumes, the low concentrations of sediment-bound contaminants in the offshore development area, and the low likelihood of increased bio-availability of contaminants in the water column, it is concluded beyond reasonable scientific doubt that the release of sediment-bound contaminants will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the river lamprey QI for either Project Option 1 or Project Option 2.

EMF (Operation)

There are no changes to this section. Refer to Section 5.2.3.2.6 of the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.2.3.2.6 of the 2024 NIS.

Assessment

There are no changes to this section. Refer to Section 5.2.3.2.6 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.2.6 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that EMFs generated by subsea cables associated with the proposed development will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the river lamprey QI for either Project Option 1 or Project Option 2.

5.2.3.3 Atlantic Salmon

Underwater Noise from Piling (Construction)

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements) piling is no longer included in the construction strategy for the WTG and OSP foundations. Section 5.2.3.3.1 shall therefore be removed from the 2024 NIS.

Underwater Noise from UXO Clearance (Construction)

Mitigation

The key change required to this section is the commitment from the Developer to use a NAS (e.g. bubble curtains or similar) as noise abatement if high order UXO clearance is required. Therefore, the following text of Section 5.2.3.3.2 of the 2024 NIS shall be deleted:

The clearance of UXO will follow a mitigation hierarchy with high order detonation of UXO only taken place where avoidance, relocation, removal or low order deflagration is not possible. To minimise the area affected by underwater noise and the sound levels received by marine species at any one time, any UXO detonations will not occur within the same 24-hour window as piling operations, and where there may be clusters of UXO requiring detonation, these UXO will not be detonated at the same time.

In addition, where auditory injury impact ranges for marine mammals from the use of high order detonations are greater than what can be mitigated using MMP/PAM watch and ADD (e.g., 120kg UXO charge weight plus donor weight), noise abatement will be used to attenuate the sound emitted by the detonation. While the primary driver for the use of NAS is to mitigate effects on marine mammals, its use will also reduce the likelihood of potential lethal or recoverably physical injuries in fish, including Atlantic salmon. In addition, the use of noise abatement will also likely reduce the number of individuals at risk of TTS or behavioural reactions, through a reduction in the potential impact zones.

And be replaced with:

The clearance of UXO will follow a mitigation hierarchy with high order detonation of UXO only taken place where avoidance, relocation, removal or low order deflagration is not possible. To minimise the area affected by underwater noise and the sound levels received by marine species at any one time, where there may be clusters of UXO requiring detonation, these UXO will not be detonated at the same time. If high order clearance is required, NAS (e.g. bubble curtains or similar) will be deployed to attenuate the sound emitted by a high order detonation. While the primary driver for the use of noise abatement systems is to mitigate effects on marine mammals, their use will also reduce the likelihood of potential lethal or recoverably physical injuries in fish, including Atlantic salmon. In addition, use of NAS will also likely reduce the number of individuals at risk of TTS or behavioural reactions, through a reduction in the potential impact zones.

The MMMP has been updated and is presented in Appendix A10: MMMP.

Assessment

This section has been updated to include reference to the most recent data to ensure the NIS remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following text of Section 5.2.3.3.2 of the 2024 NIS shall be deleted:

Long-term monitoring data suggest that since the 1980's the number of wild salmon returning to Irish rivers has decreased from 15-20% to only 5%, indicating a decrease in salmon survival in the marine environment (Millane et al., 2023). This decline closely mirrors global trends of declining salmon stocks. Moreover, data from fish counters indicate that the salmon stock of the River Boyne is currently below river-specific conservation limits (Millane et al., 2023).

And be replaced with:

Long-term monitoring data suggest that since the 1980s the number of wild salmon returning to Irish rivers has decreased from 15-20% to approximately 5%, indicating a decline in salmon survival in the marine environment (Millane et al., 2023). Recent assessments show that the River Boyne salmon stock is currently below its river-specific conservation limit (Technical Expert Group on Salmon (TEGOS), 2025), with fish counter returns in 2025 being below mean counts from preceding years for the River Boyne (TEGOS, 2025). This decline closely mirrors global trends of declining salmon stocks.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.3.2 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that underwater noise from UXO clearance will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

Underwater Noise from Other Noise Sources (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.2.3.3.3 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.3.3 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that underwater noise from other noise sources will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

Underwater Noise Generated by Wind Turbines (Operation)

In Section 11 (g) of the RFI, An Bord Pleanála requested the Developer to consider the potential for disturbance to fish from underwater noise generated by wind turbines during the operational phase of the proposed development. Therefore, this impact has been added to the NIS as Section 5.2.3.3.4 and does not replace any text from the 2024 NIS.

Assessment

There is currently no evidence that non-impulsive (i.e., continuous) sounds such as those generated by operational wind turbines cause mortality or potential mortal injury in fish (Popper et al., 2014). The risk of recoverable injury in Group 2 fish such as Atlantic salmon from continuous noise is also considered to be low, at all distances from the noise source, while the risk of TTS is likely to be moderate, near (10s of meters) to the noise source and low at intermediate (100s of meters) and far (1,000s meters) distances. These risk estimates align with the modelled estimates (Appendix A13: Underwater Noise Modelling Report) for fish receptors of higher sensitivity to underwater noise (Groups 3 and 4) which suggest the potential fish to experience recoverable injury and TTS at less than 50m from the noise source, if the receptor remained in the immediate vicinity of the turbine for 48 hours (recoverable injury) and 12 hours (TTS) continuously. The likelihood of behavioural responses is considered to be moderate at near and intermediate distances and low at far field distances from the noise source (Popper et al., 2014).

Given the distance between the River Boyne and River Blackwater SAC and array area (20.9km) and factoring in the lower noise levels compared to piling, no mortality or potential mortal injury, recoverable injury and TTS are predicted for Atlantic salmon within the SAC from underwater noise from operational turbines, with the risk of behavioural reactions considered to be at most low. Therefore, the species is considered in the context of its presence and distribution when out at sea rather than in the site itself.

Given their migratory nature, Atlantic salmon are anticipated to be transient within the marine area, and therefore any exposure to non-impulsive sounds is anticipated to be temporary. Underwater noise from operational turbines is predicted to be long-term (over the lifetime of the proposed development) and continuous, but any effects on Atlantic salmon would be indirect and limited to very close proximity to individual turbines within the array area.

Given their mobility, and transient nature across the array area, Atlantic salmon are unlikely to remain within any near-field noise zone for durations sufficient to result in auditory effects or sustained behavioural disruption.

Conclusion of AEoI

Based on the above, it is concluded beyond reasonable scientific doubt that underwater noise from operational WTGs will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

Increase in SSC and Sediment Deposition (Construction, Operation and Decommissioning)

Design refinements in response to the RFI (See Appendix A7: Design Refinements) have necessitated changes to this section; notable refinements of relevance to this impact, include the removal of monopiles, with WTGs now proposed with SBJ foundations, and OSPs with jacket foundations installed with either drilled pin piles or suction buckets, furthermore dredging activities across the site have also been removed from the proposed development design. These refinements to the proposed development design required revised sediment plume modelling to reassess the effects on SSC and deposition, and the updated modelling is presented in NIS Appendix A11: Marine Physical Processes Numerical Modelling.

Due to these changes in the proposed development design, Project Option 1 now represents the greatest magnitude of impact with respect to impacts from increased SSC and deposition, compared to Project Option 2. This has been amended and reflected where relevant throughout this section of the NIS.

These refinements do not alter the overall conclusions of the assessment, which remain unchanged: no AEoI of Atlantic salmon, as designated in the River Boyne and River Blackwater SAC.

To reflect these changes, the following text from Section 5.2.3.3.4 of the 2024 NIS shall therefore be deleted:

As determined in Table 5.4, Project Option 2 has a greater potential for increases in SSC and associated sediment deposition compared to Project Option 1 during construction and decommissioning activities. During the operational phase, Project Option 1 has a greater potential for increases in SSC and sediment deposition; however, the volume of sediment released during the operational and maintenance phase and associated bed level changes would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 2 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 1 when considering increases in SSC and sediment deposition.

As detailed in Section 4.2, temporary increases in SSCs and associated sediment deposition are expected from construction activities that disturb the seabed and from the release of dredged material and drill cuttings. In addition, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and during the removal of infrastructure during decommissioning.

And be replaced with:

As determined in Table A5.4, Project Option 1 has a greater potential for increases in SSC and associated sediment deposition compared to Project Option 2 during construction and decommissioning activities. During the operational phase, Project Option 1 also has a greater potential for increases in SSC and sediment deposition, as there is more infrastructure to maintain; however, the volume of sediment released during the operational and maintenance phase and associated bed level changes would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 1 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 2 when considering increases in SSC and sediment deposition.

Temporary increases in SSCs and associated sediment deposition are expected from offshore construction activities that disturb the seabed (e.g. cable installation) and from the release of drill cuttings during the drilling of pin piles (should these be used). In addition, increases in SSC are likely to occur during maintenance activities associated with seabed structures and cabling and during the removal of infrastructure during decommissioning. Increased turbidity and sediment deposition may lead to smothering of sensitive fish receptors, or barrier effects, which may impede migration.

Mitigation
The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.2.3.2.4 of the 2024 NIS.

Assessment
To reflect the outputs of the revised sediment plume modelling, undertaken to reassess the effects on SSC and deposition from the refinements to the proposed development design, the following text from Section 5.2.3.2.4 of the 2024 NIS shall be deleted:

As discussed previously, sediment plumes are expected to quickly dissipate after cessation of the construction activities due to settling and wider dispersion, with SSCs reducing to background levels within a couple of tidal cycles. The highest SSCs would be confined to the points of discharge, such as around WTG locations and cable trench lines.

And be replaced with:

As discussed previously, sediment plumes are expected to quickly dissipate after cessation of the construction activities due to settling and wider dispersion, with the highest SSCs would be confined to the points of discharge, such as around WTG locations and cable trench lines. Any sediment deposition will consist of coarser material, deposited close to the source, with deposition of finer material decreasing from the point of release.

There are no further changes to this section. Please refer to Section 5.2.3.2.4 of the 2024 NIS.

Conclusion of AEoI

The key change to this section is the amendment of the proposed development design option with the greatest magnitude of impact with respect to impacts from increased SSC and deposition. The following text from the 2024 NIS shall therefore be deleted:

Based on above, any avoidance reactions at sea are expected to be localised and temporary, and changes in SSC are not predicted to result in a barrier effect to any upstream or outgoing migration that would prevent Atlantic salmon from accessing or leaving the SAC. Therefore, it is concluded that increases in SSC and associated sediment deposition will have no AEoI of Atlantic salmon designated in the River Boyne and River Blackwater SAC for Project Option 2.

Based on the increased risk of effects of Project Option 2, it is considered that the same conclusion of no AEoI would apply to Project Option 1.

And be replaced with:

Based on above, any avoidance reactions at sea are expected to be localised and temporary, and changes in SSC are not predicted to result in a barrier effect to any upstream or outgoing migration that would prevent Atlantic salmon from accessing or leaving the SAC. Therefore, it is concluded beyond reasonable scientific doubt that increases in SSC and associated sediment deposition will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

Accidental Pollution (Construction, Operation and Decommissioning)

As a result of design refinements in response to the RFI (See Appendix A7: Design Refinements) Project Option 1 now represents the greatest magnitude of impact with regards to accidental pollution during all phases of the development. Therefore, the following text of Section 5.2.3.3.5 of the 2024 NIS shall be deleted:

As determined in Table 5.4, Project Option 2 has the greater potential for adverse effects on migratory fish species compared to Project Option 1 with regards to accidental pollution during construction and decommissioning activities. During the operational phase, Project Option 1 has a greater potential for the release of contaminated sediments; however, the volume of sediment released during the operational and maintenance phase would be less to those experienced during the construction and decommissioning phase. Therefore, it is considered that Project Option 2 has a greater potential for adverse effects on migratory fish during the lifetime of the proposed development compared to Project Option 1 with regards to accidental pollution.

And be replaced with:

As determined in Table A5.4, Project Option 1 has the greater potential for adverse effects on migratory fish species compared to Project Option 2 with regards to accidental pollution during construction, operational and decommissioning activities.

Mitigation

The Offshore EMP referenced under this subheading is updated in Appendix A8: Offshore EMP.

However, there are no other changes to this section. Refer to Section 5.2.3.3.5 of the 2024 NIS.

Assessment

There are no changes to this section. Refer to Section 5.2.3.3.5 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.3.5 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that the release of sediment-bound contaminants will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

EMF (Operation)

There are no changes to this section. Refer to Section 5.2.3.3.6 of the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.2.3.3.6 of the 2024 NIS.

Assessment

There are no changes to this section. Refer to Section 5.2.3.3.6 of the 2024 NIS.

Conclusion of AEoI

There are no changes to this section. Refer to Section 5.2.3.3.6 of the 2024 NIS. For clarity, it is concluded beyond reasonable scientific doubt that EMFs generated by subsea cables associated with the proposed development will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's COs with respect to the Atlantic salmon QI for either Project Option 1 or Project Option 2.

5.3 Marine Mammals

5.3.1 Approach

In response to RFI Section 1 (b), updates to this section are required as a result of updated PTS thresholds for marine mammals, and the revision of the foundation types for Project Option 1 and Project Option 2.

In the 2024 NIS, the Southall et al (2019) PTS thresholds were used; these have since been superseded by National Marine Fisheries Service (NMFS, 2024) guidance. In addition, the 2024 NIS assessed WTG monopile foundations and OSP monopile and jacket foundations with pin piles. Following further design refinements in response to the RFI (See Appendix A7: Design Refinements) WTGs are now proposed with suction-bucket jacket (SBJ) foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations.

In response to RFI Section 10 (h), operational noise from WTGs was screened in to the assessment. Accordingly, Table 5.6 of the 2024 NIS shall be deleted and replaced by Table A.5.5 below, where grey shading indicates the inclusion of this additional impact pathway. There is no change required to Figure 5.15 in the 2024 NIS. In summary, all text in Section 5.3.1 shall be deleted and replaced with the following text and tables.

European sites designated for marine mammals have been screened in given their potential connectivity between the proposed development boundary/activities and the features of the site(s). Given the mobile nature of the species considered in this NIS, the extent of any impact pathway has been classified by taking into account the scale of movement and population structure of each marine mammal protected feature. For each species (harbour porpoise, bottlenose dolphin, grey seal and harbour seal) the assessment area considered is defined by the appropriate management unit for cetaceans and the typical foraging ranges for seals, as defined in Section 1.13 of the SISAA. The assessment process for marine mammal species remains in line with relevant guidance in Section 1.7 and the process outlined in Section 1.5 of the 2024 SISAA.

It should be noted that no onshore activities or impacts have been identified for marine mammals as all SACs with this receptor group as QIs are outside of the ZoI for onshore impacts and there is no connectivity between the sites and the onshore development area.

The European sites designated for marine mammal species screened in for assessment are listed in Table A5.5 below.

Table A5.5 European Sites Screened in for Marine Mammal Receptors. New impacts screened in for the NIS are highlighted in grey (replaces Table 5.6 of the 2024 NIS).

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Rockabill to Dalkey Island SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Lambay Island SAC	Annex II species: Harbour porpoise; Harbour seal; Grey seal.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Hook Head SAC	Annex II species: Harbour porpoise; Bottlenose dolphin.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Codling Fault Zone SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	Offshore development area only Underwater noise Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution
North Anglesey Marine/ Gogledd Môn Forol SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Murlough SAC	Annex II species: Harbour seal.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
North Channel SAC	Annex II species Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Glannau Ynys Gybi/ Holy Island Coast SAC	Annex II species: Grey seal	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
West Wales Marine/ Gorllewin Cymru Forol SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC	Annex II species: Bottlenose dolphin.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Blackwater Bank SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Carnsore Point SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Cardigan Bay/ Bae Ceredigion SAC	Annex II species: Bottlenose dolphin.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Roaringwater Bay and Islands SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Blasket Islands SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Kenmare River SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Nord Bretagne DH SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
West Connacht Coast SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Mers Celtiques – Talus du golfe de Gascogne SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Récifs et landes de la Hague SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Anse de Vauville SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Banc et récifs de Surtainville SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Tregor Goëlo SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Belgica Mound SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie de Morlaix SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Abers-Côtes des légendes SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Ouessant-Molène SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Chausey SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Baie de Saint-Brieuc – Est SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Côtes de Crozon SAC,	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie du Mont Saint-Michel SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Kilkieran Bay and Islands SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

European site name	Qualifying Interest	Impacts screened in for construction	Impacts screened in for operation	Impacts screened in for decommissioning
Chaussée de Sein SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Inishmore Island SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

The greatest effects on marine mammals are most likely to occur during the construction phase with any effects during decommissioning considered less than construction because although the main pathways for impact are similar, the intensity and duration are generally lower during decommissioning. The operational phase is usually associated with least impacts on marine mammals because activity is intermittent and low-intensity, with infrequent maintenance visits and generally limited underwater noise and seabed disturbance.

As detailed in the Section 3.4.1 of the SISAA, there are several activities that have the potential to introduce an effect receptor pathway for underwater noise, primarily from installation of SBJ foundations, UXO clearance, vessel operations, seabed preparation works, cable installation and other activities. These impacts have varying degrees of severity, ranging from changes in behaviour and masking (i.e. affecting communication and listening space, and/or locating prey) (Pirotta et al. 2012, Dunlop 2016, Erbe et al. 2016, Heiler et al. 2016, Wisniewska et al. 2018, Pine et al. 2019, Basran et al. 2020), displacement and disturbance (Brandt et al. 2011, Pirotta et al. 2014, Culloch et al. 2016, Stone et al. 2017), to injury and even mortality (Schaffeld et al. 2019).

With respect to noise assessments, using the criteria outlined in NMFS (2024), there are two types of impacts considered: a Temporary Threshold Shift (TTS) in hearing, and a Permanent Threshold Shift (PTS) in hearing, the latter of which is typically regarded as injury. To assess this, sound sources are typically divided into two categories, 'impulsive' and 'non-impulsive', based on attributes of the sound source:

- Impulsive sound sources, such as UXO detonation, are transient and brief (less than a second), broadband and typically consist of high peak pressure with rapid rise time and decay; and
- Non-impulsive sound sources, such as drilling, trenching and shipping, can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent and typically do not have a high peak pressure with rapid rise time.

Noise exposure criteria outlined in NMFS (2024) grouped all marine mammals into functional hearing groups based on their hearing ability, as listed in Table A5.6.

Table A5.6 Generalised Hearing Ranges and Noise Exposure Criteria from NMFS (2024) for TTS and PTS in Hearing for the Functional Hearing Groups Phocid in Water (PW), High Frequency Cetaceans (HF), Very High Frequency Cetaceans (VHF). The Unit for SEL_{cum} Criteria is dB 1µPa^2S, and Unit for SPL_{peak} Criteria is dB re 1µPa. (Replaces Table 5.7 in the 2024 NIS)

Functional hearing group	Relevant species	Generalised hearing range	Noise exposure criteria					
			Impulsive				Non-impulsive	
			TTS		PTS		TTS	PTS
			SEL_{cum} dB re 1 µPa2s weighted	SPL_{peak} dB re 1 µPa unweighted	SEL_{cum} dB re 1 µPa2s weighted	SPL_{peak} dB re 1 µPa unweighted	SEL_{cum} dB re 1 µPa2s weighted	SEL_{cum} dB re 1 µPa2s weighted
Phocids in water	Grey seal and harbour seal	40Hz–90kHz	168	217	183	223	175	195
High Frequency Cetaceans	Bottlenose dolphin	150Hz – 160kHz	178	224	193	230	181	201
Very High Frequency Cetaceans	Harbour porpoise	200Hz–165kHz	144	196	159	202	161	181

Harbour porpoises are dependent on sound to detect their prey and are sensitive to underwater noise. Harbour porpoises are defined as very high frequency (VHF) cetaceans, with a generalised hearing range of 200Hz to 165 kHz (NMFS, 2024;Table A5.6), their vocal repertoire includes VHF, short-range and narrow-band high frequency echolocation clicks.

The hearing sensitivity of harbour porpoise is greatest in the higher part of this range. Harbour porpoise PTS and TTS thresholds are shown in Table A.5.6. Their high sensitivity to sound, coupled with them being the most abundant marine mammal species in UK and Irish waters, means they are often a species of concern when assessing risks of impacts from underwater noise.

Bottlenose dolphins are also dependent on sound to detect their prey and are sensitive to underwater noise. Bottlenose dolphins are classified as high frequency (HF) cetaceans, with a generalised hearing range of 150 Hz to 160 kHz (NMFS, 2024;Table A5.6). Bottlenose dolphin PTS and TTS thresholds are shown in Table 5.6.

Grey seals and harbour seals are less reliant on sound for foraging but are nonetheless sensitive to underwater noise. There are in air and in water thresholds for seals, only the latter, defined as phocids in water (PW), are relevant to the assessment of underwater noise. Seals have a generalised hearing range of 40Hz to 90kHz (NMFS, 2024;Table A5.6). Seal PTS and TTS thresholds are shown in Table A5.6.

It should be noted that, as described in detail in the TTS Position Statement (See Appendix A25: Temporary Threshold Shift Position Statement), there is not expected to be any biologically meaningful impact using the currently defined TTS-onset threshold and therefore it is not assessed alongside auditory injury (PTS). For behavioural disturbance, guidance for thresholds for harbour porpoise are available for geophysical surveys (3 km), low-order UXO clearance (5 km) and high-order UXO clearance with a bubble curtain (10 km) (JNCC, 2025). In the absence of specific guidance for other marine mammal species, the same Effective Deterrence Ranges (EDRs) have been assumed.

5.3.1.1 Project Option 1 and Project Option 2 Determination of Greatest Potential for an Effect on Site Integrity

The key change required in this section is the revision of the foundation types and associated design refinements in response to the RFI (See Appendix A7:Design Refinements), for Project Option 1 and Project Option 2. Therefore, Section 5.3.1.1 of the 2024 NIS shall be deleted and replaced with the text herein and Table 5.8 of the 2024 NIS replaced with Table A5.7. Grey shading in Table A5.7 identifies where design refinements have resulted in changes from those presented in the 2024 NIS.

The identification of the Project Option with the greatest potential for AEoI is based on a precautionary comparison of the scale, duration and spatial extent of each impact pathway, as these parameters are key determinants of an AEoI on a site and qualifying marine mammal features.

For each impact, the option presenting the greatest magnitude of pressure (e.g. highest levels of underwater noise, greatest spatial footprint of activity) is considered as having the greatest potential for AEoI. This approach is consistent with the assessment presented in the 2024 NIS, where the relationship between impact magnitude, behavioural disturbance/injury pathways, and consequences for COs is described in detail. Table 5.7 therefore identifies the Project Option with the greatest potential for AEoI.

Table A5.7 Potential impacts and the Project Option which has the greatest potential for AEoI on Marine Mammal SACs (Replaces Table 5.8 in the 2024 NIS). Text highlighted in grey indicates changes between 2024 NIS and this NIS. The Project Option that has the greatest potential for AEoI is identified in blue.

Potential effect	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of marine mammals
Construction			
Underwater noise from piling	Following further design refinement in response to the RFI, WTGs are now proposed with SBJ foundations, and the OSP for each project option as drilled jackets or with SBJ foundations. As SBJ foundations do not require installation through impact piling, an assessment of PTS and disturbance from pile driving is no longer required.		
Underwater noise from UXO clearance	A detailed UXO survey will be completed prior to construction. The type, size (net explosive quantities (NEQ) and number of possible detonations and duration of UXO clearance operations is not known at this stage. Therefore, an illustrative assessment is presented here, using a range of UXO charge sizes from 25 kg to 525 kg.	A detailed UXO survey will be completed prior to construction. The type, size (net explosive quantities (NEQ) and number of possible detonations and duration of UXO clearance operations is not known at this stage. Therefore, an illustrative assessment is presented here, using a range of UXO charge sizes from 25 kg to 525 kg.	The potential for an AEoI is considered to be the same for both Project Option 1 and Project Option 2, as they would result in equal impact and likelihood of effect on the relevant SACs and marine mammal QIs.
Underwater noise from other noise sources (cable laying, trenching, rock placement, drilling, SBJ installation and pre-construction geophysical surveys)	**Inter-array cables:** Installation of 111km of array cables Installation method: jetting, ploughing, trenching Protection: burial, mattressing and/or loose rock Cable installation timeframe (PLGR, trenching, laying, protection): 240 days **Export cables:** Installation of 18km of export cables Installation: jetting, ploughing, trenching Protection: mattressing and/or loose rock Duration: 180 days **OSP pin piles:** Drilled pin piles **Geophysical surveys:** A series of pre-construction surveys will be undertaken in the array area and along the ECC. Geophysical surveys will utilise towed equipment such as side scan sonar, sub bottom profiler, multibeam echosounder, Ultra Short Base Line (USBL) and magnetometer.	**Inter-array cables:** Installation of 91km of array cables Installation method: jetting, ploughing, trenching Protection: burial, mattressing and/or loose rock Cable installation timeframe (PLGR, trenching, laying, protection): 240 days **Export cables:** Installation of 18km of export cables Installation: jetting, ploughing, trenching Protection: mattressing and/or loose rock Duration: 180 days **OSP pin piles:** Drilled pin piles **Geophysical surveys:** A series of pre-construction surveys will be undertaken in the array area and along the ECC. Geophysical surveys will utilise towed equipment such as side scan sonar, sub bottom profiler, multibeam echosounder, USBL and magnetometer.	The greatest potential for an AEoI is defined by the extent of construction activity which will generate noise. Project Option 1 represents the greatest potential for an AEoI in relation to PTS from other construction noise. The potential for an AEoI from pre-construction surveys is considered to be the same for both Project Option 1 and Project Option 2, as the pre-construction survey activities are the same for both options.

Potential effect	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of marine mammals
Vessel disturbance	**Summary for construction:** Total construction vessels: 70 Total number of return trips during construction: 3032 Maximum vessels simultaneously onsite during construction: 50 Types: guard vessel, observation vessel, transport vessel, installation vessel (SSCV, HLV), support vessel, scour protection vessel, SOV, CTV, cable laying vessel, cable burial vessel, JUV, workboats/RIBs	**Summary for construction:** Total construction vessels: 70 Total number of return trips during construction: 2504 Maximum vessels simultaneously onsite during construction: 47 Types: guard vessel, observation vessel, transport vessel, installation vessel (SSCV, HLV), support vessel, scour protection vessel, SOV, CTV, cable laying vessel, cable burial vessel, JUV, workboats/RIBs	The greatest potential for an AEoI is defined by the greatest number of vessels and greatest number of return trips associated with construction activities. As such, Project Option 1 represents the greatest potential for an AEoI in relation to disturbance from vessels.
Collision risk	**Summary for construction:** Total construction vessels: 70 Total number of return trips during construction: 3032 Maximum vessels simultaneously onsite during construction: 50 Types: guard vessel, observation vessel, transport vessel, installation vessel (SSCV, HLV), support vessel, scour protection vessel, SOV, CTV, cable laying vessel, cable burial vessel, JUV, workboats/RIBs	**Summary for construction:** Total construction vessels: 70 Total number of return trips during construction: 2504 Maximum vessels simultaneously onsite during construction: 47 Types: guard vessel, observation vessel, transport vessel, installation vessel (SSCV, HLV), support vessel, scour protection vessel, SOV, CTV, cable laying vessel, cable burial vessel, JUV, workboats/RIBs	The greatest potential for an AEoI is defined by the number of vessels and number of return trips associated with construction activities. As such Project Option 1 represents the greatest potential for an AEoI in relation to collision with vessels.
Changes to prey	Please refer to Table 5.4 Potential impacts and the project options which has the greatest potential for AEoI on migratory fish.		
Operation and Maintenance			
Collision risk	**Summary for O&M:** Total O&M vessels: 12 Total number of annual return trips during O&M: 1261 Maximum vessels simultaneously onsite during O&M: 12	**Summary for O&M:** Total O&M vessels: 12 Total number of annual return trips during O&M: 1055 Maximum vessels simultaneously onsite during O&M: 12	The greatest potential for an AEoI is defined by the number of vessels and number of return trips associated with operation activities. As such, Project Option 1 represents the greatest potential for an AEoI in relation to collision with vessels.

Potential effect	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of marine mammals
	Types: JUV, SOV, CTV, lift vessel, cable vessel, aux vessel	Types: JUV, SOV, CTV, lift vessel, cable vessel, aux vessel	
Vessel disturbance	**Summary for O&M:** Total O&M vessels: 12 Total number of annual return trips during O&M: 1261 Maximum vessels simultaneously onsite during O&M: 12 Types: JUV, SOV, CTV, lift vessel, cable vessel, aux vessel	**Summary for O&M:** Total O&M vessels: 12 Total number of annual return trips during O&M: 1055 Maximum vessels simultaneously onsite during O&M: 12 Types: JUV, SOV, CTV, lift vessel, cable vessel, aux vessel	The greatest potential for an AEoI is defined by the number of vessels and number of return trips associated with operation activities. As such, Project Option 1 represents the greatest potential for an AEoI in relation to disturbance from vessels.
Disturbance from operational noise	**49 WTGs**	**35 WTGs**	Project Option 1 represents the greatest magnitude of impact in relation to disturbance from operational noise as more infrastructure will be required for Project Option 1.
Changes to prey	Please refer to Table 5.4 Potential impacts and the project options which has the greatest potential for AEoI on migratory fish.		
Decommissioning			
Underwater noise from decommissioning	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	More infrastructure will require decommissioning for Project Option 1, with a similar indicative methodology for both project options. As such, Project Option 1 has the greatest potential for an AEoI for PTS and disturbance from decommissioning.
Vessel disturbance	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	The number of vessels required during decommissioning is dependent upon the technologies available at the time of decommissioning, and the methodology likely to be used. More infrastructure will require decommissioning for Project Option 1. As such, Project Option 1 has the greatest potential for an AEoI for disturbance from vessels.

Potential effect	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest potential for AEoI of marine mammals
Collision risk	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	A precautionary approach has been applied given that decommissioning methods are not yet defined. All impact pathways are assumed to have potential to affect SAC features, and the comparison therefore focuses on the relative scale of activity and associated risk to conservation objectives.	The number of vessels required during decommissioning is dependent upon the technologies available at the time of decommissioning, and the methodology likely to be used. More infrastructure will require decommissioning for Project Option 1. As such, Project Option 1 has the greatest potential for an AEoI for collisions with vessels.
Changes to prey	Please refer to Table 5.4 Potential impacts and the project options which has the greatest potential for AEoI on migratory fish lease refer to Table 5.4 for fish.		

5.3.2 Rockabill to Dalkey Island SAC

5.3.2.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.3.2.1 of the 2024 NIS.

5.3.2.1.1 Conservation Objectives of Qualifying Interests

There are no changes to this section. Refer to Section 5.3.2.1.1 of the 2024 NIS.

5.3.2.2 Underwater Noise from Piling (Construction)

In response to the RFI (See Appendix A7: Design Refinements) this section has been removed from the NIS due to the revision of the foundation types for Project Option 1 and Project Option 2. In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed with SBJ foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations. Therefore, pile driving is no longer required. The potential impact of PTS and disturbance from the installation of SBJ foundations for WTGs and OSPs, and for the drilling of pin piles for the OSPs has been included within Section 5.3.2.4 Underwater Noise from Other Construction Activities.

5.3.2.3 Underwater Noise from UXO Clearance (Construction)

In response to the RFI (See Appendix A7: Design Refinements) the changes required to this section are the commitment from the Proposed Development to the use of a Noise Abatement System (e.g. bubble curtain or similar) in the event that high-order UXO clearance is required, the change in PTS thresholds from Southall et al (2019) to NMFS (2024) and the use of new EDRs recommended for disturbance from UXO clearance (JNCC, 2025). Therefore, Section 5.3.2.3 of the 2024 NIS shall be deleted and replaced with the text herein.

As determined in Table A5.7, both Project Option 1 and Project Option 2 have the same level of potential for an AEoI on the COs of relevant SACs when considering underwater noise impact from UXO clearance. As stated in the TTS Position Statement (Appendix A25: Temporary Threshold Shift Position Statement), there is not expected to be any biologically meaningful impact using the TTS-onset threshold and therefore it is not assessed alongside auditory injury (PTS).

5.3.2.3.1 PTS

Most of the acoustic energy produced by a high-order detonation is below a few hundred Hz, and there is a pronounced decline in energy levels above 5 to 10kHz (von Benda-Beckmann et al. 2015, Salomons et al. 2021). Recent acoustic characterisation of UXO clearance noise has shown that there is more energy at lower frequencies (<100Hz) then previously assumed (Robinson et al., 2022). Therefore, the primary acoustic energy from a high-order UXO detonation is below the region of greatest sensitivity for harbour porpoises. If PTS were to occur within this low frequency range, it would be unlikely to result in any significant impact to vital rates[1] of the porpoise.

As UXO detonation is defined as a single pulse, the weighted SEL_{ss} criteria and the unweighted SPL_{peak} criteria from NMFS (2024) were considered (see Tables A5-10 and A5-11 of Appendix A13: Underwater Noise Modelling Report). For low-order clearance, the maximum PTS impact range for harbour porpoises is 990m, therefore any low-order UXO clearance activities in either the ECC or the array area will not impact on harbour porpoise within the boundary of the SAC. For high-order clearance of a 525kg UXO with Noise Abatement System reduction (e.g., bubble curtain), the maximum PTS impact range is 4.6km; which overlaps with the SAC.

[1] Vital rates in ecology are the age- or size-specific demographic components (primarily survival, growth, and reproduction (fecundity)) that dictate population growth, structure, and dynamics.

Whilst the impact ranges overlap with the SAC, the modelling of UXO clearance impact range has assumed no degradation of the UXO, and no smoothing of the impact wave over distances (meaning injurious potential of the impact wave at greater distances would be lower than just a reduction in absolute noise level, Cudahy and Parvin (2001)), which is a very precautionary approach. As such, the true impact ranges are likely to much smaller.

Hearing loss from UXO clearance, due to the peak energy being contained within lower frequencies, is likely to form a notch in the hearing of a harbour porpoise that is not considered to result in any biologically significant effects. As such, current scientific understanding is that PTS from UXO clearance would not result in significant impacts on the fitness of individual harbour porpoises.

Mitigation

The primary UXO clearance method will be low-order. In the unlikely event that high-order clearance is required, the Proposed Development has committed to the use of a Noise Abatement System (NAS) (e.g., bubble curtain) to reduce noise impacts. Prior to any high-order clearance, ADDs will be used to displace harbour porpoise out with the potential PTS-onset range. The PTS-onset range for each detonation will be determined by the charge size of each specific UXO, as confirmed by an explosive ordnance (EOD) expert following target investigations. The ADD duration will be set to displace harbour porpoise from within the PTS-onset area for each UXO, rather than applying a fixed value for all UXO irrespective of charge size. MMOs and PAM will be used together as required, in line with NPWS (2014) guidance, to ensure that marine mammals are not present within the defined mitigation zone, which also aids in the validation of the efficacy of the ADD. Technical discussion of these specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. Together, these mitigation measures are considered sufficient to reduce the risk of PTS to any individual harbour porpoise to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: ‘Species range within the site [is] not [..] restricted by artificial barriers’ (Target 1) and ‘Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site’ (Target 2).

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of harbour porpoise from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede harbour porpoise access to suitable habitat within the site.

Regarding Target 2, following the mitigation the risk of PTS from UXO clearance is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of harbour porpoise within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS arising from UXO clearance will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site’s CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

5.3.2.3.2 Behavioural Disturbance

Internationally recognised noise thresholds for determining behavioural impacts from UXO clearance are not currently available. There is also currently no guidance available from NPWS or IWDG on the methodology to assess behavioural disturbance from UXO clearance. Various methods could be used to determine whether there is a potential overlap from the noise from UXO clearance at the proposed development with the SAC, including use of TTS-onset thresholds as a proxy for disturbance, a fixed 5km range for low-order clearance and a fixed 10km range for high-order clearance with a bubble curtain (JNCC, 2025).

For low-order clearance, the maximum TTS impact range for harbour porpoises is 1.8km, or an EDR of 5km. For high-order clearance of a 525kg UXO with Noise Abatement System reduction (e.g., bubble curtain), the maximum TTS impact range is 8.4km; or an EDR of 10km. Therefore, spatial overlap with the SAC cannot be excluded.

It is noted however, in the JNCC (2020) guidance that, although UXO detonation is considered a loud underwater noise source, *"...a one-off explosion would probably only elicit a startle response and would not cause widespread and prolonged displacement..."*. Whilst detonations will usually be undertaken as part of a campaign and, therefore, may result in multiple detonations over several days (JNCC, 2020), each detonation will be of a short-term duration, resulting in behavioural effects that are temporary and reversible. Therefore, disturbance associated with UXO clearance will not result in the permanent exclusion of harbour porpoise from part of its range within the site and beyond. Additionally, such short-term disturbance is unlikely to be sufficient to result in any changes to the vital rates of individuals and therefore will not result in a significant negative impact on individuals or the harbour porpoise community within the site.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of harbour porpoise from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede harbour porpoise access to suitable habitat within the site in the long term.

Regarding Target 2, while temporary displacement of harbour porpoise within the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the harbour porpoise community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.4 Underwater Noise from Other Noise Sources (Construction)

Following design refinements in response to the RFI (See Appendix A7: Design Refinements), it is now considered Project Option 1 has the greater potential to result in an adverse effect on site integrity as a result of impacts to marine mammals. As such the following text shall be deleted from Section 5.3.2.4 of the 2024 NIS:

As determined in Table 5.8, Project Option 1 and Project Option 2 are considered to have an equal potential for adverse effects on marine mammals when considering underwater noise impact from UXO clearance.

And be replaced with:

As determined in Table A5.7, Project Option 1 has a greater potential for adverse effects on marine mammals than Project Option 2 when considering underwater noise impact from other noise sources.

5.3.2.4.1 PTS

In response to RFI Section 10 (g), the change for this section is the replacement of the Southall et al. (2019) auditory injury thresholds and hearing ranged used in the 2024 NIS with the more up to date NMFS (2024) auditory thresholds and hearing ranges. Therefore, Section 5.3.2.4.1 of the 2024 NIS shall be deleted and replaced with the text herein.

Noise sources resulting from various construction activities, including from cable laying, drilling of OSP pin piles, rock placement, trenching are considered non-impulsive and continuous noise. The impact ranges for these noise sources, considering the impact ranges for these noise sources, considering a very precautionary assumption of constant operation for 24 hours, are detailed in Appendix A13:Underwater Noise Modelling Report.

The PTS-onset ranges with non-impulsive weighted SEL_{cum} thresholds are <50m for harbour porpoises for all non-piling construction noise (cable laying, trenching, rock placement and drilling of OSP pin piles), assuming the harbour porpoise as fleeing animals. Therefore, there will be no overlap of the impacted area and the SAC.

The pre-construction surveys of the type used for offshore wind projects produce highly directional sound sources, with the energy directed towards the seabed (to maximum the returns and therefore data collection), which inherently results in very limited horizontal propagation of the sound source. While the indicative source levels for MBES and SSS exceed the unweighted injury threshold for harbour porpoise, the operational frequency of each sound source (MBES: 200 – 400kHz; SSS: 300 & 900kHz) is above their estimated hearing range (200 Hz–165kHz). As there is no overlap between the hearing ranges of these species and the expected sound frequency of equipment, there is expected to be no reduction in the hearing ability. The indicative source levels for SBP and USBL exceed the unweighted injury threshold for harbour porpoise. However, harbour porpoise hearing ranges are between 200Hz – 165kHz, and the SBP (2 – 15kHz (peak: 3.5kHz)) and USBL (12 - 32 kHz) typically operate in the bottom region of greatest hearing sensitivity of harbour porpoise. Therefore, whilst there is a risk of auditory injury, this risk of significant reduction in the hearing ability is unlikely.

It should be also noted that data collected during wind farm construction have demonstrated that harbour porpoise occurrence decreased with increasing vessel presence (Brandt *et al.*, 2018, Graham *et al.*, 2019, Benhemma-Le Gall *et al.*, 2021, Benhemma-Le Gall *et al.*, 2023**Error! Bookmark not defined.**). As such, p resence of survey vessels prior to the start of pre-construction survey activities can act as a local-scale deterrent for harbour porpoise and therefore further reduce the risk of auditory injury.

Mitigation

None required for cable laying, trenching, rock placement and drilling of OSP foundations.

Prior to pre-construction geophysical surveys commencing, MMOs and PAM will be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined 1km mitigation zone. Technical discussion of these specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. The MMMP will be updated prior to construction to ensure it captures the final proposed development parameters. Together, these mitigation measures are considered sufficient to reduce the risk of PTS to any individual harbour porpoise to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: ‘Species range within the site [is] not [..] restricted by artificial barriers’ (Target 1) and ‘Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site’ (Target 2).

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of harbour porpoise from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede harbour porpoise access to suitable habitat within the site.

Regarding Target 2, following the mitigation the risk of PTS from other construction noise sources is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of harbour porpoise within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS arising from other construction activities and geophysical surveys will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site’s CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.4.2 Behavioural Disturbance

In response to RFI Section 1 (b) and RFI Section 10 (i), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) as well as the inclusion of the USBL, in addition to the revision of the foundation types for Project Option 1 and Project Option 2, following further design refinement in response to the RFI (See Appendix A7: Design Refinements). In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI (See Appendix A7) WTGs are now proposed with SBJ foundations, and OSPs as jacket foundations with SBJ foundations or drilled pin piles and therefore no dredging is required. Therefore, Section 5.3.2.4.2 of the 2024 NIS shall be deleted and replaced with the text herein.

Cable laying, trenching, drilling of OSP pin piles and rock placement: There is a limited information on disturbance effects on harbour porpoise from construction activities including cable laying, trenching, drilling and rock placement. Construction activities including acoustic surveys, rock trenching, pipe laying and rock placement for an underwater pipeline in northwest Ireland were observed to result in a decline in harbour porpoise detections (Todd et al. 2020). There was however a considerable increase in detections after these activities, suggesting that any impact arising from these works was localised and temporary. As the disturbance impact from other construction activities is closely associated with the disturbance from vessel presence required for the activity, it is difficult to determine the sensitivity specifically to disturbance from other construction activities in isolation (Todd et al., 2015). It is expected that any disturbance impact will be primarily dominated by the underwater noise/presence of vessels.

Pre-construction geophysical surveys**:** JNCC (2025) advises the use of a 3km EDR for disturbance from the use of SBPs, USBLs and multiple-transducer SBES or MBES with an operating frequency of ⩽12kHz operating in waters ⩽200m depth. Although minimal, the overlap of disturbance range from geophysical surveys with the boundary of the SAC cannot be excluded. Having said that, for harbour porpoise, MBES and SSS are not expected to cause disturbance because their frequencies are above the species' hearing range. In contrast, SBP and USBL operate within the harbour porpoise hearing range and may cause short-term behavioural disturbance; however, effects are expected to be temporary and localised.

Installation of SBJs: Koschinski and Luderann (2020) provide a review of noise mitigation methods to comply with noise limits when constructing offshore wind turbines. The first SBJ offshore wind turbine was installed by Orsted at Borkum Riffgrund 1 in 2014 (n=1), and they have since been installed at Borkum Riffgrund 2 in 2018 (n=20) and Aberdeen Bay in 2018 (n=11). Measurements at Borkum Riffgrund 2 showed that the noise from the suction pumps could not be detected >500 m from the source, and that the average sound pressure level at 750m did not differ from the background noise, though it was noted that the background noise levels at the time included construction related noise including the installation vessel.

Weilgard (2023) provides a review of best available technologies and environmental practices for mitigating the noise from pile driving. This includes a section on SBJs which states that SBJ installation noise "*barely exceeds background levels*". More recently, 114 WTGs were installed on three-legged steel jackets using suction bucket caissons at Seagreen OWF (North Sea off the coast of Angus, Scotland) between 2021 and 2023. Underwater noise monitoring showed that PAM sites within the Seagreen array area detected a 3-5 dB median increase to the 0.1 – 1 kHz frequency band during hours of suction compared to baseline (Chudzinska et al., 2026). The data also showed that when comparing suction and non-suction hours within a construction day, the differences were relatively minor suggesting that vessel traffic, mobilisation, and ancillary operations contribute substantially to the overall increase in underwater noise on construction days. There was no evidence of a change in porpoise detections as a result of SBJ construction activities.

Given the minimal underwater noise produced by SBJ installation, it is expected that any potential disturbance impacts to harbour porpoise will be minimal, and most likely restricted to disturbance within the array area boundary and will not overlap the SAC boundary.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of harbour porpoise from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede harbour porpoise access to suitable habitat within the site in the long term.

Regarding Target 2, while temporary displacement of harbour porpoise from a small area of the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the harbour porpoise community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from other construction activities and geophysical surveys will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.5 Vessel Disturbance (Construction)

Due to proposed development design refinements, in response to the RFI (see Appendix A7: Design Refinements), and in relation to Project Option 1 which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips makes no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel presence will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.6 Vessel collision risk (Construction)

Due to proposed development design refinements in response to the RFI (see Appendix A7: Design Refinements) and in relation to Project Option 1 which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips resulted from the foundation design refinements and make no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.7 Changes to Prey (Construction)

There are no changes to this section. Please refer to Section 5.3.2.7 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.8 Accidental Pollution (Construction)

There are no changes to this section. Please refer to Section 5.3.2.8 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.9 Vessel Disturbance (Operation)

There are no changes to this section. Please refer to Section 5.3.2.9 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel presence will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.10 Vessel Collision Risk (Operation)

There are no changes to this section. Please refer to Section 5.3.2.10 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.11 Changes to Prey (Operation)

There are no changes to this section. Please refer to Section 5.3.2.11 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.12 Accidental Pollution (Operation)

There are no changes to this section. Please refer to Section 5.3.2.12 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.13 Disturbance from operational WTG noise (Operation)

This section is additional and has been added in response to RFI Section 10 (h), to provide an assessment of disturbance from operational turbines.

As presented in Appendix 6: Underwater Noise Modelling Report of the 2024 NIS, marine mammals may experience behavioural disturbance (using the precautionary level B harassment 120dB SPL_{rms} threshold) within 150m from an operational geared-drive WTG. Although the final WTG configuration (geared or direct-drive) has not yet been determined, the use of geared WTG data represents a conservative, very precautionary assumption. If direct-drive WTGs are ultimately selected, their operational characteristics are expected to produce disturbance ranges that are even smaller than those estimated in Appendix 6 of the 2024 NIS.

Considering the above, the impact of underwater noise during the operational phase is considered to be localised to the very immediate vicinity of the WTGs and it is very unlikely to lead to the exclusion of animals within the array area. This lack of exclusion is further evidenced by the fact that the presence of harbour porpoise around bottom-fixed foundations has been widely documented (Scheidat et al., 2011, Delefosse et al., 2020, Fernandez-Betelu et al., 2024). The risk of disturbance to harbour porpoise is expected to be negligible and any potential impact ranges will not overlap the SAC boundary.

Mitigation

None required.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of harbour porpoise from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede harbour porpoise access to suitable habitat within the site in the long term.

Regarding Target 2, displacement of harbour porpoise within the SAC is highly unlikely and therefore it is considered that there will be no significant adverse effect on individual animals or on the harbour porpoise community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance from operational turbines will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

5.3.2.14 Underwater Noise (Decommissioning)

Due to the change of foundation types from monopiles and pin piles to SBJs for the WTGs and SBJs or jackets with drilled pin piles for the OSP in response to the RFI (See Appendix A7:Design Refinements), the description of decommissioning activities requires a change. Therefore, Section 5.3.2.13 of the 2024 NIS shall be deleted and replaced with the text herein.

5.3.2.14.1 PTS and behavioural disturbance

After decommissioning of the transition piece, positive pressure is applied within the suction bucket to break the seal between the bucket and the seabed, effectively reversing the original installation process. The foundation is carefully lifted and transported to shore for recycling, reuse, or disposal in accordance with waste management protocols. To break the seal between a suction bucket and the seabed during decommissioning, water is pumped into the sealed chamber at the top of the bucket to create positive internal pressure. This pressure counteracts the external hydrostatic pressure and the frictional resistance of the surrounding soil, gradually lifting the bucket and releasing it from the seabed. The process is carefully controlled to avoid sudden movements or sediment disturbance, allowing the bucket to be extracted safely and with minimal environmental impact.

The exact methods to be adopting during decommissioning are yet to be confirmed, therefore the respective impact level of PTS and disturbance of decommissioning activities cannot be accurately determined at this time. However, any effects during decommissioning are considered equal or less than construction, because although the main pathways for impact are similar, the intensity and duration are generally lower during decommissioning.

Mitigation

Prior to decommissioning a study of the potential environmental impacts to marine mammal receptors from the proposed decommissioning activities will be undertaken, considering the baseline environment at the pre-decommissioning stage. For the activities involving high noise levels, ADDs may be used to displace harbour porpoise out with the potential PTS-onset range. MMOs and PAM may be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined mitigation zone. The mitigation measures agreed before the decommissioning will aim to reduce the risk of PTS to any individual harbour porpoise to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of harbour porpoise from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. In addition, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Therefore, PTS nor disturbance is considered to impede harbour porpoise access to suitable habitat within the site.

Regarding Target 2, following the mitigation the risk of PTS from decommissioning activities will be reduced to negligible. While temporary displacement of harbour porpoise from a small area of the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals. As such, PTS and disturbance are not predicted to result in any significant change to individual fitness and therefore are highly unlikely to result in negative impact on community of harbour porpoise within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that underwater noise from decommissioning will not result in an of the Rockabill to Dalkey Island SAC, in view of the site's CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

5.3.2.15 Vessel Disturbance (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.2.14 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel presence will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.16 Vessel Collision Risk (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.2.15 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.17 Changes to Prey (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.2.16 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.2.18 Accidental Pollution (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.2.17 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.3 Lambay Island SAC

5.3.3.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Please refer to Section 5.3.3.1 of the 2024 NIS.

5.3.3.1.1 Conservation Objectives of Qualifying Interests

In response to RFI Section 1 (b), the key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Lambay Island SAC since the 2024 NIS (NPWS 2024a,b). As a result, the following text from section 5.3.3.1.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Lambay Island SAC. Whilst no detailed conservation objectives are available for harbour porpoise at Lambay Island SAC, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*

- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Lambay Island SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.3.2.

5.3.3.1.2 Qualifying Interests and Conservation Objectives – Grey and Harbour Seal

This section has been added to the NIS for clarity due to the introduction of the COs.

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

5.3.3.2 Assessment for Harbour Porpoise

There are no changes to this section. Please refer to Section 5.3.3.2 of the 2024 NIS.

For clarity, It is concluded beyond reasonable scientific doubt that for all impacts there will not be an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

The assessment provided below is therefore for grey seal and harbour seal only.

5.3.3.3 Underwater Noise from Piling (Construction)

This section has been removed from the NIS due to the revision of the foundation types for Project Option 1 and Project Option 2 in response to the RFI (See Appendix A7: Design Refinements). In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations. Therefore, pile driving is no longer required. The potential impact of PTS and disturbance from the installation of suction caisson bucket foundations for WTGs and OSPs, and for the drilling of pin piles for the OSPs has been included within Section 5.3.3.4 Underwater Noise from Other Construction Activities.

5.3.3.4 Underwater Noise from UXO Clearance (Construction)

In response to RFI Section 10 (ai), the changes required to this section are the commitment from the Proposed Development to the use of a Noise Abatement System (e.g., bubble curtain) in the event that high-order UXO clearance is required, the change in PTS thresholds from Southall et al (2019) to NMFS (2024) and the use of new EDRs recommended for disturbance from UXO clearance (JNCC, 2025). Therefore, Section 5.3.3.4 of the 2024 NIS shall be deleted and replaced with the text herein.

As determined in Table A5.7, both Project Options have an equal potential for adverse effects on marine mammals when considering underwater noise impact from UXO clearance.

5.3.3.4.1 PTS

Most of the acoustic energy produced by a high-order detonation is below a few hundred Hz, decreasing on average by about SEL 10dB per decade above 100Hz, and there is a pronounced drop-off in energy levels above ~5-10kHz (von Benda-Beckmann et al. 2015, Salomons et al. 2021). Therefore, the overlap with generalised hearing range for seals cannot be excluded (NMFS, 2024).

As UXO detonation is defined as a single pulse, both the weighted SEL_{ss} criteria and the unweighted SPL_{peak} criteria from NMFS (2024) were considered (see Tables A5-10 and A5-11 of Appendix A13: Underwater Noise Modelling Report). For low-order clearance, the maximum PTS impact range for seals is 110m, while for high-order clearance of a 525kg UXO with Noise Abatement System reduction (e.g, bubble curtain), the maximum PTS impact range for seals is 540m. As such, there is no spatial overlap of these impact ranges with the Lambay Island SAC. Therefore, there is no potential for in situ overlap between PTS-onset ranges and the SAC for low-order or mitigated (with bubble curtain) high-order UXO clearance activities.

Mitigation

The primary UXO clearance method will be low-order. In the unlikely event that high-order clearance is required, the Proposed Development has committed to the use of a Noise Abatement System (e.g, bubble curtain) to reduce noise impacts. Prior to any detonations, ADDs will be used to displace marine mammals out with the potential PTS-onset range. The PTS-onset range for each detonation will be determined by the charge size of each specific UXO, as confirmed by an EOD expert following target investigations. The ADD duration will be set to displace marine mammals from within the PTS-onset area for each UXO, rather than applying a fixed value for all UXO irrespective of charge size. MMOs and PAM will be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined mitigation zone, which also aids in the validation of the efficacy of the ADD. Technical discussion of these specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. Together, these mitigation measures are considered sufficient to reduce the risk of PTS to any individual grey or harbour seal to negligible.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of grey and harbour seals from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede grey and harbour seals access to suitable habitat within the site.

Regarding Targets 2 – 4, there will be no overlap of the PTS ranges with the SAC. Additionally, following the application of mitigation measures, the risk of PTS outside of the SAC is reduced to negligible. Therefore, it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, PTS is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition

Regarding Target 5, following mitigation the risk of PTS from UXO clearance is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of grey and/or harbour seals within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS arising from UXO clearance will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.4.2 Behavioural disturbance

Internationally recognised noise thresholds for determining behavioural impacts from UXO clearance are not currently available. There is also currently no guidance available from NPWS or IWDG on the methodology to assess behavioural disturbance from UXO clearance. Various methods could be used to determine whether there is a potential overlap from the noise from UXO clearance at the proposed development with the SAC, including use of TTS-onset thresholds as a proxy for disturbance, a fixed 5km range for low-order clearance and a fixed 10km range for high-order clearance with a bubble curtain (JNCC, 2025).

For low-order clearance, the maximum TTS impact range for seals is 0.38km, or an EDR of 5km. For high-order clearance of a 525kg UXO with Noise Abatement System reduction (e.g, bubble curtain), the maximum TTS impact range is 2.9km; or an EDR of 10km. Therefore, following the mitigation measures, there will be no overlap with the SAC.

It is noted in the JNCC (2020) guidance that, although UXO detonation is considered a loud underwater noise source, "*...a one-off explosion would probably only elicit a startle response and would not cause widespread and prolonged displacement...".* Whilst detonations will usually be undertaken as part of a campaign and, therefore, there may result in multiple detonations over several days (JNCC 2020), each detonation will be of a short-term duration. Therefore, it is not expected that disturbance from a single UXO detonation would result in any significant impacts, and that disturbance from a single noise event would not be sufficient to result in any changes to the vital rates of individuals.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Given that there is no overlap of behavioural disturbance ranges with the SAC, it is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, there will be no overlap of the behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, disturbance is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the grey and harbour seal community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.5 Underwater Noise from Other Noise Sources (Construction)

Following design refinements, in response to the RFI (see Appendix A7: Design Refinements), it is now considered Project Option 1 has the greater potential for an adverse effect on marine mammals. As such the following text shall be deleted from Section 5.3.3.5 of the 2024 NIS:

As determined in Table 5.8, Project Option 1 and Project Option 2 are considered to have an equal potential for adverse effects on marine mammals when considering underwater noise impact from UXO clearance.

And be replaced with:

As determined in Table A5.7, Project Option 1 has a greater potential for adverse effects on marine mammals than Project Option 2 when considering underwater noise impact from other noise sources.

5.3.3.5.1 PTS

In response to RFI Section 10 (g), the change for this section is the replacement of the Southall et al. (2019) auditory injury thresholds and hearing ranged used in the 2024 NIS with the more up to date NMFS (2024) auditory thresholds and hearing ranges. Therefore, Section 5.3.3.5.1 of the 2024 NIS shall be deleted and replaced with the text herein.

Noise sources resulting from various construction activities, including from cable laying, drilling of OSP pin piles, rock placement for the cable protection, and trenching are considered non-impulsive and continuous noise. The impact ranges for these noise sources, considering the impact ranges for these noise sources, considering a very precautionary assumption of constant operation for 24 hours, are detailed in Appendix A13:Underwater Noise Modelling Report.

The PTS-onset ranges with non-impulsive weighted SEL_{cum} thresholds are <50m for grey seals and harbour seals for all non-piling construction noise (cable laying, trenching, rock placement and drilling of OSP pin piles), assuming the seal species as fleeing animals. Therefore, there will be no overlap of the impacted area and the SAC.

Pre-construction surveys of the type used for offshore wind projects produce highly directional sound sources, with the energy directed towards the seabed (to maximum the returns and therefore data collection), which inherently results in very limited horizontal propagation of the sound source. While the indicative source levels for MBES and SSS exceed the unweighted injury threshold for seals, the operational frequency of each sound source (MBES: 200 – 400kHz; SSS: 300 & 900kHz) is above their estimated hearing range (40 Hz - 90kHz). As there is no overlap between the hearing ranges of these species and the expected sound frequency of equipment, there is expected to be no reduction in the hearing ability. The source levels of SBP and USBL are below the SPL_{pk} PTS-onset thresholds for seals. As such, there is no risk of PTS onset to seals.

Mitigation

None required for cable laying, trenching, rock placement and drilling.

Prior to any pre-construction geophysical surveys commencing, MMOs and PAM will be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined 1km mitigation zone. Technical discussion of specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. The MMMP will be updated prior to construction to ensure it captures the final proposed development parameters. Notwithstanding the low risk of any PTS impacts due to geophysical surveys to seals, these mitigation measures are considered sufficient to further reduce the risk of PTS to any individual seal to negligible.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of grey and harbour seals from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede grey and harbour seals access to suitable habitat within the site.

Regarding Targets 2 – 4, there will be no overlap of the PTS ranges with the SAC. Additionally, following the application of mitigation measures, the risk of PTS is reduced to negligible. Therefore, it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, PTS is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition

Regarding Target 5, following mitigation the risk of PTS from other noise sources is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of grey and/or harbour seals within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS arising from other installation activities will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.5.2 Behavioural Disturbance

In response to RFI Section 10 (g), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) and the revision of the foundation types for Project Option 1 and Project Option 2. In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with SBJ foundations or drilled pin piles. Therefore, Section 5.3.3.5.2 of the 2024 NIS shall be deleted and replaced with the text herein.

Cable laying, trenching, drilling of OSP pin piles and rock placement for cable protection: There is limited information on disturbance effects from other construction activities including cable laying, trenching, drilling and rock placement. It is expected that any disturbance impact will be primarily dominated by the underwater noise/presence of vessels. A telemetry study that included the tagging of 28 harbour seals in the UK found high exposure levels of harbour seals to shipping noise (Jones *et al.*, 2017). The overlap between seals and vessel activity most frequently occurred within 50km of the coast, and in proximity to seal haul outs. Despite the distributional overlap and high cumulative sound levels, there was no evidence of reduced harbour seal presence as a result of vessel traffic (Jones *et al.*, 2017). Similarly, Mathews *et al.* (2016) reported that higher vessel counts in the study area were not associated with reduced seal counts in the water.

Pre-construction geophysical surveys: JNCC (2025) advises the use of a 3km EDR for disturbance from the use of SBPs, USBLs and multiple-transducer SBES or MBES with an operating frequency of ⩽12kHz operating in waters ⩽200m depth (in the absence of guidance specific to seals, the same EDRs have been applied here). Therefore, there is no potential for disturbance within the SAC boundary.

Installation of SBJs: Koschinski and Luderann (2020) provide a review of noise mitigation methods to comply with noise limits when constructing offshore wind turbines. The first SBJ offshore wind turbine was installed by Orsted at Borkum Riffgrund 1 in 2014 (n=1), and they have since been installed at Borkum Riffgrund 2 in 2018 (n=20) and Aberdeen Bay in 2018 (n=11). Measurements at Borkum Riffgrund 2 showed that the noise from the suction pumps could not be detected >500 m from the source, and that the average sound pressure level at 750m did not differ from the background noise, though it was noted that the background noise levels at the time included construction related noise including the installation vessel. Weilgard (2023) provides a review of best available technologies and environmental practices for mitigating the noise from pile driving. This includes a section on SBJs which states that SBJ installation noise "barely exceeds background levels". More recently, 114 WTGs were installed on three-legged steel jackets using suction bucket caissons at Seagreen OWF (North Sea off the coast of Angus, Scotland) between 2021 and 2023. Underwater noise monitoring showed that PAM sites within the Seagreen array area detected a 3-5 dB median increase to the 0.1 – 1 kHz frequency band during hours of suction compared to baseline (Chudzinska et al., 2026). The data also showed that when comparing suction and non-suction hours within a construction day, the differences were relatively minor suggesting that vessel traffic, mobilisation, and ancillary operations contribute substantially to the overall increase in underwater noise on construction days.

Given the minimal underwater noise produced by SBJ installation, it is expected that any potential disturbance impacts to harbour and grey seal will be minimal, and most likely restricted to disturbance within the array area boundary and will not overlap the SAC boundary.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access.

Given that there is no overlap of behavioural disturbance ranges with the SAC, it is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, there will be no overlap of the behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, disturbance is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the grey and harbour seal community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from other construction activities will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.6 Vessel Disturbance (Construction)

Due to proposed development design refinements, in response to the RFI (See Appendix A7) and in relation to Project Option 1, which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips makes no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel presence will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.7 Vessel Collision Risk (Construction)

Due to proposed development design refinements, in response to the RFI (See Appendix A7: Design Refinements), and in relation to Project Option 1, which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips makes no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.8 Changes to Prey (Construction)

There are no changes to this section. Please refer to Section 5.3.3.8 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from changes to prey will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.9 Accidental Pollution (Construction)

There are no changes to this section. Please refer to Section 5.3.3.9 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from accidental pollution will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.10 Vessel Disturbance (Operation)

There are no changes to this section. Please refer to Section 5.3.3.10 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel disturbance will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.11 Vessel Collision Risk (Operation)

There are no changes to this section. Please refer to Section 5.3.3.11 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.12 Changes to Prey (Operation)

There are no changes to this section. Please refer to Section 5.3.3.12 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from changes to prey will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.13 Accidental Pollution (Operation)

There are no changes to this section. Please refer to Section 5.3.3.13 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that disturbance arising from accidental pollution will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.14 Disturbance from operational noise (Operation)

This section has been added in response to RFI 10 Section (h), to provide an assessment of disturbance from operational turbines.

As presented in Appendix 6: Underwater Noise Modelling Report of the 2024 NIS, marine mammals may experience behavioural disturbance (using the precautionary level B harassment 120dB SPL_{rms} threshold) within 150m from an operational geared-drive WTG. Although the final WTG configuration (geared or direct-drive) has not yet been determined, the use of geared WTG data represents a conservative, very precautionary assumption. If direct-drive WTGs are ultimately selected, their operational characteristics are expected to produce disturbance ranges that are even smaller than those estimated in Appendix 6 of the 2024 NIS.

The impact of underwater noise during the operational phase is considered to be localised to the very immediate vicinity of the WTGs and it is very unlikely to lead to the exclusion of animals within the array area. This lack of exclusion is further evidenced by the fact that the presence of seals around bottom-fixed foundations has been previously documented (Russell et al., 2014). The risk of disturbance to seals is expected to be negligible and any potential impact ranges will not overlap the SAC boundary.

Mitigation

None required.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.

- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Given that there is no overlap of behavioural disturbance ranges with the SAC, it is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, there will be no overlap of the behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, PTS is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary and localised displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the grey and harbour seal community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance from operational turbines will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.15 Underwater Noise (Decommissioning)

5.3.3.15.1 PTS and behavioural disturbance

Due to the change of foundation types from monopiles and pin piles to SBJs for the WTGs and SBJs or jackets with drilled pin piles for the OSP in response to the RFI (see Appendix A7: Design Refinements) the description of decommissioning activities requires a change. Therefore, Section 5.3.3.14 of the 2024 NIS shall be deleted and replaced with the text herein.

After decommissioning of the transition piece, positive pressure is applied within the suction bucket to break the seal between the bucket and the seabed, effectively reversing the original installation process. The foundation is carefully lifted and transported to shore for recycling, reuse, or disposal in accordance with waste management protocols. To break the seal between a suction bucket and the seabed during decommissioning, water is pumped into the sealed chamber at the top of the bucket to create positive internal pressure. This pressure counteracts the external hydrostatic pressure and the frictional resistance of the surrounding soil, gradually lifting the bucket and releasing it from the seabed. The process is carefully controlled to avoid sudden movements or sediment disturbance, allowing the bucket to be extracted safely and with minimal environmental impact.

The exact methods to be adopting during decommissioning are yet to be confirmed, therefore the respective impact level of PTS and disturbance of decommissioning activities cannot be accurately determined at this time. However, any effects during decommissioning are considered equal or less than construction, because although the main pathways for impact are similar, the intensity and duration are generally lower during decommissioning.

Mitigation

Prior to decommissioning a study of the potential environmental impacts to marine mammal receptors from the proposed decommissioning activities will be undertaken, considering the baseline environment at the pre-decommissioning stage. For the activities involving high noise levels, ADDs may be used to displace seals out with the potential PTS-onset range. MMOs and PAM may be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined mitigation zone. The mitigation measures agreed before the decommissioning will aim to reduce the risk of PTS to any individual grey and harbour seal to negligible.

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for PTS and behavioural disturbance does not constitute a permanent barrier to movement or access. It is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, as in case of the construction, it is unlikely that there will be an overlap of PTS and behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, PTS and behavioural disturbance due to decommissioning is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, as in case of the construction, it is unlikely that there will be an overlap of PTS and behavioural disturbance ranges with the SAC. While temporary displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the grey and harbour seal community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that underwater noise from decommissioning will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey seal or harbour seal QI for Project Option 1 or Project Option 2.

5.3.3.16 Vessel Disturbance (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.3.15 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel disturbance will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.17 Vessel Collision Risk (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.3.16 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.18 Changes to Prey (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.3.17 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.3.19 Accidental Pollution (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.3.18 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Lambay Island SAC, in view of the site's COs with respect to the grey seal or harbour seal QIs for Project Option 1 or Project Option 2.

5.3.4 Hook Head SAC

There are no changes to this section. Please refer to Section 5.3.4 of the 2024 NIS.

5.3.4.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for both bottlenose dolphins and harbour porpoise, specific to the Hook Head SAC since the 2024 NIS (NPWS 2024, 2025). Therefore, the following text from Section 5.3.4.1 of the 2024 NIS shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding bottlenose dolphin and harbour porpoise at Hook Head SAC. No detailed conservation objectives are available for bottlenose dolphin and harbour porpoise at Hook Head SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise and bottlenose dolphin have been assumed, based on the conservation objectives for these species from Rockabill to Dalkey Island SAC and Lower River Shannon SAC respectively:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use.*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise or bottlenose dolphin community at the site; and*
- *Target 3: Habitat use: critical areas: Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition.*

And replaced with:

For both harbour porpoise, the CO for the Hook Head SAC are to maintain a favourable conservation condition of the QIs. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise/bottlenose dolphin community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.4.2.

For bottlenose dolphins, the CO for the Hook Head SAC is to maintain a favourable conservation condition of the QIs. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for bottlenose dolphin in Section 5.3.4.3 onwards.

5.3.4.2 Assessment for Harbour Porpoise

There are no changes to this section. Please refer to Section 5.3.4.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that for all impacts there will not be an AEoI of the Rockabill to Dalkey SAC, in view of the site's CO with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

The assessment provided below is therefore for bottlenose dolphin only.

5.3.4.3 Underwater Noise from Piling (Construction)

This section has been removed from the NIS due to the revision of the foundation types for Project Option 1 and Project Option 2 in response to RFI 10 Section (a). In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations. Therefore, pile driving is no longer required. The potential impact of PTS and disturbance from the installation of suction caisson bucket foundations for WTGs and OSPs, and for the drilling of pin piles for the OSPs has been included within Section 5.3.2.4 Underwater Noise from Other Construction Activities.

5.3.4.4 Underwater Noise from UXO Clearance (Construction)

In response to RFI (See Appendix A7: Design Refinements) the changes required to this section are the commitment from the Proposed Development to the use of a Noise Abatement System (e.g., bubble curtain) in the event that high-order UXO clearance is required, the change in PTS thresholds from Southall et al (2019) to NMFS (2024) and the use of new EDRs recommended for disturbance from UXO clearance (JNCC, 2025). Therefore, Section 5.3.4.4 of the 2024 NIS shall be deleted and replaced with the text herein.

As determined in Table A5.7, Project Option 1 and Project Option 2 are considered to have an equal potential for adverse effects on marine mammals when considering underwater noise impact from UXO clearance.

5.3.4.4.1 PTS

Most of the acoustic energy produced by a high-order detonation is below a few hundred Hz, decreasing on average by about SEL 10dB per decade above 100Hz, and there is a pronounced drop-off in energy levels above ~5-10kHz (von Benda-Beckmann et al. 2015, Salomons et al. 2021). Therefore, the overlap with generalised hearing range for seals cannot be excluded (NMFS, 2024).

As UXO detonation is defined as a single pulse, the weighted SEL_{ss} criteria and the unweighted SPL_{peak} criteria from NMFS (2024) were considered (see Tables A5-10 and A5-11 of Appendix A13: Underwater Noise Modelling Report). For low-order clearance, the maximum PTS impact range for bottlenose dolphins is 60m. For high-order clearance of a 525kg UXO with Noise Abatement System reduction (e.g, bubble curtain), the maximum PTS impact range for bottlenose dolphins is 260m. As such, there is no spatial overlap of these impact ranges with the Hook Head SAC. Therefore, there is no potential for in situ overlap between PTS-onset ranges and the SAC for low-order or mitigated (with bubble curtain) high-order UXO clearance activities.

Mitigation

The primary UXO clearance method will be low-order. In the unlikely event that high-order clearance is required, the Proposed Development has committed to the use of a Noise Abatement System (e.g, bubble curtain) to reduce noise impacts. Notwithstanding the low risk of PTS resulting in any biologically meaningful effects to bottlenose dolphins, prior to any high-order clearance, ADDs will be used to displace marine mammals out with the potential PTS-onset range. The PTS-onset range for each detonation will be determined by the charge size of each specific UXO, as confirmed by an EOD expert following target investigations. The ADD duration will be set to displace marine mammals from within the PTS-onset area for each UXO, rather than applying a fixed value for all UXO irrespective of charge size. MMOs and PAM will be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined mitigation zone, which also aids in the validation of the efficacy of the ADD. Technical discussion of specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. Together, these mitigation measures are considered sufficient to reduce the risk of PTS to any individual bottlenose dolphin to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion of bottlenose dolphin from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede bottlenose dolphin access to suitable habitat within the site.

Regarding Target 2, following the mitigation the risk of PTS from UXO clearance is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of bottlenose dolphin within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS arising from UXO clearance will not result in an AEoI of the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.4.2 Behavioural Disturbance

Internationally recognised noise thresholds for determining behavioural impacts from UXO clearance are not currently available. There is also currently no guidance available from NPWS or IWDG on the methodology to assess behavioural disturbance from UXO clearance. Various methods could be used to determine whether there is a potential overlap from the noise from UXO clearance at the project with the SAC, including use of TTS-onset thresholds as a proxy for disturbance, a fixed 5km range for low-order clearance and a fixed 10km range for high-order clearance with a bubble curtain (JNCC, 2025). In the absence of guidance for other species, the porpoise EDRs are assessed here.

For low-order clearance, the maximum TTS impact range for bottlenose dolphins is 60m, or an EDR of 5km. For high-order clearance of a 525kg UXO with a Noise Abatement System reduction (e.g, bubble curtain), the maximum TTS impact range is 260m; or an EDR of 10km. Therefore, there will be no spatial overlap with the SAC.

It is noted in the JNCC guidance (2020) that UXO detonation is not expected to cause widespread and prolonged displacement of marine mammals. The impact is short-term and intermittent in nature with temporary behavioural effect, which is very unlikely to alter survival or reproductive rate to the extent to alter the population trajectory of bottlenose dolphins.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets:

'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphins from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphin outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the bottlenose dolphin community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance will not result in an AEoI of the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.5 Underwater Noise from Other Noise Sources (Construction)

Following design refinements, in response to RFI (See Appendix A7) it is now considered Project Option 1 has the greater potential for an adverse effect on marine mammals. As such the following text shall be deleted from Section 5.3.4.5 of the 2024 NIS:

As determined in Table 5.8, Project Option 1 and Project Option 2 are considered to have an equal potential for adverse effects on marine mammals when considering underwater noise impact from UXO clearance.

And be replaced with:

As determined in Table A5.7, Project Option 1 has a greater potential for adverse effects on marine mammals than Project Option 2 when considering underwater noise impact from other noise sources.

5.3.4.5.1 PTS

In response to RFI Section 1 (b), the change for this section is the replacement of the Southall et al. (2019) auditory injury thresholds and hearing ranged used in the 2024 NIS with the more up to date NMFS (2024) auditory thresholds and hearing ranges. Therefore, Section 5.3.4.5.1 of the 2024 NIS shall be deleted and replaced with the text herein.

Noise sources resulting from various construction activities, including from cable laying, drilling of OSP pin piles, rock placement and trenching are considered non-impulsive and continuous noise. The impact ranges for these noise sources, considering the impact ranges for these noise sources, considering a very precautionary assumption of constant operation for 24 hours, are detailed in Appendix A13:Underwater Noise Modelling Report.

The PTS-onset ranges with non-impulsive weighted SEL_{cum} thresholds are <50m for bottlenose dolphins for all non-piling construction noise (cable laying, trenching, rock placement and drilling of OSP pin piles), assuming the bottlenose dolphins as fleeing animals. Therefore, there will be no overlap of the impacted area and the SAC.

Pre-construction surveys of the type used for offshore wind projects produce highly directional sound sources, with the energy directed towards the seabed (to maximum the returns and therefore data collection), which inherently results in very limited horizontal propagation of the sound source.

For dolphin species, the indicative source levels for SSS (210dB re 1µPa (SPL_{peak})) are unlikely to exceed the unweighted injury thresholds for PTS (dolphins: 230dB re 1µPa (SPL_{peak}). As such, there is no risk of auditory injury to these from the use of SSS. For MBES the indicative source levels (210–240dB re 1µPa (SPL_{peak})) could exceed unweighted injury thresholds for PTS for dolphin species depending on the source level used during surveys. In the event that the PTS thresholds are exceeded during use of MBES equipment, the operational frequency (200 – 400kHz) is far above that of the hearing range for dolphins (150Hz–160kHz). As such, the expected sound frequency does not overlap with the functional hearing range of this species and hence there is no potential to affect the hearing abilities of dolphins.

The source levels of SBP and USBL are below the SPL_{pk} PTS-onset thresholds for dolphins. Therefore, there is no risk of PTS onset to bottlenose dolphin.

Mitigation

None required for cable laying, trenching, rock placement and drilling.

Prior to any pre-construction geophysical surveys commencing, MMOs and PAM will be used together as required, in line with NPWS (2014) guidance, to ensure that marine mammals are not present within the defined 1km mitigation zone. Technical discussion of specific measures is presented within Appendix 10: MMMP of the 2024 NIS and Appendix A10: MMMP. The MMMP will be updated prior to construction to ensure it captures the final proposed development parameters. Notwithstanding the low risk of any PTS impacts due to geophysical surveys to bottlenose dolphin, these mitigation measures are considered sufficient to further reduce the risk of PTS to any individual dolphin to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which concerns artificial barriers that could lead to the permanent exclusion bottlenose dolphin from the site, the occurrence of PTS, being an effect on individual hearing, does not constitute a barrier to movement or access. Therefore, PTS is not considered to impede bottlenose dolphin access to suitable habitat within the site.

Regarding Target 2, following the mitigation the risk of PTS from other construction noise sources is reduced to negligible. As such, it is not predicted to result in any significant change to individual fitness and therefore will not result in negative impact on community of bottlenose dolphin within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that PTS and TTS arising from other construction activities will not result in an AEoI of the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.5.2 Behavioural Disturbance

In response to RFI Section 1 (b), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) and the revision of the foundation types for Project Option 1 and Project Option 2. In the 2024 NIS, WTG monopile foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI, WTGs are now proposed as SBJ foundations, and OSPs as jacket foundations with SBJ foundations or drilled pin piles. Therefore, Section 5.3.4.5.2 of the 2024 NIS shall be deleted and replaced with the text herein.

Cable laying, trenching, drilling of OSP pin piles and rock placement: There is a limited information on disturbance impact from other non-piling construction activities including cable laying, trenching, drilling and rock placement. It is expected that any disturbance impact will be primarily dominated by the underwater noise/presence of vessels. Studies using passive acoustic monitoring suggested that vessel disturbance has been shown to negatively affect bottlenose dolphin foraging activity as the results indicated a short-term 49% reduction in foraging activity (though this did not vary with noise level) (Pirotta *et al.*, 2015). However, animals resumed foraging after the vessel had travelled through the area. The susceptibility to disturbance was variable depending on the location and year, suggesting circumstantial impacts of vessel noise on bottlenose dolphins. It should be noted that these activities will not take place within the SAC and the spatial overlap of potential behavioural disturbance area is highly unlikely.

Pre-construction geophysical surveys: JNCC (2025) advises the use of a 3km EDR for disturbance from the use of SBPs, USBLs and multiple-transducer SBES or MBES with an operating frequency of $\leqslant$12kHz operating in waters $\leqslant$200m depth. Therefore, there is no potential for disturbance within the SAC boundary.

Installation of SBJs: Koschinski and Luderann (2020) provide a review of noise mitigation methods to comply with noise limits when constructing offshore wind turbines. The first SBJ offshore wind turbine was installed by Orsted at Borkum Riffgrund 1 in 2014 (n=1), and they have since been installed at Borkum Riffgrund 2 in 2018 (n=20) and Aberdeen Bay in 2018 (n=11). Measurements at Borkum Riffgrund 2 showed that the noise from the suction pumps could not be detected >500 m from the source, and that the average sound pressure level at 750m did not differ from the background noise, though it was noted that the background noise levels at the time included construction related noise including the installation vessel. Weilgard (2023) provides a review of best available technologies and environmental practices for mitigating the noise from pile driving. This includes a section on SBJs which states that SBJ installation noise "barely exceeds background levels". More recently, 114 WTGs were installed on three-legged steel jackets using suction bucket caissons at Seagreen OWF (North Sea off the coast of Angus, Scotland) between 2021 and 2023. Underwater noise monitoring showed that PAM sites within the Seagreen array area detected a 3-5 dB median increase to the 0.1 – 1 kHz frequency band during hours of suction compared to baseline (Chudzinska et al., 2026). The data also showed that when comparing suction and non-suction hours within a construction day, the differences were relatively minor suggesting that vessel traffic, mobilisation, and ancillary operations contribute substantially to the overall increase in underwater noise on construction days. There was no evidence of a change in dolphin detections as a result of SBJ construction activities.

Given the minimal underwater noise produced by SBJ installation, it is expected that any potential disturbance impacts to marine mammals will be minimal, and most likely restricted to disturbance within the array area boundary and will not overlap the SAC boundary.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphin from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. There will be no overlap of behavioural impact ranges and the boundary of the SAC. Consequently, behavioural disturbance is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphin outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the bottlenose dolphin community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from other construction activities will not result in an AEoI Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.6 Vessel Disturbance (Construction)

Due to proposed development design refinements, in response to RFI (see Appendix A7:Design Refinements), and in relation to Project Option 1, which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips makes no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that disturbance arising from vessel presence will not result in an AEoI the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.7 Vessel Collision Risk (Construction)

Due to proposed development design refinements, in response to RFI (see Appendix A7:Design Refinements) and in relation to Project Option 1, which has the greater potential for adverse effect on marine mammals, the key change to this section is a very slight increase in the total number of construction vessels (was 67, now 70), a very slight increase in the total number of return trips during construction (was 3,008, now 3,032) and a very slight increase in the maximum number of vessels simultaneously onsite during construction (was 49, now 50) compared to the 2024 NIS. This change in vessel numbers and vessel trips makes no change to the resulting assessment conclusions.

Therefore, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.8 Changes to Prey (Construction)

There are no changes to this section. Please refer to Section 5.3.4.8 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.9 Accidental Pollution (Construction)

There are no changes to this section. Please refer to Section 5.3.4.9 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.10 Vessel Disturbance (Operation)

There are no changes to this section. Please refer to Section 5.3.4.10 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel disturbance will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2

5.3.4.11 Vessel Collision Risk (Operation)

There are no changes to this section. Please refer to Section 5.3.4.11 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2

5.3.4.12 Changes to Prey (Operation)

There are no changes to this section. Please refer to Section 5.3.4.12 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that changes to prey will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2

5.3.4.13 Accidental Pollution (Operation)

There are no changes to this section. Please refer to Section 5.3.4.13 of the 2024 NIS.

For clarity, the conclusion remains beyond reasonable scientific doubt that accidental pollution will not result in an AEoI of the Hook Head SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2

5.3.4.14 Disturbance from operational noise (Operation)

This section has been added in response to RFI Section 10 h), to provide an assessment of disturbance from operational turbines.

As presented in Appendix 6: Underwater Noise Modelling Report of the 2024 NIS, marine mammals may experience behavioural disturbance (using the precautionary level B harassment 120dB SPLrms threshold) within 150m from an operational geared-drive WTG. Although the final WTG configuration (geared or direct-drive) has not yet been determined, the use of geared WTG data represents a conservative, a very precautionary assumption. If direct-drive WTGs are ultimately selected, their operational characteristics are expected to produce disturbance ranges that are even smaller than those estimated in Appendix 6 of the 2024 NIS.

The impact of underwater noise during the operational phase is considered to be localised to the very immediate vicinity of the WTGs and it is very unlikely to lead to the exclusion of animals within the array area. This lack of exclusion is further evidenced by the fact that the presence of other cetacean species (e.g. harbour porpoise) around bottom-fixed foundations has been widely documented (Scheidat et al., 2011, Delefosse et al., 2020, Fernandez-Betelu et al., 2024). The risk of disturbance to bottlenose dolphin is expected to be negligible and any potential effects will not overlap the SAC boundary.

Mitigation

None required.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphin from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, there will be no overlap of behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphins outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the bottlenose dolphin community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance from operational turbines will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.15 Underwater Noise (Decommissioning)

Due to the change of foundation types from monopiles and pin piles to SBJs for the WTGs and SBJs or jackets with drilled pin piles for the OSP in response to the RFI (See Appendix A7:Design Refinements) the description of decommissioning activities requires a change. Therefore, Section 5.3.4.14 of the 2024 NIS shall be deleted and replaced with the text herein.

5.3.4.15.1 PTS and Behavioural Disturbance

After decommissioning of the transition piece, positive pressure is applied within the suction bucket to break the seal between the bucket and the seabed, effectively reversing the original installation process. The foundation is carefully lifted and transported to shore for recycling, reuse, or disposal in accordance with waste management protocols. To break the seal between a suction bucket and the seabed during decommissioning, water is pumped into the sealed chamber at the top of the bucket to create positive internal pressure. This pressure counteracts the external hydrostatic pressure and the frictional resistance of the surrounding soil, gradually lifting the bucket and releasing it from the seabed.

The process is carefully controlled to avoid sudden movements or sediment disturbance, allowing the bucket to be extracted safely and with minimal environmental impact.

The exact methods to be adopting during decommissioning are yet to be confirmed, therefore the respective impact level of PTS and disturbance of decommissioning activities cannot be accurately determined at this time. However, any effects during decommissioning are considered equal or less than construction, because although the main pathways for impact are similar, the intensity and duration are generally lower during decommissioning.

Mitigation

Prior to decommissioning a study of the potential environmental impacts to marine mammal receptors from the proposed decommissioning activities will be undertaken, considering the baseline environment at the pre-decommissioning stage. For the activities involving high noise levels, ADDs may be used to displace bottlenose dolphin out with the potential PTS-onset range. MMOs and PAM may be used together as required, in line with NPWS (2014), to ensure that marine mammals are not present within the defined mitigation zone. The mitigation measures agreed before the decommissioning will aim to reduce the risk of PTS to any individual bottlenose dolphin to negligible.

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphin from the site, the potential for PTS and behavioural disturbance does not constitute a permanent barrier to movement or access. It is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, as in case of construction, there will be no overlap of PTS and behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphins outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in a significant adverse effect on individual animals or on the bottlenose dolphin community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that underwater noise from decommissioning will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.16 Vessel Disturbance (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.4.15 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that disturbance from vessel presence will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.17 Vessel Collision Risk (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.4.16 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that vessel collision risk will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.18 Changes to Prey (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.4.17 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that changes to prey will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.4.19 Accidental Pollution (Decommissioning)

There are no changes to this section. Please refer to Section 5.3.4.18 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that accidental pollution will not result in an AEoI to Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.5 Codling Fault Zone SAC

There are no changes to this section. Please refer to Section 5.3.5 of the 2024 NIS.

5.3.5.1 Qualifying Interests and Conservation Objectives

In response to RFI Section 1 (b), the key change to this section is to reflect the publication of Conservation Objectives for harbour porpoise by NPWS, specific to the Codling Fault Zone SAC (NPWS 2024, 2025). These Conservation Objectives have been published by NPWS, following publication of the 2024 NIS Therefore the following text of Section 5.3.5.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Codling Fault SAC. No detailed conservation objectives are available for bottlenose dolphin and harbour porpoise at Codling Fault SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Codling Fault Zone SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.5.2.

5.3.5.2 Appropriate Assessment of Codling Fault SAC

There are no changes to this section. Please refer to Section 5.3.5.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Codling Fault SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.6 North Anglesey Marine/ Gogledd Môn Forol SAC

There are no changes to this section. Please refer to Section 5.3.6 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to North Anglesey Marine / Gogledd Môn Forol SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.7 Murlough SAC

There are no changes to this section. Please refer to Section 5.3.7 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Murlough SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.8 North Channel SAC

There are no changes to this section. Please refer to Section 5.3.8 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to North Channel SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.9 Glannau Ynys Gybi/ Holy Island Coast SAC

There are no changes to this section. Please refer to Section 5.3.9 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Glannau Ynys Gybi / Holy Island Coast SAC, in view of the site's COs with respect to the grey seal QI for Project Option 1 or Project Option 2.

5.3.10 West Wales Marine/Gorllewin Cymru Forol SAC

There are no changes to this section. Please refer to Section 5.3.10 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to West Wales Marine/Gorllewin Cymru Forol SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.11 Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC

There are no changes to this section. Please refer to Section 5.3.11 of the 2024 NIS.

5.3.11.1 Conservation Objectives of Qualifying Interests

In response to RFI Section 1 (b), the key change to this section is to reflect the publication of updated Conservation Objectives for bottlenose dolphins by NRW (NRW 2025). These Conservation Objectives have been published by NPWS, following publication of the 2024 NIS Therefore the following text of Section 5.3.5.1 shall be deleted:

'The COs to maintain the favourable conservation condition of the bottlenose dolphin within the Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC, are defined by the following list of attributes and targets:

- *The bottlenose dolphin are maintained on a long-term basis as viable components of their natural habitat by, ensuring contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression.*
- *The species populations within the SAC are such that their natural ranges are not being reduced or likely to be reduced for the foreseeable future. In specific,*
  - the population ranges within the SAC and adjacent inter-connected areas are not constrained or hindered.
  - there are appropriate and sufficient food resources within the SAC and beyond; and
  - the sites and amount of supporting habitat used by these species are accessible and their extent and
  - quality is stable or increasing.

- *The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. As part of this objective,*
  - the abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term.
  - the management and control of activities or operations likely to adversely affect the species QIs is appropriate for maintaining it in favourable condition and is secure in the long term.
  - contamination of potential prey species should be below concentrations potentially harmful to their physiological health; and
  - disturbance by human activity is below levels that suppress reproductive success, physiological health, or long-term behaviour'.

And replaced with:
Below are the attributes and targets for each conservation objective:

- Objective 1: The bottlenose dolphin population that use the SAC is maintained in favourable condition and stable or increasing over the medium term.
  - Attribute 1a. Population using the SAC – Target: Maintain the bottlenose dolphin population that use the SAC in favourable condition, and stable or increasing in the medium and long term. Population demographics such as reproductive success and survival rates are at levels needed for the population to be maintained in favourable condition.
  - Attribute 1b. SAC residency – Target: Maintain bottlenose dolphin residency in the SAC over the medium and long term.
- Objective 2: The bottlenose dolphin population that use the SAC continue to have access to and be able to utilise habitats necessary to maintain the population in favourable condition.
  - Attribute 2a. Accessibility to habitat used by bottlenose dolphin. Target: Bottlenose dolphins that use the SAC should not be significantly constrained from accessing necessary habitats within or outside of the site.
  - Attribute 2b. Anthropogenic disturbance – Target: Bottlenose dolphins that use the SAC should not be subject to significant anthropogenic disturbance within or outside of the site.
- Objective 3: The bottlenose dolphin population that use the SAC have high quality habitat and sufficient food supply to support and maintain the population in favourable condition.
  - Attribute 3a. Habitat quality and function – Target: Maintain the quality and functionality of habitat to support the bottlenose dolphin population that use the SAC in favourable condition.
  - Attribute 3b. Prey availability: Maintain the quality, abundance and diversity of prey needed for the bottlenose dolphin population that use the SAC to remain in favourable condition.
  - Attribute 3c. Water, sediments and prey contaminants - Contaminants are at levels not detrimental to the bottlenose dolphin population that use the SAC.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for bottlenose dolphin in Section 5.3.11.2

5.3.11.2 Appropriate Assessment of Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC.

There are no changes to this section. Please refer to Section 5.3.11.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.12 Blackwater Bank SAC

There are no changes to this section. Please refer to Section 5.3.12 of the 2024 NIS.

5.3.12.1 Qualifying Interests and Conservation Objectives

In response to RFI Section 1 (b), the key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Blackwater Bank SAC since the 2024 NIS (NPWS 2024). Therefore, the following text of Section 5.3.12.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Blackwater Bank SAC. No detailed conservation objectives are available for bottlenose dolphin and harbour porpoise at Blackwater Bank SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Blackwater Bank SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.12.2.

5.3.12.2 Appropriate Assessment of Blackwater Bank SAC

There are no changes to this section. Please refer to Section 5.3.12.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Blackwater Bank SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.13 Carnsore Point SAC

There are no changes to this section. Please refer to Section 5.3.13 of the 2024 NIS.

5.3.13.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Carnsore Point SAC since the 2024 NIS (NPWS 2024, 2024). Therefore, the following text of Section 5.3.13.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Carnsore Point SAC. No detailed conservation objectives are available for bottlenose dolphin and harbour porpoise at Carnsore Point SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And be replaced with:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.13.2.

5.3.13.2 Appropriate Assessment of Carnsore Point SAC

There are no changes to this section. Please refer to Section 5.3.13.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Carnsore Point SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.14 Cardigan Bay/ Bae Ceredigion SAC

There are no changes to this section. Please refer to Section 5.3.14 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Cardigan Bay / Bae Ceredigion SAC, in view of the site's COs with respect to the bottlenose dolphin QI for Project Option 1 or Project Option 2.

5.3.15 Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC

There are no changes to this section. Please refer to Section 5.3.15 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Bristol Channel/ Dynesfeydd Môr Hafren SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.16 Roaringwater Bay and Islands SAC

There are no changes to this section. Please refer to Section 5.3.16 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Roaringwater Bay and Islands SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.17 Blasket Islands SAC

There are no changes to this section. Please refer to Section 5.3.17 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Blasket Islands SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.18 Kenmare River SAC

There are no changes to this section. Please refer to Section 5.3.18 of the 2024 NIS.

5.3.18.1 Conservation Objection of Qualifying Features

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Kenmare River SAC since the 2024 NIS (NPWS 2026). Therefore, the following text from Section 5.3.18 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Kenmare River SAC. No detailed conservation objectives are available for harbour porpoise at Kenmare River SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Kenmare River SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.18.2.

5.3.18.2 Appropriate Assessment of Kenmare River SAC

There are no changes to this section. Please refer to Section 5.3.18.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Kenmare River SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.19 Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC

5.3.19.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC since the 2024 NIS (NPWS 2026). Therefore, the following text from Section 5.3.19.1 shall be deleted:

'*In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC. No detailed conservation objectives are available for harbour porpoise at Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:*

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site'.*

And replaced with:

For both harbour porpoise, the CO for the Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.19.2.

5.3.19.2 Appropriate Assessment of Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC

There are no changes to this section. Please refer to Section 5.3.19.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.20 Nord Bretagne DH SAC

There are no changes to this section. Please refer to Section 5.3.20 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Nord Bretagne SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.21 West Connacht Coast SAC

There are no changes to this section. Please refer to Section 5.3.21 of the 2024 NIS.

5.3.21.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the West Connacht Coast SAC since the 2024 NIS (NPWS 2024, 2025). Therefore, the following text from Section 5.3.21.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at West Connacht Coast SAC. No detailed conservation objectives are available for harbour porpoise at West Connacht Coast SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For both harbour porpoise , the CO for the West Connacht Coast SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.21.2.

5.3.21.2 Appropriate Assessment of West Connacht Coast SAC

There are no changes to this section. Please refer to Section 5.3.21.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to West Connacht Coast SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.22 Mers Celtiques – Talus du golfe de Gascogne SAC

There are no changes to this section. Please refer to Section 5.3.22 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Mers Celtiques – Talus du golfe de Gascogne SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.23 Récifs et landes de la Hague SAC

There are no changes to this section. Please refer to Section 5.3.23 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Récifs et landes de la Hague SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.24 Anse de Vauville SAC

There are no changes to this section. Please refer to Section 5.3.24 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Anse de Vauville SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.25 Banc et récifs de Surtainville SAC

There are no changes to this section. Please refer to Section 5.3.25 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Banc et récifs de Surtainville SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.26 Tregor Goëlo SAC

There are no changes to this section. Please refer to Section 5.3.26 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Tregor Goëlo SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.27 Belgica Mound Province SAC

There are no changes to this section. Please refer to Section 5.3.27 of the 2024 NIS.

5.3.27.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Belgica Mound Province SAC since the 2024 NIS (NPWS 2024). Therefore, the following text from Section 5.3.27.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Belgica Mound SAC. No detailed conservation objectives are available for harbour porpoise at Belgica Mound SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use.*

- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Belgica Mound Province SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.27.2.

5.3.27.2 Appropriate Assessment of Belgica Mound Province SAC

There are no changes to this section. Please refer to Section 5.3.27.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Belgica Mound Province SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.28 Baie de Morlaix SAC

There are no changes to this section. Please refer to Section 5.3.28 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Baie de Morlaix SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.29 Abers-Côtes des légendes SAC

There are no changes to this section. Please refer to Section 5.3.29 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Abers-Côtes des légendes SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.30 Ouessant-Molène SAC

There are no changes to this section. Please refer to Section 5.3.30 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Ouessant-Molène SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.31 Chausey SAC

There are no changes to this section. Please refer to Section 5.3.31 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Chausey SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.32 Baie de Saint-Brieuc – Est SAC

There are no changes to this section. Please refer to Section 5.3.32 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Baie de Saint-Brieuc SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.33 Côtes de Crozon SAC

There are no changes to this section. Please refer to Section 5.3.33 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Côtes de Crozon SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.34 Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC

There are no changes to this section. Please refer to Section 5.3.34 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.35 Baie du Mont Saint-Michel SAC

There are no changes to this section. Please refer to Section 5.3.35 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Baie du Mont Saint-Michel SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.36 Kilkieran Bay and Islands SAC

5.3.36.1 Conservation Objectives of Qualifying Interests

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Kilkieran Bay and Islands SAC since the 2024 NIS (NPWS 2024). Therefore, the following text from Section 5.3.36.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Belgica Mound SAC. No detailed conservation objectives are available for harbour porpoise at Belgica Mound SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use.*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And replaced with:

For harbour porpoise, the CO for the Kilkieran Bay and Islands SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.36.2.

5.3.36.2 Appropriate Assessment of Kilkieran Bay and Islands SAC

There are no changes to this section. Please refer to Section 5.3.36.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Kilkieran Bay and Islands SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.37 Chaussée de Sein SAC

There are no changes to this section. Please refer to Section 5.3.37 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Chaussée de Sein SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.3.38 Inishmore Island SAC

There are no changes to this section. Please refer to Section 5.3.38 of the 2024 NIS.

5.3.38.1 Qualifying Interests and Conservation Objectives

The key change to this section is the publication of Conservation Objectives for harbour porpoise, specific to the Inishmore Island SAC since the 2024 NIS (NPWS 2024). Therefore, the following text from Section 5.38.1 shall be deleted:

In March 2024 NPWS added cetacean Qualifying Interests to a number of existing SACs, including adding harbour porpoise at Inishmore Island SAC. No detailed conservation objectives are available for harbour porpoise at Inishmore Island SAC, therefore, conservation objectives for other Irish SACs designated for harbour porpoise have been assumed:

- *Target 1: Access to suitable habitat: Species range within the site should not be restricted by artificial barriers to site use; and*
- *Target 2: Disturbance: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.*

And be replaced with:

For harbour porpoise, the CO for the Inishmore Island SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

This CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, there is no need for the change in the appropriate assessment for harbour porpoise in Section 5.3.38.2**.**

5.3.38.2 Appropriate Assessment of Inishmore Island SAC

There are no changes to this section. Please refer to Section 5.3.38.2 of the 2024 NIS.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts arising from the proposed development to Inishmore Island SAC, in view of the site's COs with respect to the harbour porpoise QI for Project Option 1 or Project Option 2.

5.4 Ornithology

This section presents the Stage 2 Appropriate Assessment of ornithological receptors for the Proposed Development, taking account of updated evidence and methodological refinements made following submission of the 2024 NIS and the subsequent RFI.

The ornithology assessment has been substantially updated to reflect two principal changes. Firstly, the ornithological baseline has been strengthened through the incorporation of an additional 12 months of site-specific DAS data collected across the NWIS cSPA. This expanded dataset provides a more robust and current evidence base for characterising species abundance, seasonal patterns and spatial distribution (particularly those outside of the Proposed Development across the full NWIS cSPA), and has informed updated baseline estimates and assessment outputs presented throughout this section. Additional data has also been collected through vantage-point surveys and passive acoustic monitoring (PAM) throughout the autumn migration of 2025.

Secondly, the introduction of the Project Footprint of Infrastructure (PFI) represents a refinement of the spatial extent of the development considered in the assessment (Figure A5-11). The PFI represents the defined sub-area of the overall array area where all permanent offshore infrastructure will be located, following design refinements in response to the RFI (see Appendix A7: Design Refinements) to minimise spatial overlap with sensitive receptors. More specifically it is defined as the overlap of Project Option 1 and 2 layouts plus the relevant Limit of deviation (LOD). The use of the PFI therefore provides a more spatially constrained, yet still precautionary, basis for assessing potential ornithological effects, particularly for disturbance and displacement, and forms the basis of the assessment presented in this section. Throughout the assessment, the term PFI is used specifically to refer to the area over which the quantitative assessment is undertaken. However, the offshore development boundary, which includes the array area and ECC may still be referenced more generally when describing the broader site.

In addition to these updates, targeted refinements to assessment methods have been undertaken in response to specific RFI sections, including updates to displacement and mortality rates, collision risk modelling inputs and improved clarity in the presentation of assessment assumptions and conclusions. These changes ensure alignment with current guidance and provide transparency in how RFI points have been addressed within the assessment.

Given the scale of these updates, this section should be read as a comprehensive replacement of the corresponding ornithology assessment within the 2024 NIS, except for discrete sections where it is explicitly indicated that the text remains unchanged.

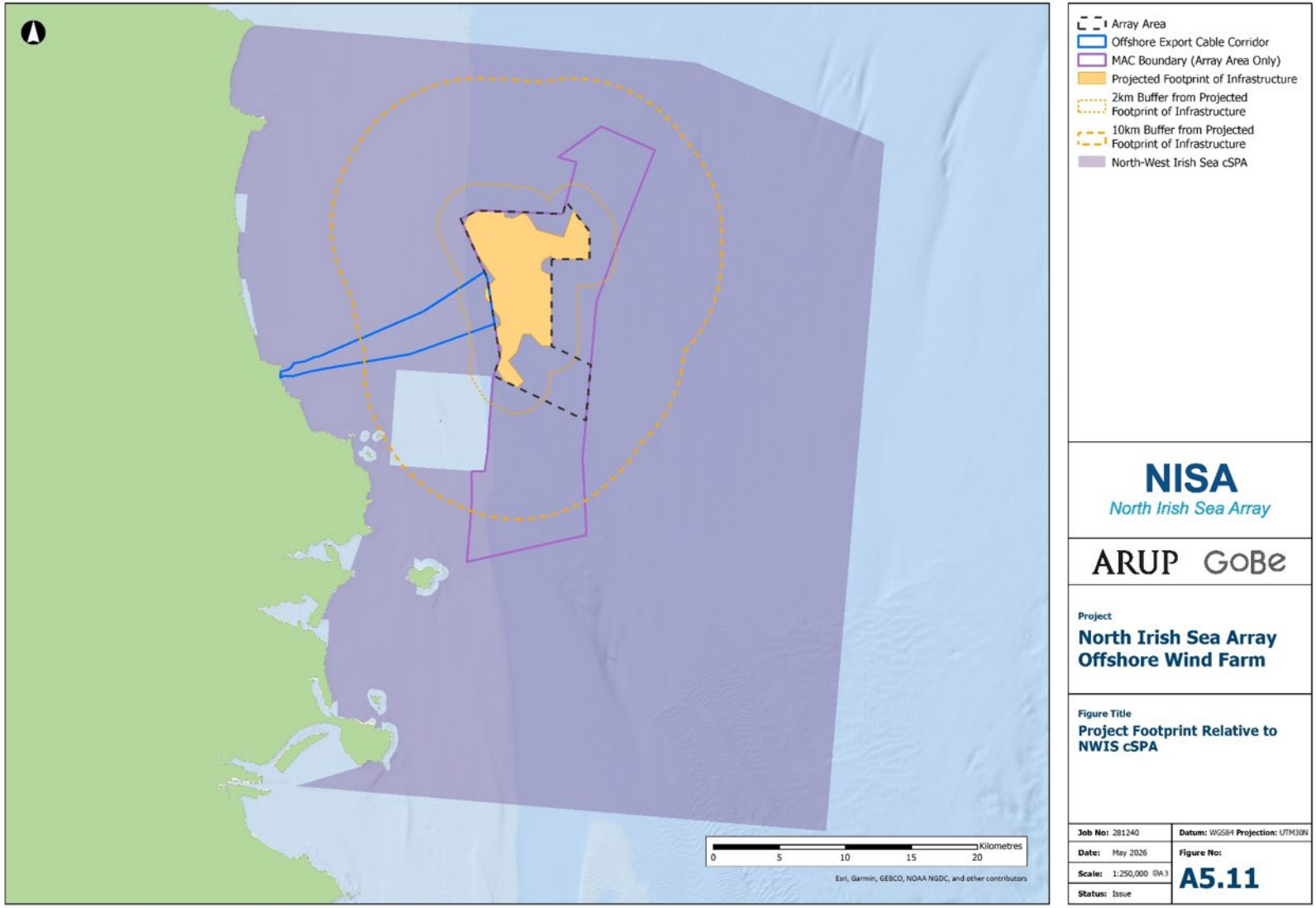


Figure A5.11 Projected Footprint of Infrastructure (PFI) relative to NWIS cSPA

5.4.1 Approach

This section has been updated to reflect changes since submission of the 2024 NIS in response to the RFI (See Appendix A7: Design Refinements). This section is entirely new and replaces the corresponding Section 5.4.1 in the 2024 NIS.

Key changes include:

- **The ornithological baseline has been refreshed using an additional 12 months of site-specific DAS data collected across the entire NWIS cSPA;**
- **The introduction of the PFI, and resulting updates in abundance and distribution estimates based on the new study area and new DAS data (including refinements to bio-seasons (as an additional scenario) for guillemot, razorbill and kittiwake based on site-specific data;**
- **Assessment methods have been refined to reflect updated UK SNCB guidance and project-specific refinements requested through the RFI process, including clearer articulation of population-level assessment criteria and thresholds and displacement rates within NatureScot guidance; and**
- **The structure and narrative of the assessment have been revised to explicitly demonstrate how RFI points have been addressed, ensuring transparency and traceability between updated evidence, assessment approach, and conclusions.**

Given the scale of these updates, this section should be read as a comprehensive replacement of the corresponding ornithology assessment within the 2024 NIS, except for discrete sections where it is explicitly indicated that the text remains unchanged.

This section of the assessment considers European sites designated for ornithological QIs that are potentially impacted by the onshore and offshore elements of the proposed development and have been screened in for the ornithology section of the NIS (as set out in Section 3.2). Where the assessment of effects on ornithological QIs relies on other relevant sections of the NIS, namely the Coastal and Marine Habitats and the Migratory Fish Species sections, reference is made to these sections.

The assessment approaches presented within this report were established based upon a review of available Irish guidance and best practice in conjunction with that of the wider offshore renewable industry. These methodologies were then aligned to be suitable for the assessment of potential impacts on marine and intertidal ornithological receptors in the western Irish sea from both the onshore and offshore development areas.

The approaches presented within this report are largely derived from UK (Natural England and NatureScot) guidance. This is due to these jurisdictions of the UK being nearest to the proposed development, the fact they have an established OWF industry, and also species which are highly relevant to those found at the proposed development (Natural England (2022), Natural England and JNCC (2012), NatureScot (2023a,b,c)). The UK guidance is supported by research and evidence and provides a precautionary approach in assessing ornithological impacts. A joint ornithological methodology was originally developed by five Phase One offshore renewable energy projects and their consultants to support consistent assessment approaches across Ireland (the Irish Phase 1 Methodology Statement). Since its preparation, key elements of guidance underpinning offshore wind assessments have been updated by UK SNCBs, including JNCC guidance on Collision Risk Modelling (CRM), and the joint methodology note is therefore no longer relied upon and is superseded by the methodologies set out in this addendum. In addition, the displacement assessment has been updated throughout to reflect NatureScot displacement rates in response to RFI Section 8(c) i, ii, and iii. Notwithstanding this, the Phase One Projects have continued to work collaboratively to maintain alignment and consistency in assessment approaches where possible, while applying the most up-to-date guidance, evidence and regulator feedback to project-specific assessments.

The list of SPAs that have been screened in and considered within this assessment are shown in Table A5.8 below (see Addendum to the SISAA for further details). The majority of the changes arise from updated COs since the 2024 NIS, further clarification of the screening ranges applied in the assessment (with indirect effects on prey species now considered within 20 km and potential barrier effects assessed out to 50 km from the array area), and the screening in of kittiwake for the assessment of displacement effects, in response to RFI Section 8(c)ii.

For screened in sites, a detailed assessment for relevant impacts is provided below, though for sites where only migratory collision risk has been screened in as an impact, an assessment is provided in Section 5.4.31 to improve readability.

Table A5.8: European sites screened in for ornithology receptors. (Replaces Table 5.9 in the 2024 NIS)

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Onshore Impact Pathways			
North West Irish Sea cSPA	Common scoter; Red-throated diver; Great northern diver, Kittiwake; Lesser black-backed gull; Black-headed gull; Common gull; Herring gull; Guillemot; Razorbill; Shag; and Cormorant.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-
Malahide Estuary SPA	Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser; Redshank;	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Shelduck; and Wetlands and waterbirds.		
Rogerstown Estuary SPA	Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; Shoveler; and Wetlands and waterbirds.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-
Baldoyle Bay SPA	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; Shelduck; and Wetlands and waterbirds.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-
North Bull Island SPA	Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover;	Onshore development area: Onshore disturbance and displacement.	-

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler; Teal; Turnstone; and Black-headed gull.		
River Nanny Estuary and Shore SPA	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling	Onshore development area: Onshore disturbance and displacement.	-
South Dublin Bay and River Tolka Estuary SPA	Black-headed gull; Bar-tailed godwit; Dunlin; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; and Sanderling.	Onshore development area: Onshore disturbance and displacement.	-

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Skerries Islands SPA	Cormorant; Shag; Light-bellied Brent Goose; Purple Sandpiper; Turnstone; and Herring Gull	Onshore development area: Onshore disturbance and displacement.	-
Rockabill SPA	Purple sandpiper.	Onshore development area: Onshore disturbance and displacement.	-
Lambay Island SPA	Cormorant; Shag; Lesser Black-backed Gull; Herring Gull; Kittiwake; Guillemot; and Razorbill.	Onshore development area: Onshore disturbance and displacement.	-
Boyne Estuary SPA	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	Onshore development area: Onshore disturbance and displacement.	

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Offshore Impact Pathways			
North West Irish Sea cSPA	Common scoter; Red-throated diver; and Great northern diver.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; Migratory collision risk; and Barrier effects.
	Kittiwake; and Manx shearwater.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; Collision risk; and Barrier effects.
	Lesser black-backed gull; Herring Gull; Great black-back gull; Black-headed gull; Common gull; Roseate tern; Common tern; Arctic tern; and Fulmar.	Array area only: Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Array area only: Indirect effects via impacts on prey; Spatial distribution and disturbance; Collision risk; and Barrier effects.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Razorbill; Guillemot; and Puffin.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; and Barrier effects.
Rockabill SPA	Common tern; Roseate tern; and Arctic tern.	Array area only: Indirect effects via impacts on prey.	Array area only: Indirect effects via impacts on prey; Collision risk; and Barrier effects.
	Purple sandpiper.	Offshore development area: Offshore disturbance and displacement;	Offshore development area: Offshore disturbance and displacement; and Migratory collision risk.
Skerries Islands SPA	Herring gull.	Array area only: Indirect effects via impacts on prey.	Array area only: Indirect effects via impacts on prey; and Collision risk.
	Light-bellied Brent Goose; Purple Sandpiper; and Turnstone.	-	Array area only: Migratory collision risk.
Lambay Island SPA	Guillemot; Puffin; and Razorbill.	Array area only: Offshore disturbance and displacement; and Indirect effects via impacts on prey.	Array area only: Offshore disturbance and displacement; and Indirect effects via impacts on prey.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Kittiwake;	Array area only: Offshore & onshore disturbance and displacement; and Indirect effects via impacts on prey.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Collision risk.
	Herring gull; Lesser black-backed gull; and Fulmar.	Array area only: Indirect effects via impacts on prey	Array area only: Indirect effects via impacts on prey; and Collision risk.
	Greylag goose.	-	Array area only: Migratory collision risk.
Rogerstown Estuary SPA	Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; and Shoveler.	-	Array area only: Migratory collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Boyne Estuary SPA	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	-	Array area only: Migratory collision risk.
River Nanny Estuary and Shore SPA	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	-	Array area only: Migratory collision risk.
Malahide Estuary SPA	Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail;	-	Array area only: Migratory collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Red-breasted merganser; Redshank; and Shelduck.		
Ireland's Eye SPA	Guillemot; and Razorbill.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.
	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
	Herring gull.	-	Array area only: Collision risk.
Baldoyle Bay SPA	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; and Shelduck.	-	Array area only: Migratory collision risk.
Howth Head Coast SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
Poulaphouca Reservoir SPA	Greylag goose.	-	Array area only: Migratory collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Wicklow Head SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
Morecambe Bay & Duddon Estuary SPA	Lesser black-backed gull.	-	Array area only: Collision risk.
Rathlin Island SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
	Lesser black-backed gull.	-	Collision risk.
Saltee Islands SPA	Guillemot.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.
	Gannet; and Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
	Lesser black-backed gull.	-	Array area only: Collision risk.
	Razorbill.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.
Ailsa Craig SPA	Gannet; and Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Lesser black-backed gull.	-	Array area only: Collision risk.
Ribble & Alt Estuaries SPA	Lesser black-backed gull.	-	Array area only: Collision risk.
Horn Head to Fanad Head SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
Blackwater Callows SPA	Whooper swan; Wigeon; Teal; and Black-tailed godwit.	-	Array area only: Migratory collision risk.
Helvick Head to Ballyquin SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Skomer, Skokholm & the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
	Lesser black-backed gull.	-	Array area only: Collision risk.
Grassholm SPA	Gannet.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
Cork Harbour SPA	To maintain the favourable conservation condition of the following species: Shelduck; Wigeon; Teal; Pintail; Shoveler; Red-breasted merganser; Little grebe; Great crested grebe; Grey heron;	-	Array area only: Migratory collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
	Oystercatcher; Black-tailed godwit; Bar-tailed godwit; Redshank; Golden plover; Grey plover; Lapwing; Dunlin; and Curlew.		
North Colonsay & Western Cliffs SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.
Courtmacsherry Bay SPA	Shelduck; Wigeon; Red-breasted merganser; Black-tailed godwit; Bar-tailed godwit; Golden plover; Lapwing; Dunlin; Curlew; and Great northern diver.	-	Array area only: Migratory collision risk.

Designated site	Features screened in for further assessment	Impacts screened in for Construction and Decommissioning	Impacts that have been screened in for Operation and Maintenance
Clonakilty SPA	Shelduck; Black-tailed godwit; Curlew; and Dunlin.	-	Array area only: Migratory collision risk.

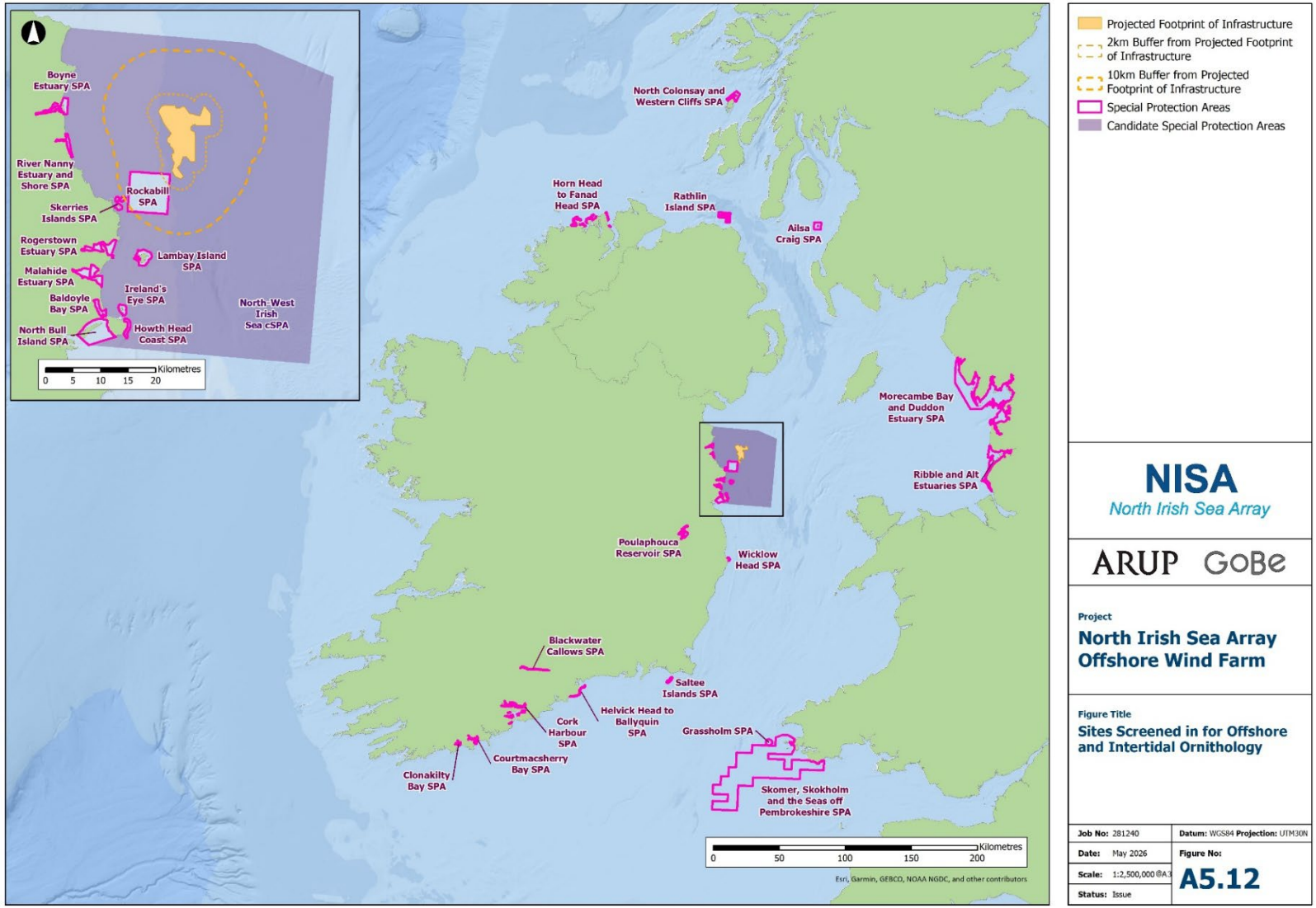


Figure A5.12 Sites Screened in for Offshore and Intertidal Ornithology (this is a new figure for the NIS).

5.4.1.1 Assessment Criteria

This section has been revised to improve clarity in the baseline characterisation, incorporating an additional 12 months of NWIS DAS data, alongside supplementary PAM and VP survey data. The section also sets out the key SPA CO attributes and clearly identifies their relationship to the relevant impact pathways. This provides a transparent framework for the assessment methodology, demonstrating how each CO and its attributes have been considered on their own merits in response to the NPWS submission.

5.4.1.1.1 Baseline characterisation

In addition to the screening criteria presented in the Addendum to the SISAA, specific assessment criteria have been used for this ornithology assessment. The assessment has been based on relevant guidance for conducting an AA and assessing offshore wind farms (e.g., European Commission, 2021; DCCAE, 2017; Maclean et al., 2009) and has applied the criteria contained in the guidance where relevant to the QIs under consideration.

Existing regional datasets from national organisations namely Bird Watch Ireland (BWI) and the British Trust for Ornithology (BTO) were also reviewed alongside relevant guidance and literature (e.g., Bradbury et al., 2014; Furness and Wade, 2012; Furness et al., 2013; Dierschke et al., 2016 and MIG-Birds, 2022), to identify the species sensitive to disturbance and/or displacement; or sensitive to collision within the offshore development area. See Appendix A14 Offshore and Intertidal Ornithology Technical Baseline for the full list of regional datasets reviewed.

Various site-specific surveys were conducted including DAS, vessel-based surveys, vantage-point surveys, intertidal bird surveys and PAM for migratory birds. For further information regarding the site-specific surveys see Appendix A14 Offshore and Intertidal Ornithology Technical Baseline. Since the 2024 NIS, a further 12 months of monthly DAS data have been collected across the NWIS cSPA (NWIS DAS). These additional data provide an updated and robust evidence base for the ornithology assessment, particularly in relation to recent species abundances and spatial distribution within the SPA. The data collected during these surveys, from the PFI area and a 10km buffer, were used to identify key species more susceptible to the potential impacts arising from the proposed development during different seasons, due to their abundance on the site. For an overview of species recorded during the site-specific surveys see the Addendum to the SISAA. The additional NWIS DAS data has been added to the original 29 months of DAS data collected over the original scoping boundary (MAC boundary plus 4km buffer) (MAC DAS) to provide an updated assessment. As such, 41 months of DAS data have been collected, analysed and used for the assessment, covering four full breeding seasons. Typically, 24 months of survey data are collected (Parker et al., 2025a) and so these data should be considered as forming a robust baseline from which to form the ornithological assessment.

A range of bird populations use Irish sea waters. The use of Irish waters and of specific sites and habitats varies throughout the year depending on species' requirements. Therefore, to increase the accuracy of the assessments, any predicted impacts are considered separately for each relevant biological season (bio-seasons) for each species (e.g., breeding, spring/autumn migration and wintering). Seasons are based on Furness (2015), though for guillemot, razorbill and kittiwake an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "Generic Approach"). See Appendix A14 Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

The abundance of birds in the survey area has been estimated from site-specific survey data carried out for the proposed development. Two methods were used to estimate the abundance of birds in the array and relevant buffer zone. The abundance for all species was calculated using design-based estimates as laid out in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline. In addition, guillemot and razorbill abundance and distribution within the survey area were predicted using a model-based approach (MRSea; see Appendix A15: MRSea Modelling for Offshore Ornithology). These two auk species were selected for modelling over the initial 29 months of MAC DAS data due to their high encounter rates and consistent presence across months and a range of densities, which made them suitable for model-based estimation.

In general, MRSea outputs for this period predicted lower monthly abundances than corresponding design-based estimates.

MRSea analysis was also applied to the additional 12 months of NWIS DAS data for nine species (Appendix A15: MRSea Modelling for Offshore Ornithology). These outputs are used to provide contextual information on species distribution across the wider NWIS cSPA, including areas beyond the 4 km MAC survey extent. While MRSea-derived abundance estimates were produced, they have not been incorporated into the quantitative assessment. This is because comparable MRSea outputs are not available for all species across both survey periods. To maintain consistency and comparability, the assessment is therefore based on design-based abundance estimates from the MAC DAS and NWIS DAS datasets.

5.4.1.1.2 SPA conservation objective attributes and relevance to impact pathways

SPAs designated for seabirds and migratory waterbirds have COs which are underpinned by a consistent set of CO attributes. The potential likely significant effect on a site is assessed only where a plausible linkage exists between an identified potential impact of the proposed development (namely collision mortality, disturbance and displacement, effects on foraging availability, and barriers to connectivity) and a site's CO attributes. The assessment is explicitly population-level in its focus, avoiding conflation of localised or short-term behavioural responses with impacts capable of affecting site integrity. This effect-pathway-led approach ensures the assessment is proportionate, focused on site integrity, and consistent with NPWS guidance and Appropriate Assessment principles.

This attribute-level assessment does not, in isolation, determine whether there is an AEoI. Rather, it provides an input to the overall Appropriate Assessment, where potential effects across all CO attributes are considered together to determine whether the integrity of the SPA would be adversely affected based on the overarching CO (maintain or restore) for each species. The relevance of each CO attribute to the assessment is explained below, with reference to the specific impact pathways assessed.

Population size

Relevant impact pathways:

- Collision mortality
- Displacement-related mortality, including indirect effects via reduced fitness or survival

Population size and trend represent the primary CO attributes through which offshore wind effects may manifest. These attributes can only be affected where impacts result in direct or indirect loss of individuals, either through additional mortality or through population-level consequences of displacement. Accordingly, collision risk and displacement-related mortality are assessed quantitatively and qualitatively in terms of their potential to influence population viability, consistent with NPWS guidance that SPA integrity is determined at the population level rather than through individual-based effects.

In most cases, the most recent robust population estimate has been used as the reference population for each SPA. Where populations are stable or increasing, the most recent count provides the most relevant representation of current site condition. Conversely, where populations are lower than historical levels, reliance on the most recent (and lowest) count represents the most precautionary and appropriate basis for assessment.

There is no single SPA citation population within the COs that adequately reflects species abundance in the NWIS cSPA across the year, as available estimates are based on limited survey snapshots and are likely to under-represent cumulative seasonal use (e.g. ObSERVE; Jessopp et al*.,* 2018). To address this, population-level effects have been assessed across multiple, ecologically relevant population contexts, including breeding populations of adjacent SPAs, the NWIS cSPA citation population, the relevant regional population, and maximum abundance estimated from the recent site-specific NWIS DAS. This approach reflects the strong seasonal variability and wide dispersal of species outside the breeding season, avoids over-reliance on highly precautionary snapshot values, and it is considered that it provides a more robust, evidence-based assessment than assessing against the stated NWIS citation populations.

Spatial distribution

Relevant impact pathways:

- Disturbance and displacement

- Barrier effects affecting movement or space use

The spatial distribution attribute reflects the requirement for QIs to continue to utilise the spatial extent of marine areas necessary to sustain the SPA population. Changes in distribution can only arise where birds consistently avoid, are displaced from, or experience impediments to movement through areas as a result of the proposed development. The assessment therefore considers whether displacement or barrier effects could alter established patterns of space use at a scale and duration that would be meaningful to population maintenance, rather than focusing on localised redistribution within the normal range of ecological variability.

Forage spatial distribution, extent, abundance and availability

Relevant impact pathways:

- Displacement from offshore foraging areas
- Indirect effects via impacts on prey

This attribute relates to the availability and functionality of foraging resources necessary to support the SPA population. The assessment focuses on whether project-related effects could reduce the effective availability of forage resources through displacement or reduced access, rather than on small-scale changes in foraging location that do not affect overall prey availability or population maintenance. To aid this assessment an assessment on key seabird prey species is provided below.

Indirect impacts on prey species were assessed to address the COs for the SPAs within 20km of the array area (details provided within the Addendum to the SISAA). This section briefly assesses the predicted impact of the proposed development on the key prey species of seabirds to aid the assessment within the relevant SPA sections. This includes any impacts that may arise during the construction, operation, and decommissioning phases associated with the offshore development area on key fish prey species. The environment in the vicinity of the offshore development area is naturally dynamic, and as such will exhibit some level of natural variation and change over time whether the proposed development proceeds or not. The following species accounts provide background information on key seabird prey species used to inform the assessment.

5.4.1.1.3 Sandeel

Due to their burrowing habit and reliance on specific substrates (e.g., Green, 2017; Wright et al., 2000), sandeel are susceptible to seabed disturbance impacts, inclusive of impacts from increased suspended sediment concentrations (SSCs) and sediment deposition, habitat damage and disturbance of the seabed, and the loss of benthic habitat. Analysis of site-specific and regional sediment data indicate the presence of suitable sandeel habitats along most of the ECC and in the wider region to the south of the offshore development area, while sediments within the array area are mostly unsuitable for sandeel (Appendix A16: Fish and Shellfish Baseline Characterisation). Therefore, any temporary damage or disturbance of the seabed during construction and any long-term or permanent loss of seabed habitats during operation will likely be small in the context of available suitable substrates within the offshore development area and wider region. Similarly, sediment plumes are expected to quickly dissipate after cessation of construction activities due to settling and wider dispersion, with SSCs reducing to background levels within a couple of tidal cycles.

With regards to underwater noise, sandeel belong to hearing Group 1 in accordance with the Popper et al. (2014) classification (see Section 5.2.2), based on their restricted hearing abilities and low susceptibility to pressure-related injuries. However, given their burrowing nature and demersal spawning behaviour, sandeel may have limited capacity to vacate the area from the onset of underwater noise exposure, and therefore they may experience some mortality and/or recoverable injury in addition to temporary threshold shift (TTS) and behavioural responses.

The Developer has committed to low order UXO detonation/deflagration where practicable however the largest potential impact ranges from underwater noise would likely occur where high order detonation is required, which would generate impulse sounds, characterised by high acoustic energy levels with a rapid rise time followed by a rapid decay (Popper and Hawkins, 2019). Although, any detonation would represent a short-term (i.e., seconds to minutes) increase in underwater noise. The maximum impact range for the onset of mortality and potential mortal injury from the highest charge weight (if deployed) is estimated to be 810m from the detonation (Appendix A6: Underwater Noise Modelling Report).

The impact is anticipated to occur infrequently and would be momentary (i.e., lasting seconds to minutes). As discussed above, site-specific PSA data suggest that sediments within the array area are mostly unsuitable for sandeel (Appendix A16: Fish and Shellfish Baseline Characterisation), and therefore the number of sandeel within the predicted impact ranges for mortal and recoverable injuries is likely to be low. The risk of non-lethal injuries, TTS and behavioural effects in sandeel are considered to be high within 10s of metres of the detonation, with moderate risk of effects within 100s of metres (Popper et al., 2014). It is possible that UXO operations will be planned to take place year-round during the UXO clearance campaign, and therefore they have the potential to interact with spawning or nursery periods for sandeel. However, each UXO clearance is a discrete event and while this may result in some temporary disturbance, it is unlikely to result in their displacement from spawning, nursery or feeding grounds. Moreover, the Developer has committed to the use of Noise Abatement System/s (NAS) (e.g. bubble curtains or similar) in case of high-order clearance, providing -10dB noise attenuation and consequently a reduction in the noise propagated through the water column during detonations and further limiting potential effects on sandeel.

General construction noise from the installation of suction bucket foundations, the drilling of WTG or OSP platform foundations and vessel movements would generate low levels of non-impulse (i.e., continuous) sounds. In addition, non-impulse sounds would also be generated during geophysical and geotechnical surveys. There is currently no evidence that non-impulse underwater sounds, such as those emitted during construction activities and vessel operations, cause mortality or potential mortal injury in fish. The risk of non-lethal injuries in sandeel is considered to be low at all distances from the sound source, while the risk of TTS is likely to be moderate up to 10s of metres from the source (Popper et al., 2014). The relative risk of behavioural changes is considered to be moderate up to 100s of metres from the noise source (Popper et al., 2014). Based on this, combined with the temporary and intermittent nature of the proposed construction activities, general construction noise is not predicted to result in significant population level effects on the sandeel population within the offshore development area and wider eastern Irish Sea region.

Herring

Herring are demersal spawners, reliant upon the presence of suitable substrates for spawning and egg development (Frost and Diele, 2022). Their eggs are most susceptible to seabed disturbances and sediment deposition as they would be unable to avoid the impact. The closest known active herring spawning grounds are the Dundalk Bay spawning ground and the Mourne spawning ground located off County Down, and the northern sections of County Louth (Dickey-Collas et al., 2001). Both of the spawning grounds are located outside of the areas affected by habitat disturbance and loss, elevated SSC and sediment deposition (Appendix A16: Fish and Shellfish Ecology Baseline Characterisation), and therefore no effects on herring spawning grounds are predicted to arise from increased SSC, sediment deposition, habitat disturbance and habitat loss.

With regard to underwater noise, herring belong to hearing Group 4, based on the presence of a swim bladder that is directly involved in hearing through its connection to the inner ear. Group 4 species are considered to be the most sensitive to underwater noise, with direct detection of sound pressure, rather than just particle motion. The presence of a swim bladder makes them highly susceptible to physical injuries, and given their good hearing ability, they are also at higher risk to experience physiological and behavioural effects (Popper et al., 2014; Popper and Hawkins, 2019).

As aforementioned, the largest potential impact ranges from underwater noise would likely result from UXO clearance activities, which would occur infrequently and would be momentary. The maximum impact range for the onset of mortality and potential mortal injury is estimated to be 810m from the detonation (Appendix A6: Underwater Noise Modelling Report). The risk of non-lethal injuries, TTS and behavioural effects in herring are considered to be high within 100s of meters of the detonation (Popper et al., 2014). Subsequently there is no potential interaction between the predicted underwater noise impact ranges and the Dundalk Bay and the Mourne herring spawning grounds, and therefore, spawning adults and herring eggs are not predicted to experience injurious or non-injurious effects during UXO clearance. Moreover, the Developer has committed to the use of NAS (e.g. bubble curtains or similar) in case of high-order clearance, providing -10dB noise attenuation and consequently a reduction in the noise propagated through the water column during detonations, and further limiting potential effects on herring.

As detailed above, general construction noise from the installation of suction bucket foundations, the drilling of WTG or OSP platform foundations, vessel movements and surveys would generate low levels of non-impulse sounds. There is currently no evidence that non-impulse underwater sounds, such as those emitted during construction activities and vessel operations, cause mortality or potential mortal injury in fish. Recoverable injury and TTS are predicted to occur within 50 m of the noise source (Appendix A13: Underwater Noise Assessment), with the risk of behavioural effects in herring considered to be high, up to 10s of metres from the source, and moderate within 100s of metres (Popper et al., 2014). Based on this, combined with the temporary and intermittent nature of the proposed construction activities, general construction noise is not predicted to result in significant population level effects on the herring population within the offshore development area and wider eastern Irish Sea region.

Sprat

Sprat are mobile and expected to move away from localised sediment plumes, with individuals expected to return shortly after sediment plumes have dissipated. Moreover, spart do not depend upon the seabed for part or all of their life cycle, and therefore they are not susceptible to the physical damage or disturbance of the seabed during construction and the long-term loss of benthic habitats during operation.

With regards to underwater noise, sprat belong, like herring, to hearing Group 4, and are therefore highly susceptible to physical injuries, as well as physiological and behavioural effects. As detailed above, the maximum impact range for the onset of mortality and potential mortal injury is estimated to be 810m from the detonation (Appendix A13: Underwater Noise Assessment). The risk of non-lethal injury, TTS and behavioural effects in sprat are high, within 100s of metres of the detonation (Popper et al., 2014). Any behavioural responses or TTS are expected to be short-lived, with affected individuals resuming normal behaviour or recolonising affected areas shortly after clearance activities have ceased. Sprat spawning and nursery grounds are broadly distributed throughout the study area and the wider Irish Sea. Given the relatively small spatial extent potentially affected by UXO detonations in relation to the overall distribution of spawning and nursery grounds, together with the intermittent and temporary nature of UXO clearance works, UXO detonations are not predicted to result in significant population level effects on the sprat population within the offshore development area and wider eastern Irish Sea region.

Moreover, the Developer has committed to the use of NAS (e.g. bubble curtains or similar) in case of high-order clearance, providing -10dB noise attenuation, thereby reducing noise propagation through the water column during detonation events and further limiting potential effects on sprat.

Disturbance across the site

Relevant impact pathways:

- Construction, operation and decommissioning related disturbance
- Repeated displacement within the SPA functional area

Disturbance across the site is relevant where repeated or sustained disturbance could interfere with normal behaviours such as foraging or commuting, with potential population-level consequences. The assessment therefore considers disturbance in terms of its frequency, duration and spatial extent, and whether it could lead to effects that undermine the SPA's ability to support its QI population over time.

Barriers to connectivity

Relevant impact pathways:

- Barrier effects affecting commuting or movement between functional habitats

This attribute relates to the maintenance of ecological connectivity between breeding sites, foraging areas and other functionally important habitats.

The assessment considers whether barrier effects associated with the proposed development could alter movement pathways or reduce connectivity between functionally linked habitats. This is evaluated in the context of the relevant CO attribute (i.e. barriers to connectivity), specifically whether any such effects could influence the population's ability to access the SPA or ecologically important areas beyond it.

Additional relevant impact pathways

Dust deposition, surface water run-off of suspended sediment, and accidental pollution are considered primarily in relation to onshore and estuarine SPAs, where QIs are dependent on intertidal and nearshore habitats. These pathways do not act directly on offshore bird populations and are therefore not relevant to offshore SPA COs.

Dust deposition and surface water run-off may, if unmitigated, result in short-term changes to intertidal substrates or prey availability, with potential indirect implications for forage spatial distribution, extent, abundance and availability. Accidental pollution represents a low-probability pathway that could affect habitat quality under exceptional circumstances. None of these pathways give rise to barriers to connectivity or sustained disturbance across the site, and any effects would be localised, temporary and managed through standard construction controls.

Assessment therefore focuses on whether these pathways could plausibly undermine the ability of affected SPAs to support their qualifying populations, rather than on transient or localised environmental change.

5.4.1.2 Description of Designation

This section has been updated to refer to the Addendum to the SISAA.

The description of designated sites and the conservation objects for each site can be found in the Addendum to the SISAA Report. COs and relevant QIs for each SPA are provided in SPA sections below. Designated sites were included based on connectivity to species which are considered vulnerable to potential impacts as a result of the proposed development, with breeding seabird connectivity determined based on mean maximum foraging range plus 1 standard deviation (as presented in Woodward et al., 2019).

5.4.1.3 Project Option 1 and Project Option 2 Determination Greatest Potential for AEoI on Designated Sites

In the 2024 NIS, WTG monopile and jacket foundations and OSP monopile and jacket foundations with pin piles were considered. Following further design refinement in response to the RFI (see Appendix A7: Design Refinements), WTGs are now proposed as Suction Bucket Jacket (SBJ) foundations, and OSPs as jacket foundations with either drilled pin piles or suction bucket foundations (meaning there will be no piling). The key changes required in this section are related to this refinement of the project design envelope.

Additionally, in response to RFI Section 6, the spatial extent of the infrastructure within the array area has been refined to reduce the overlap with the NWIS cSPA.

Therefore, Table 5.11 within the 2024 NIS shall be deleted and replaced with Table A5.9.

Table A5.9: Potential impacts and the Project Option with the greatest magnitude of impact in respect of Ornithology Receptors. The Project Option that has the greatest level of magnitude for the respective impact is Identified in Blue. (Replaces Table 5.11 in the 2024 NIS)

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
Construction			
Disturbance and displacement in the ECC and/or array area	Construction duration: Approximately 3 years Array area: Array area size of 88.5km^2; and PFI size of 57.7km^2; Vessel activity (WTG Installation): 2 installation vessels; 6 personnel support vessels; 2 component transport vessels; and 1 support helicopter. Vessel activity (Cable Installation -Array) 1 main laying vessel; 1 main burial vessel; 1 personnel support vessel; and 1 component transport vessel ECC area: ECC area of 36.45km^2 Vessel activity (ECC installation): 1 main laying vessel; 1 main burial vessel; 1 main support vessel; 12 work boats/Rigid Inflatable Boat (RIBs); 1 work boat for landfall HDD installation; 1 small JUV for landfall HDD installation; and 1 guard vessel for HDD and cable installation	Construction duration: Approximately 3 years Array area: Array area size of 88.5km^2; and PFI size of 57.7km^2; Vessel activity (WTG Installation): 2 installation vessels; 6 personnel support vessels; 2 component transport vessels; and 1 support helicopter. Vessel activity (Cable Installation -Array) 1 main laying vessel; 1 main burial vessel; 1 personnel support vessel; and 1 component transport vessel ECC area: ECC area of 36.45km^2 Vessel activity (ECC installation): 1 main laying vessel; 1 main burial vessel; 1 main support vessel; 12 work boats/Rigid Inflatable Boat (RIBs); 1 work boat for landfall HDD installation; 1 small JUV for landfall HDD installation; and 1 guard vessel for HDD and cable installation.	Both project options have the same magnitude of impact with regard to the number of vessels present for displacement impacts in the ECC, and the size of the offshore development area for displacement due to presence of offshore infrastructure.
Disturbance and displacement from the onshore development area	Disturbance and displacement will occur at the landfall site and Malahide estuary from works including HDD drilling and duct pull-back, grid facility construction, road breaking out, cable trenching and backfilling, installation of joint bays and road resurfacing.	Disturbance and displacement will occur at the landfall site and Malahide estuary from works including HDD drilling and duct pull-back, grid facility construction, road breaking out, cable trenching and backfilling, installation of joint bays and road resurfacing.	The onshore development area does not have project options as the associated onshore infrastructure and works will be the same for both project options.

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
			Therefore, Project Option 1 and Project Option 2 will result in the same potential for AEoI on integrity of designated sites in relation to this impact.
Indirect impacts due to impacts on prey species	WTGs: 49 Temporary disturbance to fish habitats will arise from the foundation installation, jack-up and anchoring operations and cable installation including boulder clearance and Pre-Lay Grapnel Runs (PLGR). Increased SSC and deposition will arise from habitat disturbance events, and has the potential to change key prey species habitats, and smother eggs and larvae. The greatest impact will arise from the largest volume of sediments released during construction activities including cable installation and drilling of OSP foundations. Underwater noise has the potential to result in mortality, injurious effects, and behavioural disturbance to prey species. The greatest impacts from underwater noise will arise from the pre-construction surveys, UXO clearance operations and construction activities including the installation of foundations and cables. The long-term/permanent loss of key habitats for fish will arise from the presence of infrastructure on the seafloor. The greatest impact from habitat loss is defined by the largest area of seabed lost or changed as a result of the installation of offshore infrastructure and associated protection measures. See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	WTGs: 35 Temporary disturbance to fish habitats will arise from the foundation installation, jack-up and anchoring operations and cable installation including boulder clearance and PLGR. Increased SSC and deposition will arise from habitat disturbance events, and has the potential to change key prey species habitats, and smother eggs and larvae. The greatest impact will arise from the largest volume of sediments released during construction activities including cable installation and drilling of OSP foundations. Underwater noise has the potential to result in mortality, injurious effects, and behavioural disturbance to prey species. The greatest impacts from underwater noise will arise from the pre-construction surveys, UXO clearance operations and construction activities including the installation of foundations and cables. The long-term/permanent loss of key habitats for fish will arise from the presence of infrastructure on the seafloor. The greatest impact from habitat loss is defined by the largest area of seabed lost or changed as a result of the installation of offshore infrastructure and associated protection measures. See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	Project Option 1 presents the greatest magnitude of impact to prey species, when considering multiple impact pathways, as more infrastructure will be installed (see Table A5.4 of Section 5.2 of this NIS for details).
Indirect impacts due to accidental pollution	WTGs: 49 Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.	WTGs: 35 Each WTG will contain components that require lubricating oils, hydraulic oils and coolants for operations such as grease, synthetic oil, nitrogen, transformer oil, sulphur hexafluoride (SF6) and glycerol. The volume of oils and fluids will vary depending on the WTG design.	Project Option 1 presents the greatest magnitude of impact with regard to vessel movement during the construction period. These parameters present the maximum volumes of compounds which could be associated with the proposed development infrastructure.

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
	The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6. A maximum of 3,032 return vessel trips will occur during construction activities.	The OSP will contain diesel for the emergency diesel generators contained in tanks, oil for transformers, deionised water for cooling systems, glycol, lead acid for UPS and batteries, engine oil and SF6. A maximum of 2,504 return vessel trips will occur during construction activities.	
Operation			
Disturbance and displacement in the array area (including barrier effects)	Array area: Array area size of 88.5km^2 PFI area size of 57.7km^2 WTGs infrastructure presence: Operation of 49 WTGs Vessel activity (O&M Vessels): 1 JUV; 1 SOV; 1 CTV; 1 lift vessels; 1 cable vessels; and 7 aux vessels. Construction duration: 36 months	Array area: Array area size of 88.5km^2 PFI area size of 57.7km^2 WTGs infrastructure presence: Operation of 35 WTGs Vessel activity (O&M Vessels): 1 JUV; 1 SOV; 1 CTV; 1 lift vessels; 1 cable vessels; and 7 aux vessels. Construction duration 36 months	Both project options have the same magnitude of impact based on the displacement assessment, which is based on the size of the offshore development area which is the same across both options.
Collision risk	WTGs: Operation of 49 WTGs; Air draft 40m (LAT); Rotor diameter 250m; Blade width 7m; and Rotor max rotational speed 8.3m/s.	WTGs: Operation of 35 WTGs; 8 WTGs with an air draft 35m (LAT); 27 WTGs with an air draft 40m (LAT); Rotor diameter 276m; Blade width 7.5m; and Rotor max rotational speed 7.5m/s.	Predominantly Project Option 1 but considered on a species-by-species basis with the project option with the greatest magnitude of impact presented for each species.
Combined collision and displacement risk	Array area: Array area size of 88.5km^2 PFI area size of 57.7km^2	Array area: Array area size of 88.5km^2 PFI area size of 57.7km^2	This impact is assessed only for gannet, for which Project Option 1 represents the project option with the greatest magnitude of impact

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
	WTGs: Operation of 49 WTGs; Air draft 40m (LAT); Rotor diameter 250m; Blade width 7m; and Rotor max rotational speed 8.3m/s.	WTGs: Operation of 35 WTGs; 8 WTGs with an air draft 35m (LAT); 27 WTGs with an air draft of 40m (LAT); Rotor diameter 276m; Blade width 7.5m; and Rotor max rotational speed 7.5m/s.	for collision impacts (with no differences for displacement impacts)
Migratory collision risk	WTGs: Operation of 49 WTGs; Air draft 40m (LAT); Rotor diameter 250m; Blade width 7m; and Rotor max rotational speed 8.3m/s.	WTGs: Operation of 35 WTGs; 8 WTGs with an air draft 35m (LAT); 27 WTGs with an air draft of 40m (LAT); Rotor diameter 276m; Blade width 7.5m; and Rotor max rotational speed 7.5m/s.	Project Option 1 is the project option with the greatest magnitude of impact for migratory collision risk based on modelling for both Project Options.
Indirect impacts due to impacts on prey species	See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	Project Option 1 Presents the greatest magnitude of impact when considering multiple impact pathways, as more infrastructure will be require maintaining (see Table A5.4 of Section 5.2 of this NIS for details).
Impacts arising from artificial light	Artificial lighting will be used continuously during HDD drilling activities. During construction, temporary lighting will be used to mark any surface piercing structures and will have a 2.5 second yellow flash visible for at least 2nm with a 360-degree visibility.	Artificial lighting will be used continuously during HDD drilling activities. During construction, temporary lighting will be used to mark any surface piercing structures and will have a 2.5 second yellow flash visible for at least 2nm with a 360-degree visibility.	Project Option 1 is considered to have a greater magnitude of impact due to the higher number of surface piercing structures.
Decommissioning			
Disturbance and displacement in the ECC and/or array area	The greatest potential for effect is identical (or less) to that of the construction phase	The greatest potential for effect is identical (or less) to that of the construction phase	Equal magnitude of impact across both options
Indirect impacts due to impacts on prey species	See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	See Table A5.4 in Section 5.2 of this NIS, which details the potential impacts to fish receptors from the proposed development (inclusive of potential impacts to key prey species of ornithological features).	Project Option 1 Presents the greatest magnitude of impact when considering multiple impact pathways, as more infrastructure will be require maintaining (see

Potential impact	Project Option 1 (49 WTG)	Project Option 2 (35 WTG)	Rationale for the project option with the greatest magnitude of impact
			Table A5.4 of Section 5.2 of this NIS for details).
Indirect impacts due to accidental pollution	The greatest potential for effect is identical (or less) to that of the construction phase	The greatest potential for effect is identical (or less) to that of the construction phase	Equal magnitude of impact across both project options

5.4.1.3.1 Approach to the assessment

This section has been revised to incorporate amendments made in response to the RFI, improve clarity, transparency and alignment with Appropriate Assessment requirements by separating core methodology from supporting technical evidence. Detailed justification for displacement and mortality rates is now provided in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, ensuring the NIS presents a clear, focused assessment while maintaining a robust and traceable evidence base.

Disturbance and Displacement

The developer maintains that the evidenced approach to displacement and mortality rates (the 'Developer approach') remains the most appropriate. However, throughout the assessment the full suite of impacts are presented as requested in RFI Section 8(c)i, including PVA outputs (where appropriate) for the displacement and mortality rates following NatureScot guidance (NatureScot, 2023a). As requested in the RFI, puffin (8(e)iv) and kittiwake (8(c)ii) have also now been screened in. For simplicity, all information and justification for displacement rates is provided in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis. Therefore, discussion on displacement rates has been removed from this NIS and only summary tables of rates remain. The following text should be considered a direct replacement of Section 5.4.1.3.1 in the 2024 NIS.

The screening process for disturbance and displacement has identified the QIs and sites to have potential for disturbance and displacement during the construction, decommissioning and operational phases (LSE cannot be ruled out). The relevant SPAs, identified based on connectivity to the proposed development and from site-specific DAS data, are presented in Table A5.10 and Table A5.11 below. This includes updates since the 2024 NIS to assessing kittiwake and puffin.

Table A5.10 Sites Identified Where LSE Could Not be Ruled Out for Disturbance and Displacement within the Construction, Decommissioning and Operational Phases with Associated Designated QIs, and Bio-season. (Replaces Table 5.12 in the 2024 NIS).

Site	Qualifying Interests screened in	Bio-season	Relevant development area
Republic of Ireland sites			
North-west Irish Sea cSPA	Guillemot, Razorbill, Puffin, Kittiwake, Manx shearwater	Breeding and non-breeding	PFI Onshore development area
	Great northern diver, Common scoter	Breeding and non-breeding	Offshore development area Onshore development area
	Red-throated diver	Breeding and non-breeding	Offshore development area PFI Onshore development area
	Lesser black-backed gull, Black-headed gull, Common gull, Herring gull, Shag and Cormorant.	Breeding and non-breeding	Onshore development area
Malahide Estuary SPA	Bar-tailed godwit, Black-tailed godwit, Dunlin, Golden plover, Goldeneye, Great crested grebe, Grey plover, Knot, Light-bellied brent goose, Oystercatcher, Pintail, Red-breasted merganser, Redshank, Shelduck, Wetlands and Waterbirds.	Non-breeding	Onshore development area
Rockabill SPA	Purple sandpiper	Non-breeding	Offshore development area Onshore development area
Rogerstown Estuary SPA	Black-tailed godwit, Dunlin, Grey plover, Greylag goose, Knot, Light-bellied brent	Non-breeding	Onshore development area

Site	Qualifying Interests screened in	Bio-season	Relevant development area
	goose, Oystercatcher, Redshank, Ringed plover, Shelduck, Shoveler, Wetlands and Waterbirds.		
Baldoyle Bay SPA	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; Shelduck, Wetlands and Waterbirds.	Non-breeding	Onshore development area
North Bull Island SPA	Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin, Golden plover; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler; Teal; Turnstone; black-headed gull.	Non-breeding	Onshore development area
River Nanny Estuary and Shore SPA	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	Non-breeding	Onshore development area
South Dublin Bay and River Tolka Estuary SPA	Black-headed gull, Bar-tailed godwit, Dunlin, Grey plover, Knot, Light-bellied brent goose, Oystercatcher, Redshank, Ringed plover, Sanderling	Non-breeding	Onshore development area
Skerries Islands SPA	Light-bellied Brent Goose; Purple Sandpiper; Turnstone; Herring Gull; Cormorant and Shag.	Breeding and non-breeding	Onshore development area
Lambay Island SPA	Guillemot, Razorbill, Kittiwake	Breeding and non-breeding	PFI
	Guillemot; Lesser Black-backed Gull; Herring Gull; Kittiwake; Fulmar, Puffin	Breeding	Onshore development area
Boyne Estuary SPA	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	Non-breeding	Onshore development area
Ireland's Eye SPA	Guillemot, Razorbill, Kittiwake	Breeding and non-breeding	PFI
Howth Head Coast SPA	Kittiwake	Breeding and non-breeding	PFI
Wicklow Head SPA	Kittiwake	Breeding and non-breeding	PFI
Saltee Islands SPA	Gannet, Kittiwake	Breeding and non-breeding	PFI
	Guillemot, Razorbill	Non-breeding	PFI
Horn Head to Fanad Head SPA	Kittiwake	Breeding and non-breeding	PFI
Helvick Head to Ballyquin SPA	Kittiwake	Breeding and non-breeding	PFI
UK sites			
Rathlin Island SPA	Kittiwake	Breeding and non-breeding	PFI
Ailsa Craig SPA	Gannet; Kittiwake	Breeding and non-breeding	PFI
Skomer, Skokholm and the Seas off Pembrokeshire/ Sgomer, Sgogwm a Moroedd Penfro SPA	Kittiwake	Breeding and non-breeding	PFI
Grassholm SPA	Gannet	Breeding and non-breeding	PFI

Site	Qualifying Interests screened in	Bio-season	Relevant development area
North Colonsay and Western Cliffs SPA	Kittiwake	Breeding and non-breeding	PFI

Sensitivity to displacement varies considerably between seabird species. The developer has provided a full justification for the displacement rates used within Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis. However, and below present the displacement and mortality rates for the construction and decommissioning, and operational phases respectively, with displacement rates for construction and decommissioning assumed to be half that of the operational phase, in line with the approach undertaken for UK projects, due to:

- Construction activities being undertaken predominantly within discrete localised areas of the PFI+buffer at any one time, meaning that displacement impacts will have a considerably smaller footprint, and therefore act on fewer birds, than during the operational phase.
- Only a proportion of the array will be constructed and therefore there will be less infrastructure present to disturb birds during the earlier phases of construction. For example, over the course of construction, assuming that turbines are constructed at a constant rate, on average approximately 50% of the array will have been constructed; and
- Construction activities are temporally limited (over approximately 3 years).

The Developer considers that the evidence base demonstrates the adopted Developer approach to be suitably precautionary, while avoiding the use of excessive precaution that could distort assessment outcomes. In particular, the use of overly high mortality rates has the potential to substantially over-inflate predicted mortalities in in-combination assessments, leading to unrealistic population-level scenarios. The Guidance approach is defined as the NatureScot guidance (NatureScot, 2023a) displacement and mortality rates (i.e. 60% displacement, 1% and 3% mortality for auks in the operational phase), where two mortality rates are recommended these have been referred to as NatureScot high or low approach (i.e. 1% mortality is NatureScot low approach and 3% mortality is NatureScot high approach for kittiwake and gannet).

Guillemot have moderate/medium sensitivity to disturbance, primarily from ship and helicopter traffic (Garthe and Hüppop, 2004; Furness and Wade, 2012; Langston, 2010; and Bradbury et al., 2014). Evidence suggests that the Developer's displacement rate of 50% is precautionary, with NatureScot's advised 60% likely to be over-precautionary; post-consent monitoring has shown an overall weak displacement response to OWFs (Dierschke et al., 2016; Peschko et al., 2020; APEM, 2022; Vanermen et al., 2023). Furthermore, guillemot displacement has been shown to reduce by 20% during the breeding seasons compared to the non-breeding season (Peschko et al., 2020a). Post-construction monitoring at Beatrice OWF suggested that a 30% displacement rate may be overly precautionary for guillemot considering this species exhibited no strong displacement response to Beatrice OWF (MacArthur Green, 2023; Vanermen et al., 2023). Furthermore, the mortality rates recommended by NatureScot are also considered highly precautionary with research indicating little evidence to support mortality rates above 1% (Searle et al., 2014; 2018; van Kooten et al., 2018). Overall, evidence suggest that the displacement rate of 50% and the mortality rate of 1% are considered to be suitable for assessment, indicating that complete displacement from the PFI is unlikely.

A full justification of the displacement rates applied, together with the supporting evidence, is now provided in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis.

Kittiwake are not considered vulnerable to impacts from disturbance and displacement (Bradbury et al., 2014) and are not considered within displacement assessments across England and Wales as per MIG-Birds (2022). In the 2024 SISAA, kittiwake were screened out for displacement assessments due to an inconsistent evidence base to suggest that kittiwake are routinely displaced by OWFs and their large foraging ranges (mean max +1SD 300.6km) (Woodward et al., 2019). However, within RFI Section 8(c)ii, An Bord Pleanála state the following:

"… the Board disagrees with the screening out of Black-legged Kittiwake for displacement for reasons related to the proximity of the proposed development to the coast and to breeding colonies. The applicant is requested to use the displacement matrix approach, as for other species.

Here, a 30% displacement rate should be applied, and mortality rates should be based on best available evidence, but with a range of rates presented, from 1% to 3%, as advised by NatureScot (2023)."

In line with the RFI, an assessment is therefore provided for displacement impacts for kittiwake, using advised rates (30% displacement and 1% to 3% mortality for the operational phase, with 15% displacement used in construction and decommissioning). However the Developer's position remains that, based on the available evidence (presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis), kittiwake should not be assessed for displacement.

The assessment for displacement has been carried out for the proposed development based on the UK guidance (Parker et al., 2022c; MIG-Birds, 2022). It incorporates a range of assessment scenarios that reflect project parameters of the proposed development, including the fact that construction activities are spatially and temporally restricted, in particular in respect of the proposed development:

- Export cable laying activities will be undertaken by a maximum of one vessel cluster across the entire ECC.
- Construction activities are restricted both temporally and spatially to approximately three-years for offshore construction.
- Where construction activities do not occur, such as locations without WTG foundations, cables, or OSP installation, such areas shall remain largely uninfluenced by construction activities.
- Therefore, to reflect available research and to provide a precautionary assessment during the construction phase that reflects the lower levels of displacement compared to the operational phase, displacement rates used are half those used in the operational phase assessment. This accounts for the fact that, on average over the full construction period, approximately half of the WTG array will be constructed. This approach is consistent with what has been undertaken for other projects within the UK (e.g., Natural Resources Wales (NRW) agreed that the Awel y Mor wind farm should use half operational displacement rates in the construction phase; APEM, 2022). Mortality rates used for the construction phase assessment remain the same as those used in the operational phase assessment.
- Construction-phase impact assessment is referenced to the PFI, notwithstanding that some temporary works and vessel activity may occur within the wider array area. Displacement and disturbance are assessed using bird abundance within the PFI plus an appropriate buffer (typically PFI + 2 km for seabirds, and larger buffers for seaducks and divers). This buffer is defined to encompass the ZoI of construction activities, including disturbance from vessels operating both within and immediately beyond the PFI. As such, any additional, transient disturbance outside the PFI is captured within the applied buffers. The PFI represents the maximum extent of fixed infrastructure and the primary source of disturbance, while activities outside it are temporary and spatially limited. This approach therefore provides a robust and proportionate basis for assessment.

Table A5.11: Displacement and Mortality Rates Used for the Assessment in Construction and Decommissioning Phases of NISA Based on Half of those Used in the Operational Phase (replaces Table 5.13 in the 2024 NIS).

Species	Displacement rate (%)		Mortality rate (%)	
	Developer approach	Guidance approach	Developer approach	Guidance approach
Gannet	35	35	1	1 - 3
Kittiwake	NA	15	1	1 - 3
Guillemot	25	30	1	3 – 5 breeding; 1 – 3 non-breeding
Razorbill	25	30	1	3 – 5 breeding; 1 – 3 non-breeding
Puffin	25	30	1	3 – 5 breeding;

Species	Displacement rate (%)		Mortality rate (%)	
	Developer approach	Guidance approach	Developer approach	Guidance approach
				1 – 3 non-breeding
Manx shearwater	5 – 15	5 – 15	1	1
Red-throated diver (PFI)	PFI – 4km buffer: 50% 4 – 10km buffer 26%	PFI – 4km buffer: 50% 4 – 10km buffer 26%	1	1 (range of 1% to 5% presented)
Red-throated diver (ECC)	100 (range of 90% to 100% presented)	100 (range of 90% to 100% presented)	1	1 (range of 1% to 5% presented)
Great northern diver (ECC)	100 (range of 90% to 100% presented)	100 (range of 90% to 100% presented)	1	1 (range of 1% to 5% presented)
Common scoter (ECC)	100 (range of 90% to 100% presented)	100 (range of 90% to 100% presented)	1	1 (range of 1% to 10% presented)

NatureScot's recommended mortality rates are considered highly precautionary. Research undertaken on behalf of a range of developers in UK OWFs has concluded that 1% to 2% mortality is an appropriate range (as opposed to 1% to 10%) (Norfolk Vanguard, 2019; SPR, 2019; Orsted, 2018; APEM, 2022). However, there is little evidence to support mortality rates above 1%. For example, van Kooten et al. (2018), which found that a mortality rate of 1% itself was precautionary, and Searle et al. (2014; 2018) which concluded that mortality is unlikely to exceed 0.5% for both the breeding and non-breeding seasons. APEM (2022) predicted mortality rates using simulation models for the Flamborough and Filey Coast SPA from displacement impacts from Hornsea Four. These models predicted impacts of up to 1%, which was likely an overestimate given the distance between the SPA and the array. More recent studies at OWFs located comparable distances from SPA colonies have modelled guillemot mortalities of 0.2% (Buchan Ness and Collieston Coast SPA) and 2.7% (St Abb's Head to Fast Castle SPA). Additionally, in spite of an observed displacement rate of 44% from four wind farms in the vicinity of Helgoland, numbers of birds breeding at local colonies continues to rise, suggesting that the impact from (and as such the mortality rate related to) this displacement is not affecting current populations. Taking the evidence above into account, the use of a mortality value of 1% in the assessments for all auk species can be considered suitably precautionary.

Table A5.12: Displacement and Mortality Rates Used for the Assessment of the Operational Phase of NISA (replaces Table 5.15 in the 2024 NIS)

Species	Displacement rate (%)		Mortality rate (%)	
	Developer approach	Guidance approach	Developer approach	Guidance approach
Gannet	70	70	1	1 – 3
Kittiwake	NA	30	1	1 – 3
Guillemot	50	60	1	3 – 5 breeding; 1 – 3 non-breeding
Razorbill	50	60	1	3 – 5 breeding; 1 – 3 non-breeding
Puffin	50	60	1	3 – 5 breeding; 1 – 3 non-breeding
Manx shearwater	10 – 30	10 – 30	1	1
Red-throated diver	PFI – 4km buffer: 100% 4 – 10km buffer 52%	PFI – 4km buffer: 100% 4 – 10km buffer 52%	1	1 (range of 1% to 5% presented)

The assessments provided within this NIS include a number of assumptions that contribute to the predicted impacts and potential effects being precautionary (and in some cases highly precautionary), including:

- The abundance assessed within each bio-season being the mean of the peaks from each survey year. This makes the assumption that such a high population is maintained for each of the months within the bio-season, whereas in reality the abundance of each species is likely to be considerably less for much of the bio-season. Using the mean of peaks and applying it across the whole bioseason (as opposed to taking an average across the whole bio-season) means that the mortalities attributed to each 'non-peak' month are at the peak rate, and are therefore over precautionary.
- The maximum extent of displacement considered for each species within the assessment is likely to be greater than actually experienced within the PFI and (relevant) buffer zone (i.e., birds are not likely to experience displacement impacts across the entire PFI and relevant buffer in reality).
- The 1% mortality of displaced birds is highly unlikely, as the species assessed in this NIS are not solely dependent upon the area within the PFI and buffer for all their foraging needs either within the breeding or non-breeding bio-seasons (APEM, 2022). The maximum of 5% mortality of birds displaced during the non-migratory breeding bio-season is not realistic (APEM, 2022).
- Adult birds that are actively breeding are assumed to respond to displacement by continuing to breed despite increased stress, potentially to the point of mortality, rather than ceasing breeding (i.e. abandoning eggs or chicks) and surviving to reproduce in a subsequent year.
- The abundance of birds within the PFI and relevant buffer was apportioned to relevant SPAs and colonies using the methods set out in Appendix A18: Offshore and Intertidal Ornithology Apportioning Appendix. The apportionment assumptions using this method are highly precautionary.

Collision Risk

In response to RFI Section 1 (b), the key change in this section is that the 2024 JNCC interim guidance on collision risk modelling has been used as the most recent guidance. This replaces the parameters presented in the Irish Phase One Methodology Note.

Birds that fly through the array area whilst foraging, commuting between breeding sites and foraging areas, or when on migration are at risk of collision. The birds are at risk from colliding with the WTG rotors and associated infrastructure which could lead to injury or fatality.

The potential for collision mortalities to result in an AEoI relates to the designated sites and the relevant QIs found in Table A5.13.

It should be noted that Manx shearwater were also screened in to assess the potential for collision risk from the proposed development on a precautionary basis, despite the species 'low' sensitivity to collision impacts (Garthe and Huppop, (2004), Furness and Wade (2012), Bradbury et al., (2014), and Wade et al. (2016). However, following the CRM assessment (presented in Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment) no collisions were predicted with the updated CRM parameters and DAS data. No impact can be considered non-material and will, therefore, not affect the achievement of the COs for the NWIS cSPA and as a result an AEoI can be confidently ruled out, and this species has not been considered further.

Table A5.13: Sites and Associated Qualifying Interests Identified for Sites Where LSE Could Not be Ruled Out for Collision Risk within the Operational Phase (Replaces Table 5.16 in the 2024 NIS).

Site	Qualifying Interests Screened In	Bio-season
Republic of Ireland sites		
Ireland's Eye SPA	Kittiwake, Herring gull	Breeding, and non-breeding
Lambay Island SPA	Kittiwake, Herring gull, Lesser black-backed gull, Fulmar	Breeding, and non-breeding
Saltee Islands SPA	Kittiwake, Gannet, Lesser black-backed gull.	Breeding, and non-breeding
Wicklow Head SPA	Kittiwake	Breeding, and non-breeding

Site	Qualifying Interests Screened In	Bio-season
Howth Head Coast SPA	Kittiwake,	Breeding, and non-breeding
Skerries Island SPA	Herring gull	Breeding, and non-breeding
Rockabill SPA	Common tern, Roseate tern, Arctic tern	Breeding, and non-breeding
Helvick Head SPA	Kittiwake	Breeding, and non-breeding
Horn Head to Fanad Head	Kittiwake	Breeding, and non-breeding
North- west Irish Sea cSPA	Kittiwake, Manx shearwater, Lesser black-backed gull, Herring gull, Great black-back gull, Black-headed gull, Common gull, Roseate tern, Common tern, Arctic tern; and Fulmar.	Breeding, and non-breeding
UK sites		
Rathlin Island	Kittiwake	Breeding, and non-breeding
Ailsa Craig SPA	Kittiwake, Gannet, Lesser black-backed gull	Breeding, and non-breeding
North Colonsay and Western Cliffs SPA	Kittiwake*	Breeding
Grassholm SPA	Gannet	Breeding
Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	Kittiwake*, Lesser black-backed gull,	Breeding
Ribble and Alt Estuaries SPA	Lesser black-backed gull	Breeding
Morecambe Bay & Duddon Estuary SPA	Lesser black-backed gull	Breeding

*Seabird Assemblage QI

CRM has been used to estimate the potential risk to birds associated with the proposed development. The updated approach to CRM is presented in Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment and provides the updated methodology, data input and results of the CRM. The Stochastic Collision Risk Model (sCRM) developed by Marine Scotland Science (McGregor, 2018), has been used to carry out the modelling, applied through the 'Shinyapp' interface using the density of flying birds measured by 41 months of DAS to produce species- specific predictions of mortality across set time periods (biological seasons) and annually. This most recent version of the Band (2012) CRM has been designed specifically to address uncertainty in developments and other key input parameters as progressed initially by Masden (2015) for application to the assessment of collision risk to seabirds from offshore wind farm developments. The use of sCRM is standard in industry across UK projects, and therefore is also considered the most relevant approach for Irish projects.

Several different species-specific behavioural aspects of assessed birds, including the height at which birds fly, their ability to avoid moving or static structures and how active they are diurnally and nocturnally, respectively as accounted for by the CRM. Details of these considerations are also provided Appendix A18: Offshore and Intertidal Apportioning and A19: Offshore and Intertidal Ornithology Collision Risk Assessment.

CRM follows an evidence-led approach taking into account site-specific DAS data collected from within the array area along with the up-to-date literature on seabirds and their behaviour in relation to OWFs (Appendix A18: Offshore and Intertidal Ornithology Apportioning and A19: Offshore and Intertidal Ornithology Collision Risk Assessment). However, there is limited evidence available, regarding impacts of OWFs to seabird species specific to Ireland, therefore evidence from UK and European OWFs has been considered, which is considered applicable here due to the proximity of this evidence-base to Irish waters/ornithological receptors.

The Band Option 2 has been relied upon as the model to carry through to the assessment of collision risk for all the assessed species presented here (see Table A5.13 for the list of collision risk species assessed). Option 2 assumes a uniform distribution of bird flights between the lowest and the highest

levels of the rotors and uses generic flight height data presented in Johnston et al. (2014). Site-specific flight height data was collected; however, these data were not used in the assessment following inconsistencies within the data (see CRM Appendix A18: Offshore and Intertidal Ornithology Apportioning and A19: Offshore and Intertidal Collision Risk Assessment) and Appendix A14:Ornithology Technical Baseline for further information regarding the use of Option 2). Option 2 has been relied upon for all UK projects (e.g., East Anglia TWO; Rampion 2 Wind Farm; Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Project and West of Orkney Wind Farm) and the use of the Johnston et al. (2014) flight height data is recommended by Natural England (Natural England, 2022) and NatureScot (NatureScot, 2023c).

Precautionary Nature of CRM

Several different species-specific behavioural aspects of the seabirds being assessed, including the height at which birds fly, their ability to avoid moving or static structures and how active they are diurnally and nocturnally are considered in CRM. As there is no specific Irish guidance for CRM at this time, the Proposed Development refers to the sCRM, recommended by the joint SNCBs (JNCC et al., 2024) for use in CRM assessments. The latest version of the sCRM shiny app tool was used for CRM (sCRM 0.2.1). These values are provided in Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment.

Avoidance rates are a key parameter in the CRM, they take into consideration that birds will undertake avoidance behaviour in response to the presence of a windfarm to prevent collision. This can occur at three scales (Cook et al., 2014); micro-avoidance; meso-avoidance and macro-avoidance. See Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment for further information regarding avoidance behaviour. This adjustment is required since baseline survey data are collected before turbines are present. The avoidance rates used in CRM for each species, presented in Table A2-3 in Appendix A19: Collison Risk Modelling Assessment , follow those presented by Ozsanlav-Harris et al. (2022) in-line with guidance from the joint SNCBs (Statutory Nature Conservation Body; JNCC et al., 2024). The only changes to the avoidance rates presented in Appendix A19: Collison Risk Modelling Assessment have been to the standard deviations for Black-headed gull, Herring gull and Lesser Black-backed gull, bringing them in line with guidance.

Species-specific flight speeds used in the CRM assessment are presented in Table A2.5 in Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment. Flight speeds were taken from Pennycuick (1987) for gannet and Alerstam et al. (1997) for all other species, as per the latest guidance from the joint SNCBs (JNCC et al., 2024). Any species values not included in this guidance were determined using expert judgement or built-in values within the sCRM tool and from Robinson (2005) as originally agreed through consultation with other Phase 1 Irish projects (Appendix 14 of the 2024 NIS: Method Statement Offshore Wind Ornithology Assessment for East Coast Phase 1 Projects).

To enable collision risk during the night to be accounted for within the CRM model, Nocturnal Activity Factors (NAF) are applied in the CRM for further information regarding this see Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment. The rates used are based on the most recent guidance provided by the joint SNCBs (JNCC et al., 2024), which are evidenced from the most robust scientific research and expert judgement (Garthe and Hüppop, 2004; Cook et al. 2023).

The species-specific NAF used in the CRM assessment are presented in Table A2-4 and are based on joint SNCB guidance (JNCC et al., 2024). The mean NAF values were all derived from Garthe and Hüppop (2004) except for gannet and kittiwake which were taken from Cook et al. (2023) in-line with joint SNCB guidance (JNCC et al. 2024), and lesser black-backed gull which was aligned with herring gull and great black-backed gull as a precautionary approach. In response to NPWS' submission with regards to tern NAFs, these have been updated to a mean value of 0.25.

Barrier effects

Detailed consideration of barrier effects is provided for the NWIS cSPA and Rockabill SPA qualifying interests only. For other SPAs, the greater distance from the proposed development is such that connectivity with the array area will be reduced. Therefore, there is low potential for the proposed development to create a barrier to movement and limit access to the SPA or ecologically important sites outside the SPA. Additionally, impacts arising from barrier effects are already accounted for within the assessment of displacement impacts for relevant species.

Assessment Data

Information used to inform the apportioning of impacts to individual SPAs is provided in AppendixA20: Offshore and Intertidal Apportioning, including the following:

- Bio-seasons assumed in the assessment.
- Adult proportions of birds within the array area.
- Distances from the centre of the array area to relevant SPAs.
- The at sea foraging area available to birds from each SPA.
- The proportion of adults apportioned to each SPA in the breeding and non-breeding bio-seasons.
- SPA population sizes (most recent count).

There are no further changes to this section. Refer to Section 5.4.1.3.3 in the 2024 NIS.

5.4.1.3.2 Determination of AEoI

This section does not introduce new assessment material but instead clarifies how conclusions presented throughout the ornithology assessment have been derived. It responds to RFI Sections 8c(i)–8c(iii) and 8e(iv), which emphasise the need for greater clarity and transparency in the assessment methodology and in how impacts are interpreted at a population level in the context of COs.

Accordingly, this section provides a clear and structured explanation of the framework used to determine AEoI, ensuring that the assessment is aligned with Appropriate Assessment principles and that the relationship between predicted impacts, CO attributes, and overall site integrity is explicit. The text has been drawn from Section 5.4.1.1 (Assessment Criteria) of the 2024 NIS and expanded to provide additional detail on how the determination of AEoI has been applied within the ornithology assessment. It does not directly replace any text from the 2024 NIS and should be read as supplementary information.

The determination of AEoI on Natura 2000 sites is based on the contributing factors to the definition of maintaining and/or restoring integrity, namely that ecological structure and site function is not adversely affected. It is undertaken with reference to the site-specific COs, which aim to maintain or restore the favourable conservation condition of the QIs as defined by their attributes, targets, and associated measures. In this context, the assessment considers whether the Proposed Development could adversely affect the ability of the site to support the QI populations, including through effects on key attributes such as population size, spatial distribution, and forage availability.

Increases to baseline mortality lower than 1%, assessed for the proposed development alone, are deemed to be undetectable in the context of natural variation in baseline mortality. Should the predicted impacts indicate an increase in baseline mortality greater than 1%, further consideration of the significance of the mortality is required to determine if AEoI can be ruled out, for example through Population Viability Analysis (PVA). This approach is recommended by Natural England (Parker et al., 2022c) and can incorporate known population trends and density dependence, where considered appropriate, to assess the impacts on a population more accurately. Similarly, NatureScot recommend undertaking PVA if the survival rate of an assessed species falls by 0.02 percentage points (NatureScot, 2023c). The above approaches to consideration of increases in baseline mortality are standard practice at UK developments, and as such it is deemed to be an appropriate approach here.

The PVA results throughout this assessment are presented as the counterfactual population growth rate (CGR) and counterfactual population size (CPS). The former is the median of the ratio of the annual growth rate of the impacted to un-impacted population and the latter is the median of the ratio of end-point size of the impacted to un-impacted (baseline) population; both are expressed as a proportion. These ratios of impacted to un-impacted scenarios are used to interpret the predicted impact upon the population (Cook and Robinson, 2016), therefore the model outputs are interpreted in terms of relative changes in population dynamics rather than absolute predictions of population size.

Density dependence regulates population size by adjusting demographic rates to maintain a population around a carrying capacity. If impacts from OWFs decrease survival rates, the resulting decrease in

competition for resources might lead to increased survival and/or productivity in the remaining population, consequently boosting population growth. The importance of density dependence is evident in natural ecosystems, where without it, populations would exhibit exponential growth. However, the mechanisms as to how this operates in seabird populations are largely uncertain. Misinterpretation of density dependence in population assessments can result in unreliable predictions. As such, PVA models used in this assessment were density independent, despite ecological evidence suggesting the presence of density dependence in large populations (Horswill et al., 2017). While density-independent models lack the capacity for population recovery once it falls below a certain threshold, they are preferred for impact assessments due to their precautionary nature (Ridge et al. 2019). Please see Appendix A20: Offshore and Intertidal Ornithology Population Viability Analysis for further justification.

When interpreting results of PVA in terms of impact significance, CGR i**s** used as the primary output parameter of the PVA, as it provides a robust indicator of changes in population growth rate. CPS is presented for completeness but is not relied upon in the assessment, as the absence of density dependence within the model can result in unrealistic projections of population decline.

Where the CGR for an impact is above 0.995 (or a reduction in population growth rate of below 0.5%), the level of change would not have any meaningful effect on the population growth rate over the long term. This reflects the fact that such small changes are negligible relative to normal background variability in demographic processes. This is particularly the case where density-dependent regulation is not modelled, as any apparent reduction in growth rate is likely to be substantially smaller than natural fluctuations driven by environmental and ecological factors.

Where predicted effects result in a CGR below 0.995, or an equivalent reduction in population growth rate exceeding 0.5%, further consideration of population trajectory is required to determine the significance of the effect. This is because PVA outputs derived from the Leslie-matrix models used do not explicitly simulate population trajectories through time; instead, they quantify the relative difference in growth rate between impacted and unimpacted populations.

Interpreting such results therefore benefits from consideration of empirical population trends and demographic context. This additional step allows assessment of whether the predicted reduction in growth rate is meaningful in relation to observed population dynamics. For example, populations that are stable or increasing may be resilient to reductions in CGR well below 0.995 without experiencing adverse long-term consequences, whereas for populations that are already declining, a CGR close to 0.995 may represent a more precautionary and appropriate indicator of potential population-level concern.

A range of changes have been made to this section due to the updates described in Section 5.4.1. These primarily arise from (1) the introduction of the PFI and (2) the addition of new baseline DAS data collected across the NWIS cSPA. As a result, the baseline (monthly average density in the PFI) has been updated since the 2024 NIS. Any updates made in response to specific RFI Sections are set out within the relevant SPA and species-specific sections. The following SPA assessment sections of 2024 NIS are therefore replaced, with all values updated accordingly, and replaced with the text presented within the remainder of Section 5.4:

- **NWIS cSPA**
- **Rockabill SPA**
- **Skerries Island SPA**
- **Ireland's Eye SPA**
- **Howth Head SPA**
- **Lambay Island SPA**
- **Wicklow Head SPA**
- **Saltee Islands SPA**
- **Morecambe Bay & Duddon Estuary SPA**

- **Rathlin Island SPA**
- **Ailsa Craig SPA**
- **Helvick Head to Ballyquin SPA**
- **Ribble & Alt Estuaries SPA**
- **Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA**
- **Grassholm SPA**
- **Horn Head to Fanad Head SPA**
- **North Colonsay and Western Cliffs SPA**
- **Migratory Waterbird Assessment**

5.4.2 North-west Irish Sea cSPA

The array area and ECC are located within the NWIS cSPA which covers an area of 2,333km^2 and is designated for 21 species of seabird, including four tern species, three auk species, seven gull species, two diver species, fulmar, Manx shearwater, shag, cormorant and common scoter. All designated species have been considered in the ornithology assessment presented here.

Twelve QIs of NWIS cSPA have been screened in for the assessment of impacts arising from the onshore elements of the proposed development, where the landfall site is immediately adjacent to the cSPA, and due to their presence within the ZoI during baseline surveys. Whereas, for impacts arising from the offshore elements of the proposed development nineteen species were screened in. Cormorant and shag were screened out as there is plausible impact pathways with respect to both collision risk and displacement effects – both shag and cormorant are not considered at risk of offshore impacts of collision effects (based on flight height data) or displacement impacts (with evidence of birds even being attracted to OWFs and roosting on the structures) (Bradbury et al., 2014; Dierschke et al., 2016). Similarly, Sandwich tern were screened out due to low numbers recorded across 41-months of DAS data, and therefore no significant effects are expected for this species (only two Sandwich tern was recorded).

For the NWIS cSPA, assessment of AEoI has been undertaken using a multi-population approach. This reflects the absence of a single, clearly defined, accurate population that fully represents use of the site across all seasons, particularly given the highly mobile nature of seabird species and the reliance of available datasets on temporal snapshots.

Population-level effects have therefore been evaluated across a range of ecologically relevant population contexts, derived from CO citation populations (often derived from ObSERVE survey data), site-specific NWIS DAS data, and regional population estimates presented in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline and Appendix A18: Offshore and Intertidal Ornithology Apportioning. This approach ensures that the assessment is based on the best available evidence and reflects both site-specific usage and wider population connectivity. An assessment has also been carried out separately where breeding colony SPAs abut the NWIS cSPA.

During the construction, operation and decommissioning phases of the proposed development, there is potential for ornithological receptors to be indirectly affected as a result of impacts on prey species and their habitats. Impacts on prey species may occur from increased underwater anthropogenic noise, temporary disturbance or loss of key habitats, and effects associated with elevated suspended sediments and/or smothering. These impacts could therefore result in a reduction in prey available to foraging seabirds within the construction area (consisting of the array area, ECC and intertidal zone). The vulnerability of ornithological receptors to these potential effects varies across species, with some species being generalist foragers, able to feed on a wide variety of food sources (sometimes spanning across both marine and terrestrial environments like lesser black-backed gull), whereas some species rely more heavily on a narrower range of food sources such as sand eel and sprat. Additionally, vulnerability is linked to foraging range, with some species having very large foraging ranges and being able to easily forage across other areas, while other species (e.g., roseate tern) have a smaller foraging range and are more limited in their ability to forage elsewhere.

As such the 'Forage spatial distribution, extent, abundance and availability' CO attribute was assessed against species' diet variability, based on information presented in the North-West Irish Sea cSPA COs document, as well as the sources and species-specific foraging ranges presented in Woodward et al. (2019).

5.4.2.1 Qualifying Interests and Conservation Objectives

The following QIs of the North-west Irish Sea cSPA are considered within this section:

Table A5.14: Qualifying Interests and Conservation Objectives of North-west Irish Sea cSPA (replaces Table 5.17 in the 2024 NIS)

Qualifying Interests	Conservation Objective and attributes
Red-throated Diver [A001] Great Northern Diver [A003] Common Scoter [A065] Black-headed Gull [A179] Common Gull [A182] Little gull [A177]* Great black-backed gull Lesser Black-backed Gull [A183] Herring Gull [A184] Fulmar [A009] Kittiwake [A188] Manx shearwater [A013] Little tern [A195]* Roseate tern [A92] Common tern [A193] Arctic tern [A194] Guillemot [A199] Razorbill [A200] Puffin [A204]	To maintain or restore the favourable conservation condition of the bird species listed as QIs for this cSPA, which is defined by the following attributes and targets: Population size (number): No significant decline. Distribution (hectares, timing, and intensity of use of areas): Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. Forage spatial distribution, extent, and abundance (Location and hectares, and forage biomass): Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. Disturbance across the site (Intensity, frequency, timing, and duration): The intensity, frequency, timing, and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution. Barriers to connectivity and site use (Number; location; shape; area (hectares)): The number, location, shape and area of barriers do not significantly impact the site population's access to the cSPA or other ecologically important sites outside the cSPA.
An asterisk (*) indicates species that were screened in within the 2024 NIS but are no longer screened in within this updated assessment. Further reasoning is outlined under the relevant headings (see Section 5.4.2.11 for Little Gull and Section 5.4.2.12 for Little Tern).	

5.4.2.2 Guillemot

Guillemot have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the guillemot assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. In addition, the displacement rates presented have been updated in response to RFI Section 8(c)i. The following text is a direct replacement of the text within Section 5.4.2.2 of the 2024 NIS.

It should be noted that two additional notes have been appended, and should be read in conjunction with this NIS. These notes provide further support to the assessment of the Guillemot feature of the NWIS cSPA. They are as follows:

- **Appendix A21: Additional Guillemot Ecological Evidence; and**
- **Appendix A22: Senior Legal Counsel Opinion on NPWS Submission.**

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Guillemot are susceptible to potential disturbance and displacement from OWF and have therefore been

screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for Guillemot (NPWS, 2023) within the NWIS cSPA are as follows:

- Population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

There is no single clearly defined citation population for guillemot within the NWIS cSPA. The previously referenced value (86,024 individuals) is derived from ObSERVE survey data and represents a temporal snapshot of birds present during limited survey periods. As such, it is likely to under-represent the true population context, particularly in the non-breeding season when guillemot are highly mobile and individuals using the cSPA may originate from a much wider regional population rather than comprising a discrete, site-specific population (Harris et al*.,* 2015; Buckingham et al*.,* 2022). In recognition of the limitations associated with the NWIS cSPA guillemot citation population, population-level effects have been evaluated across multiple, ecologically relevant population contexts. These include:

(1) breeding populations of abutting SPAs (Lambay Island SPA and Ireland's Eye SPA);

(2) the NWIS cSPA citation population of 86,024 individuals, recognising its precautionary but limited nature;

(3) the regional population, representing the wider group of individuals with potential connectivity to the site during the post-breeding seasons (465,111 individuals; Appendix A18: Offshore and Intertidal Ornithology Apportioning), and that utilise the SPA during the non-breeding period; and

(4) maximum population estimated from NWIS DAS undertaken by the Developer (326,565 individuals).

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that Guillemot use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. Within the multi-population approach, all population estimates are considered to provide context for the scale and interpretation of impacts. However, the NWIS DAS-derived population is used as the primary basis for quantitative interpretation, as it is site-specific, reflects the most recent survey data, and represents the best evidence of actual usage of the cSPA by the QI. The citation and regional populations are retained to provide precautionary context and to ensure conclusions are robust across a range of plausible population scales.

Two approaches to breeding season definitions were assessed for guillemot because site-specific DAS data suggested that the Furness approach to bio-seasons is not the most ecologically relevant. Though Furness (2015) suggest a breeding season of March to July, project-specific DAS data and available literature (e.g., Dunn et al. 2020) indicate that birds at the early and late stages of this period are not under the same energy constraints as in the core breeding season, and therefore a shorter season not incorporating the early and late stages of the season is considered more appropriate. Additionally, birds present in July are highly likely to be a result of post-breeding dispersal (as opposed to being breeding birds) based on available evidence and site-specific DAS data. Therefore, a more ecologically relevant breeding season of April to June has been used. Consequently, two approaches are laid out in the section below; a 'Site Specific Approach' using the breeding seasons evidenced using site-specific data, and a 'Generic Approach' using the Furness (2015) bio-season definitions. A full justification of this approach is provided in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline.

5.4.2.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. The Developer has substantially reduced the area of overlap between the Proposed Development and the site by reducing the original MAC boundary of 195.9 km² (representing 8.4% of the NWIS cSPA or 15.2% when a displacement buffer of 2 km is applied) to the array area coving 88.5 km^2 in the Planning Application (which equates to 3.8% of the NWIS cSPA or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI Section (8(e)vi)) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA (Figure A5.11). Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. Furthermore, removal of the northern sections of the array area has eliminated overlap with high guillemot density areas ('Hotspots'; see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline) during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.2.2.2 Population Size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the guillemot population size of the NWIS as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.15. Displacement during construction has been conservatively assumed to be 50% of operational-phase displacement. This reflects the temporally and spatially restricted nature of construction activities, including the absence of rotating turbines and the phased installation of infrastructure. This approach is consistent with established UK offshore wind Environmental Statement practice and aligns with SNCB guidance, which recognises that construction-phase disturbance is typically less extensive than operational effects, reflecting the approach taken by other projects including Outer Dowsing OWF and Five Estuaries OWF. For further details please see Section 5.4.1.3.1.

For birds apportioned to the NWIS cSPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 55 (55.2) individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality (an increase of 0.277%) and fall well within natural annual variability for the population (see Table A5.15 for the full range of impacts against all population scales).

Given the short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the guillemot QI of the NWIS cSPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the population size attribute, is presented in the section below.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's CO to maintain the favourable conservation condition of the guillemot QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.15: Estimated Mortalities During the Construction and Decommissioning Phases for Guillemot at the NWIS cSPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (30, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (50%,1%)	Guidance (30, 1% and 3%)	Guidance (30%, 3% and 5%)
NWIS DAS Population - 326,565 individuals							
Site Specific Approach							
Breeding	987.5 (715.8-1,278.5)	2.5 (1.8-3.2)	8.9 (6.4-11.5)	14.8 (10.7-19.2)	0.012% (0.009%-0.016%)	0.045% (0.032%-0.058%)	0.074% (0.054%-0.096%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	52.7 (31.0-78.2)	63.2 (37.2-93.9)	189.7 (111.5-281.6)	0.264% (0.155%-0.393%)	0.317% (0.187%-0.471%)	0.952% (0.560%-1.414%)
Annual Total	22,061.3 (13,103.4-32,571.1)	55.2 (32.8-81.4)	72.1 (43.6-105.4)	204.5 (122.2-300.8)	0.277% (0.164%-0.409%)	0.362% (0.219%-0.529%)	1.026% (0.614%-1.510%)
Generic Approach							
Breeding	16,318.3 (8,345.3-25,924.3)	40.8 (20.9-64.8)	146.9 (75.1-233.3)	244.8 (125.2-388.9)	0.205% (0.105%-0.325%)	0.737% (0.377%-1.171%)	1.229% (0.628%-1.952%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	46.9 (28.0-66.3)	56.3 (33.6-79.6)	168.9 (100.8-238.7)	0.236% (0.141%-0.333%)	0.283% (0.169%-0.399%)	0.848% (0.506%-1.198%)
Annual Total	35,084.5 (19,546.3-52,447.7)	87.7 (48.9-131.1)	203.2 (108.7-312.9)	413.7 (226.0-627.6)	0.440% (0.245%-0.658%)	1.020% (0.546%-1.571%)	2.077% (1.134%-3.150%)
ObSERVE Autumn Population - 86,024 individuals							
Site Specific Approach							
Breeding	987.5 (715.8-1,278.5)	2.5 (1.8-3.2)	8.9 (6.4-11.5)	14.8 (10.7-19.2)	0.061% (0.044%-0.079%)	0.220% (0.160%-0.285%)	0.367% (0.266%-0.475%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	52.7 (31.0-78.2)	63.2 (37.2-93.9)	189.7 (111.5-281.6)	1.305% (0.767%-1.938%)	1.566% (0.921%-2.326%)	4.699% (2.762%-6.978%)
Annual Total	22,061.3 (13,103.4-32,571.1)	55.2 (32.8-81.4)	72.1 (43.6-105.4)	204.5 (122.2-300.8)	1.366% (0.812%-2.017%)	1.787% (1.080%-2.611%)	5.066% (3.028%-7.453%)
Generic Approach							
Breeding	16,318.3 (8,345.3-25,924.3)	40.8 (20.9-64.8)	146.9 (75.1-233.3)	244.8 (125.2-388.9)	1.011% (0.517%-1.606%)	3.639% (1.861%-5.781%)	6.065% (3.101%-9.635%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	46.9 (28.0-66.3)	56.3 (33.6-79.6)	168.9 (100.8-238.7)	1.162% (0.694%-1.643%)	1.395% (0.833%-1.971%)	4.185% (2.498%-5.914%)

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (30, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (50%,1%)	Guidance (30, 1% and 3%)	Guidance (30%, 3% and 5%)
Annual Total	35,084.5 (19,546.3-52,447.7)	87.7 (48.9-131.1)	203.2 (108.7-312.9)	413.7 (226.0-627.6)	2.173% (1.211%-3.249%)	5.034% (2.693%-7.752%)	10.249% (5.599%-15.549%)
Regional Population - 465,111 individuals							
Site Specific Approach							
Breeding	987.5 (715.8-1,278.5)	2.5 (1.8-3.2)	8.9 (6.4-11.5)	14.8 (10.7-19.2)	0.009% (0.006%-0.011%)	0.031% (0.023%-0.041%)	0.052% (0.038%-0.068%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	52.7 (31.0-78.2)	63.2 (37.2-93.9)	189.7 (111.5-281.6)	0.186% (0.109%-0.276%)	0.223% (0.131%-0.331%)	0.668% (0.393%-0.993%)
Annual Total	22,061.3 (13,103.4-32,571.1)	55.2 (32.8-81.4)	72.1 (43.6-105.4)	204.5 (122.2-300.8)	0.194% (0.115%-0.287%)	0.254% (0.154%-0.371%)	0.721% (0.431%-1.060%)
Generic Approach							
Breeding	16,318.3 (8,345.3-25,924.3)	40.8 (20.9-64.8)	146.9 (75.1-233.3)	244.8 (125.2-388.9)	0.144% (0.074%-0.228%)	0.518% (0.265%-0.822%)	0.863% (0.441%-1.371%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	46.9 (28.0-66.3)	56.3 (33.6-79.6)	168.9 (100.8-238.7)	0.165% (0.099%-0.234%)	0.198% (0.118%-0.280%)	0.595% (0.355%-0.841%)
Annual Total	35,084.5 (19,546.3-52,447.7)	87.7 (48.9-131.1)	203.2 (108.7-312.9)	413.7 (226.0-627.6)	0.309% (0.172%-0.462%)	0.716% (0.383%-1.103%)	1.458% (0.797%-2.212%)

5.4.2.2.3 Population Size: Disturbance and displacement (Operation)

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A15.4 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the guillemot population size of the NWIS as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects on disturbance and displacement for guillemot from operation and maintenance activities.

The summed mean peak annual abundance of guillemot in the PFI plus a 2km buffer during the breeding and non-breeding bio-seasons is estimated at 22,061. Based on 50% displacement and 1% mortality (Developer Approach) this equates to 110 (110.3) guillemot mortalities per annum across all bio-seasons (Table A5.16:).

Displacement impacts apportioned to the guillemot populations of Ireland's Eye and Lambay Island SPAs during the breeding and non-breeding bio-seasons can be found in Sections 5.4.11.2 and 5.4.13.2, respectively. The assessments for both sites concluded no AEoI during the breeding and non-breeding bio-seasons. For the purposes of this assessment, the Developer has focused on what it considers the most appropriate reference population size – namely, the NWIS DAS peak population. The corresponding increases in baseline mortality for other population scenarios are presented in Table A5.16:.

When assessing the annual total unapportioned impacts of the proposed development on guillemot to the NWIS DAS population of 326,565 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 19,920 individuals would be 0.554%. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.16 presents the displacement consequent mortalities as per NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 5% mortality). As the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in

Table A5.17. Across all assessment scenarios, both the regional population and the NWIS DAS-derived reference population show no relative reduction in population growth rate greater than 0.283% when compared with unimpacted populations. Only the reference population derived from the ObSERVE dataset (86,024 individuals) exceeds a 0.5% reduction under the NatureScot high (60% displacement, 3% and 5% mortality) scenario. However, this outcome reflects the combination of an unrealistically small reference population (given that more than 300,000 guillemot have been recorded within the NWIS cSPA on a single day in August 2025 (NWIS DAS)) and the highly precautionary and biologically unrealistic assumptions embedded within the NatureScot high (60% displacement, 3% and 5% mortality) scenario mortality rates (Appendix A21: Additional Guillemot Ecological Evidence, Section 3.1). As such, these scenarios are not considered to represent best scientific knowledge and should not be afforded substantive weight when reaching a conclusion on AEoI.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.16: Estimated Mortalities During the Operation and Maintenance Phases for Guillemot at NWIS cSPA (replaces Table 5.18 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)	Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)
NWIS DAS Population - 326,565 individuals							
Site Specific Approach to Bio-seasons							
Breeding	987.5 (715.8-1,278.5)	4.9 (3.6-6.4)	17.8 (12.9-23.0)	29.6 (21.5-38.4)	0.025% (0.018%-0.032%)	0.089% (0.065%-0.116%)	0.149% (0.108%-0.193%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	105.4 (61.9-156.5)	126.4 (74.3-187.8)	379.3 (223.0-563.3)	0.529% (0.311%-0.785%)	0.635% (0.373%-0.943%)	1.904% (1.119%-2.828%)
Annual Total	22,061.3 (13,103.4-32,571.1)	110.3 (65.5-162.9)	144.2 (87.2-210.8)	409.0 (244.4-601.6)	0.554% (0.329%-0.818%)	0.724% (0.438%-1.058%)	2.053% (1.227%-3.020%)
Furness Approach to Bio-seasons							
Breeding	16,318.3 (8,345.3-25,924.3)	81.6 (41.7-129.6)	293.7 (150.2-466.6)	489.5 (250.4-777.7)	0.410% (0.209%-0.651%)	1.475% (0.754%-2.342%)	2.458% (1.257%-3.904%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	93.8 (56.0-132.6)	112.6 (67.2-159.1)	337.8 (201.6-477.4)	0.471% (0.281%-0.666%)	0.565% (0.337%-0.799%)	1.696% (1.012%-2.397%)
Annual Total	35,084.5 (19,546.3-52,447.7)	175.4 (97.7-262.2)	406.3 (217.4-625.8)	827.3 (452.0-1,255.1)	0.881% (0.491%-1.316%)	2.040% (1.091%-3.141%)	4.153% (2.269%-6.301%)
ObSERVE Autumn Population - 86,024 individuals							
Site Specific Approach to Bio-seasons							
Breeding	987.5 (715.8-1,278.5)	4.9 (3.6-6.4)	17.8 (12.9-23.0)	29.6 (21.5-38.4)	0.122% (0.089%-0.158%)	0.440% (0.319%-0.570%)	0.734% (0.532%-0.950%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	105.4 (61.9-156.5)	126.4 (74.3-187.8)	379.3 (223.0-563.3)	2.611% (1.535%-3.877%)	3.133% (1.842%-4.652%)	9.398% (5.525%-13.956%)
Annual Total	22,061.3 (13,103.4-32,571.1)	110.3 (65.5-162.9)	144.2 (87.2-210.8)	409.0 (244.4-601.6)	2.733% (1.623%-4.035%)	3.573% (2.161%-5.222%)	10.132% (6.057%-14.906%)

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)	Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)
Furness Approach to Bio-seasons							
Breeding	16,318.3 (8,345.3-25,924.3)	81.6 (41.7-129.6)	293.7 (150.2-466.6)	489.5 (250.4-777.7)	2.022% (1.034%-3.212%)	7.278% (3.722%-11.562%)	12.129% (6.203%-19.269%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	93.8 (56.0-132.6)	112.6 (67.2-159.1)	337.8 (201.6-477.4)	2.325% (1.388%-3.286%)	2.790% (1.665%-3.943%)	8.369% (4.995%-11.829%)
Annual Total	35,084.5 (19,546.3-52,447.7)	175.4 (97.7-262.2)	406.3 (217.4-625.8)	827.3 (452.0-1,255.1)	4.346% (2.421%-6.497%)	10.067% (5.387%-15.504%)	20.498% (11.198%-31.098%)
Regional Population - 465,111 individuals							
Site Specific Approach to Bio-seasons							
Breeding	987.5 (715.8-1,278.5)	4.9 (3.6-6.4)	17.8 (12.9-23.0)	29.6 (21.5-38.4)	0.017% (0.013%-0.023%)	0.063% (0.045%-0.081%)	0.104% (0.076%-0.135%)
Non-breeding	21,073.8 (12,387.6-31,292.6)	105.4 (61.9-156.5)	126.4 (74.3-187.8)	379.3 (223.0-563.3)	0.371% (0.218%-0.551%)	0.446% (0.262%-0.662%)	1.337% (0.786%-1.985%)
Annual Total	22,061.3 (13,103.4-32,571.1)	110.3 (65.5-162.9)	144.2 (87.2-210.8)	409.0 (244.4-601.6)	0.389% (0.231%-0.574%)	0.508% (0.307%-0.743%)	1.441% (0.862%-2.120%)
Furness Approach to Bio-seasons							
Breeding	16,318.3 (8,345.3-25,924.3)	81.6 (41.7-129.6)	293.7 (150.2-466.6)	489.5 (250.4-777.7)	0.288% (0.147%-0.457%)	1.035% (0.529%-1.645%)	1.725% (0.882%-2.741%)
Non-breeding	18,766.2 (11,201.0-26,523.4)	93.8 (56.0-132.6)	112.6 (67.2-159.1)	337.8 (201.6-477.4)	0.331% (0.197%-0.467%)	0.397% (0.237%-0.561%)	1.191% (0.711%-1.683%)
Annual Total	35,084.5 (19,546.3-52,447.7)	175.4 (97.7-262.2)	406.3 (217.4-625.8)	827.3 (452.0-1,255.1)	0.618% (0.344%-0.924%)	1.432% (0.766%-2.206%)	2.916% (1.593%-4.424%)

Table A5.17: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Guillemot at NWIS cSPA.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
NWIS DAS Population - 326,565 individuals				
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.986	0.038	1.356
Guidance (60%,1% and 3%)	1.000	0.982	0.050	1.764
Guidance (60%,3% and 5%)	0.999	0.951	0.140	4.917
Furness Approach to Bio-seasons				
Developer (50%,1%)	0.999	0.979	0.060	2.14
Guidance (60%,1% and 3%)	0.999	0.951	0.139	4.882
Guidance (60%,3% and 5%)	0.997	0.903	0.283	9.716
ObSERVE Autumn Population - 86,024 individuals				
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	0.998	0.935	0.187	6.500
Guidance (60%,1% and 3%)	0.998	0.916	0.244	8.405
Guidance (60%,3% and 5%)	0.993	0.779	0.691	22.108
Furness Approach to Bio-seasons				
Developer (50%,1%)	0.997	0.899	0.296	10.128
Guidance (60%,1% and 3%)	0.993	0.780	0.687	21.967
Guidance (60%,3% and 5%)	0.986	0.602	1.399	39.789
Regional Population - 465,111 individuals				
Site Specific Approach to Bio-seasons				

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Developer (50%,1%)	1.000	0.990	0.027	0.953
Guidance (60%,1% and 3%)	1.000	0.988	0.035	1.243
Guidance (60%,3% and 5%)	0.999	0.965	0.098	3.482
Furness Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.985	0.042	1.506
Guidance (60%,1% and 3%)	0.999	0.965	0.098	3.462
Guidance (60%,3% and 5%)	0.998	0.931	0.199	6.916

5.4.2.2.4 Spatial distribution (Construction, Operation and Decommissioning)

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A15.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for spatial distribution, the target for which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains sufficient to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the guillemot spatial distribution within the NWIS as a result of disturbance and displacement.

Note that Appendix A21: Additional Guillemot Evidence, provides additional ecological evidence to supplement the main assessment presented in the NIS, with a particular focus on guillemot. The appendix expands on key areas where further context and supporting information are required, including:

- Consequences of displacement
- Effects of increased density on the prey base
- Capacity of the wider SPA to absorb displaced birds
- Existing natural variability and patchiness
- Behavioural flexibility of seabirds
- Project footprint in the context of the wider SPA
- Non-breeding season sensitivity

Distributional responses to the proposed development are assessed on the basis that displacement represents behavioural redistribution rather than permanent habitat loss, consistent with the CO to maintain the extent, distribution and availability of suitable habitat supporting the guillemot population within the NWIS cSPA. A clear distinction is made between permanent physical habitat loss associated with infrastructure and temporary, reversible changes in spatial use arising from turbine presence.

Permanent habitat loss is confined to the seabed footprint of turbine foundations and associated infrastructure, with no loss of water surface or water column habitat. This footprint is highly localised, amounting to approximately 0.53 km² or 0.02% of the NWIS cSPA, and represents a negligible reduction in suitable habitat. For further details see the Section 5.4.2.2.1 above.

As the effective loss of habitat is negligible and would not adversely affect guillemots using the SPA, the assessment of spatial distribution is focused on the effects of temporary disturbance and displacement arising from turbine presence on the density of birds and spatial use within the remaining SPA. Even under precautionary assumptions, a proportion of guillemot are predicted to continue to use the PFI, confirming that habitats within and around the development remain available and ecologically functional (see Section 5.4.1 Approach to the Assessment). Any redistribution is expected to be limited, temporary and reversible, and does not represent a level of disturbance or barrier to connectivity that would affect population size or conservation status within the SPA. This is reinforced by the population-size attribute continuing to be achieved, as described in the previous section.

Seasonal variation in guillemot abundance and distribution further indicates limited potential for ecological impact. Use of the PFI is very low during the breeding season, when birds are concentrated in near-colony coastal waters, such that displacement would not affect breeding birds (Figure A5-13). Peak use occurs during post-breeding and non-breeding periods, when guillemot are highly mobile, disperse widely, and utilise the SPA as part of a broader regional habitat network. During these periods, the PFI functions as a temporary or transit habitat rather than a core foraging area, with extensive alternative habitat available within and beyond the SPA (Appendix A21: Additional Guillemot Evidence, Sections 3.6 and 3.7).

The area over which guillemot could be displaced within the NWIS cSPA as a result of the construction, operation and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA (6.9%)[1]. During the breeding season, when breeding birds are most sensitive to impacts, guillemot have a large foraging range (mean max +1SD of 153.7km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is expected to cause minimal alteration to foraging habitat usage, given that individuals often travel beyond the NWIS cSPA boundaries to forage. This is evidenced by the low abundances within the PFI +2km buffer during the core breeding season (Figure A5-13).

A proportion of the NWIS cSPA guillemot population makes use of the PFI plus 2 km buffer, with peak representation ranging from 2.7% in the breeding season and 6.5% during the non-breeding period (Table A5.18). Even applying precautionary displacement assumptions of 50–60%, the number of birds redistributed into the remainder of the SPA is small relative to the scale of the site. During the highest-use period (post-breeding), displacement would increase densities across the rest of the SPA by only 3.5–4.1%, and during the breeding season effects are minimal (1.4–1.7%) (Table A5.18). These levels of redistribution fall well within natural seasonal variability and do not indicate any meaningful compression of birds into suboptimal habitat (see Figure A5-13 and Figure A5-14). For example, the modelled density surfaces indicate that the spatial pattern of guillemot distribution within the NWIS cSPA remains broadly unchanged following application of displacement. While slight increases in density are evident across the SPA, these changes are minimal and not readily distinguishable. Importantly, the adjusted densities do not exceed the maximum baseline densities observed elsewhere within the SPA (Appendix A21: Additional Guillemot Evidence, Sections 3.2 and 3.3).

Overall, this indicates that any redistribution of individuals associated with displacement is limited in magnitude and remains within the bounds of existing spatial variability, with no evidence of intensified aggregation that would give rise to elevated ecological pressure within the remaining SPA area. The spatial distribution is therefore maintained, and the changes described do not approach a level capable of undermining the CO attribute for spatial distribution.

Table A5.18: Range-Based Increase in Density of Guillemot Within the Remainder of the NWIS cSPA During the Breeding and Non-breeding Bioseasons (replaces Table 5.19 of the NIS 2024).

Season	Peak abundance in SPA	Estimated number of individuals displaced from PFI (plus 2km buffer)		Estimated increase in density in remainder of NWIS cSPA (%)	
		50% displacement	60% displacement	50% displacement	60% displacement
Breeding	36,097	494	593	1.41%	1.69%
Non-breeding	326,565	10,537	12,644	3.45%	4.14%

There are relatively high numbers of guillemot present within the PFI during the post-breeding period; however, there is no evidence that this area is of particular importance for guillemot foraging, nor that displacement from it would have a disproportionate effect on the population (Appendix A21: Additional Guillemot Evidence,: Sections 3.1 to 3.7). Adding to this, there is very little evidence for the mortality of birds subject to displacement (see Appendix A21: Additional Guillemot Evidence) because high densities of auks are widespread across the offshore areas of the NWIS cSPA (and likely beyond its boundaries) during this period. Some redistribution of guillemots may occur, but the predicted increases in density outside the footprint are modest (Figure A5-13).

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the spatial distribution attribute target of a sufficient number of locations, and the area, timing and intensity of use of suitable habitat required to support the population, for Project Option 1 or Project Option 2.

[1] Proportion of the SPA encompassed by the PFI + 2 km buffer.

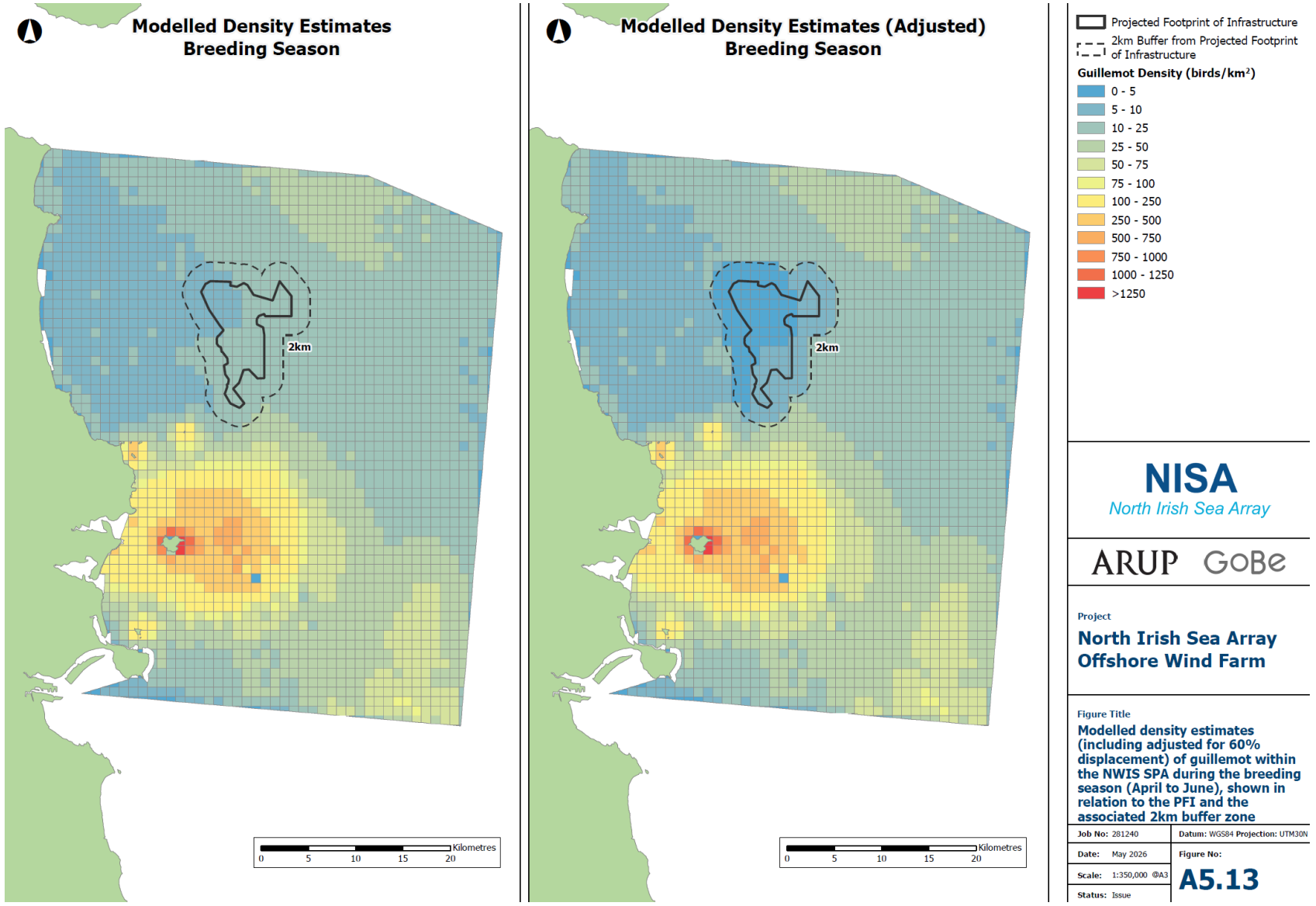


Figure A5.13 Modelled Density Estimates (Including Adjusted for 60% Displacement) of Guillemot Within the NWIS SPA During the Non-Breeding Season (July to March), Shown in Relation to the PFI and the Associated 2km Buffer Zone.

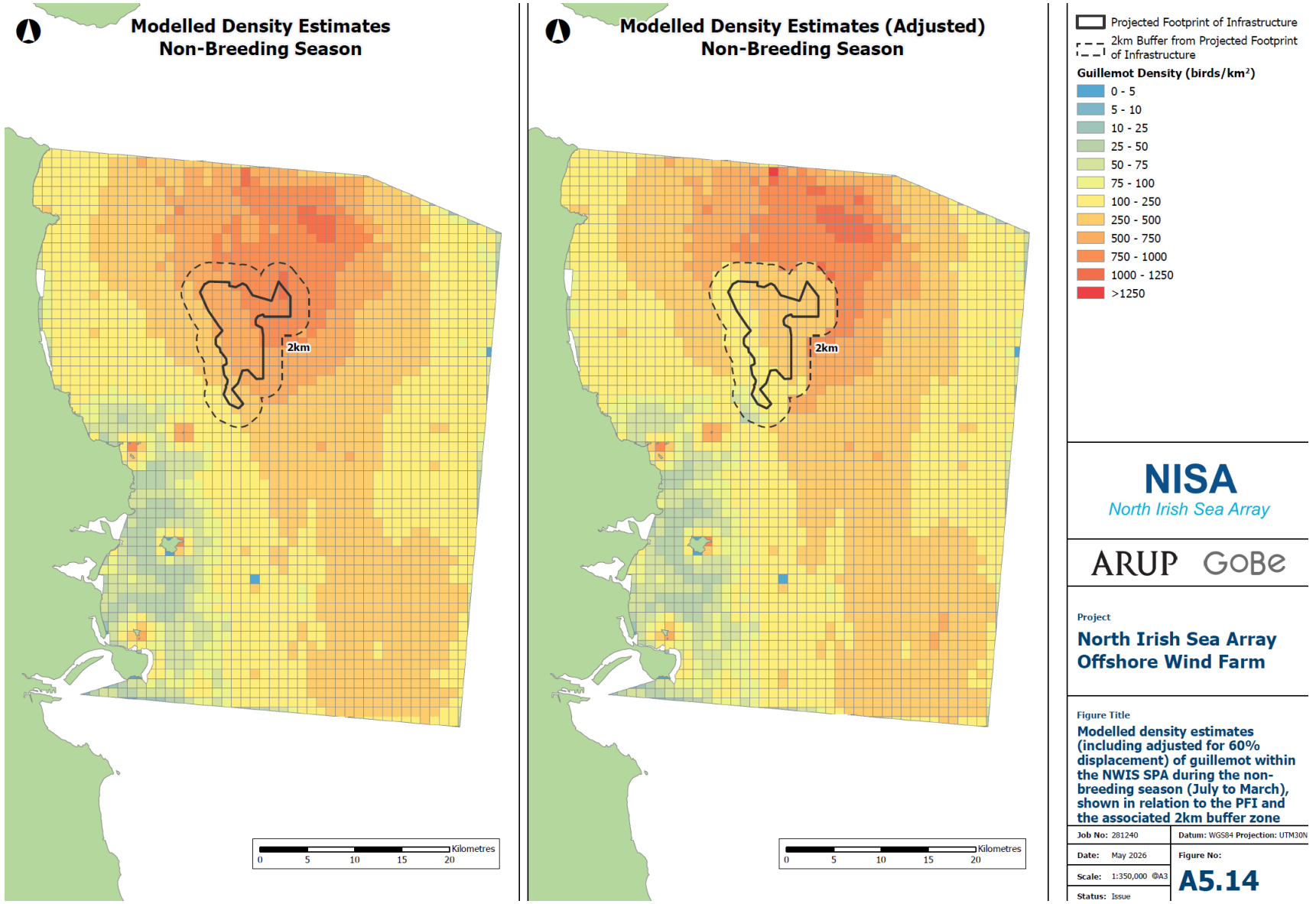


Figure A5.14 Modelled Density Estimates (Including Adjusted for 60% Displacement) of Guillemot Within the NWIS SPA During the Non-Breeding Season (July to March), Shown in Relation to the PFI and the Associated 2km Buffer Zone.

5.4.2.2.5 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.2.6 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remain adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of guillemot. The Developer has therefore undertaken an assessment of potential impacts on the guillemot forage spatial distribution, extent, abundance and availability within the NWIS as a result of disturbance and displacement. A full assessment of impacts to preferred forage fish for guillemot is presented in the Forage spatial distribution, extent, abundance and availability of Section 5.4.1.1.2 and summarised below.

Guillemot typically feed on fish such as sand eel, clupeids, and gadoids, as well as large copepods and squid (Ainley et al., 2021) and as such exhibit a reasonably varied diet, with an even greater diversity observed during the non-breeding bio-season. Moreover, because guillemots routinely forage over large distances (mean max +1SD of 153.7km; Woodward et al., 2019), the proportion of their range affected by the proposed development is small, and any resulting change in foraging habitat use is likely to be minimal.

Potential effects on prey species namely, sandeels, herring and sprat, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2). Impacts were found to not result in population level effects therefore; it is reasonable to assume any potential indirect effects on ornithological receptors, in this case guillemot, can also be ruled out.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by guillemot are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for guillemot foraging and there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of guillemot prey resources. Given the highly dynamic and seasonal nature of guillemot presence, such small shifts are unlikely to place undue pressure on prey resources (Appendix A21: Additional Guillemot Evidence).

Overall, sufficient suitable foraging habitat would remain within the NWIS cSPA to support the Guillemot population, and no meaningful effects on prey availability or foraging opportunity are expected (Appendix A21: Additional Guillemot Evidence).

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, suitable habitat area, and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.2.2.7 Barriers to connectivity (Operation)

The CO for the guillemot feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for barriers to connectivity, the target for which requires the number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the guillemot barriers to connectivity.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). Including sitting birds within the displacement analysis accounts for those birds potentially displaced from an area of sea they reside, meanwhile the inclusion of flying birds provides for an assessment of potential barrier effects to birds moving through the area of interest. The disturbance and displacement assessment for the proposed development considered both flying and sitting birds, therefore any potential impacts on resident birds are already accounted for in the disturbance & displacement section above. This approach is supported by NatureScot guidance (NatureScot 2023a), which states that the displacement assessment is considered to cover all distributional responses (i.e., disturbance and displacement impacts and barrier effects). However, available guillemot tracking data from the region have also been reviewed to identify any key commuting routes between colonies and site-specific foraging areas, as well as broader distribution patterns where the array area could act as a potential barrier requiring consideration in the assessment. Guillemot tracking data from Lambay Island SPA, which abuts the NWIS cSPA, represents the only publicly available colony-level dataset relevant to this area. Accordingly, the following analysis is based primarily on this dataset.

Tracking data of guillemot from Lambay Island SPA, recorded across 10 days between 2010 and 2011 were presented in Baer and Newton (2012). The majority of foraging activity by guillemot from this colony was concentrated within 29km of the island, with the maximum distance travelled from the colony being 45km. This indicates a partial overlap with the proposed development (located 14.4km from Lambay Island SPA). However, through Kernel analysis, three foraging hotspots were identified, the largest being due east of Lambay Island SPA on a 20km north-south axis (Baer and Newton, 2012) which does not overlap with the PFI (plus a 2km buffer). Much (if not all) of the tracking data was collected during the guillemot incubation period. Although birds are constrained during this time, they are less constrained than during the chick rearing period, where foraging intensifies (shorter, more frequent trips) in order to provision young. As such, overall interaction between this species and the proposed development during the breeding season is likely to be lower than demonstrated by these tracking data. This low level of interaction during the breeding season is also reflected in the NWIS DAS data as presented in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline.

Guillemot densities during the breeding season (Jessopp et al., 2018) were highest to the south and east of Lambay Island SPA. This spatial pattern suggests that the majority of birds from Lambay and other nearby colonies are primarily utilising waters within and immediately adjacent to the SPA, with limited evidence of regular foraging activity extending into or beyond the proposed development (PFI). On this basis,

connectivity between the SPA and key foraging areas is unlikely to involve movements through the PFI, and the potential for the proposed development to give rise to barrier effects is therefore considered negligible.

The high densities to the south and east of Lambay suggest that there is likely to be suitable foraging to sustain the relatively small number of birds that will potentially be displaced by the proposed development. Likewise, the relatively consistent densities to the north west of the highest density areas suggest that these areas can also support reasonable numbers of auks, and as such, accommodate the relatively small numbers displaced by the proposed development. Very high densities of auks were noted in this area during autumn surveys (in September) (Jessopp et al., 2018; NWIS DAS). This suggests that this area is well used by birds in the post breeding dispersal period, therefore it can be assumed that it can provide foraging habitat suitable to sustain much higher numbers of birds than use these areas during the breeding season. Again, this suggests that any displaced birds should be able to find alternative suitable foraging areas without expending excessive additional energy.

Tracking of guillemot during the breeding season (e.g. Carroll et al., 2019) shows that they can exploit a range of different foraging sites in a relatively short period of time. Thus, displacement from one particular area is unlikely to have sustained impact as a displaced bird will simply relocate to another suitable area, and barrier effects are unlikely to be encountered on numerous occasions (assuming that birds learn when a particular area is no longer available to them), thus reducing the energetic cost of having to fly around a perceived barrier. Although it cannot be completely ruled out that, on occasion, guillemot from the colony at Lambay Island SPA might forage in the waters on the far side of the array area, the evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the colony.

During the breeding season evidence suggests that the majority of breeding birds foraging from Lambay Island, Ireland's Eye and any other colonies will not encounter the array area, therefore there is a low potential for barrier. Outside the breeding season, birds are more widely dispersed across the region and are not undertaking regular commuting flights between colonies and foraging areas; as a result, barrier effects are also expected to be minimal. Consequently, there is no evidence that any changes to movement or connectivity would be sufficiently frequent, widespread or persistent to affect the population's ability to access key habitats (both within the SPA and outside the SPA) necessary to maintain the SPA population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.2.8 Summary of AEoI Conclusions for Guillemot at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.3 Razorbill

Razorbill have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the razorbill assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. In addition, the displacement rates presented have been updated in response to RFI Section 8(c)i. The following text is a direct replacement of the text within Section 5.4.2.3 of the 2024 NIS.

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Razorbill are susceptible to potential disturbance and displacement from OWF(s) and have therefore been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Discussion and evidence for the displacement and mortality

rates used is provided in Section 5.4.1.3.10 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for razorbill (NPWS, 2023) within the NWIS cSPA are as follows:

- Population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

In recognition of the limitations associated with the NWIS cSPA razorbill citation population, population-level effects have been evaluated across multiple, ecologically relevant population contexts. These include:

(1) breeding populations of abutting SPAs (Lambay Island SPA and Ireland's Eye SPA) during the breeding season;

(2) the NWIS cSPA citation population of 27,025 individuals, recognising its precautionary but limited nature;

(3) the relevant regional population (632,453 individuals), which represents the wider pool of individuals that may have connectivity with, and utilise, the SPA during the non-breeding period; and

(4) maximum population estimated from NWIS DAS undertaken by the Developer (131,615 individuals).

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that razorbill use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.3.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. The Developer has substantially reduced the area of overlap between the Proposed Development and the site by reducing the original MAC boundary of 195.9 km² (representing 8.4% of the NWIS cSPA or 15.2% when a displacement buffer of 2 km is applied) to the array area coving 88.5 km2 in the Planning Application (which equates to 3.8% of the NWIS cSPA or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI Section (8(e)vi)) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. Furthermore, removal of the northern sections of the array area has eliminated overlap with high razorbill density areas ('Hotspots'; see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline) during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development..

5.4.2.3.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14

and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the razorbill population size of the NWIS as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.19:. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 18 (18.0) individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality (0.130%) and fall well within natural annual variability for the population (see Table A5.19: for the full range of impacts against all population scales).

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the razorbill QI of the NWIS cSPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.19: Estimated Mortalities During the Construction and Decommissioning Phase for Razorbill at NWIS cSPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)	Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)
NWIS DAS Population - 131,615 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.089% (0.036%-0.146%)	0.106% (0.043%-0.176%)	0.319% (0.130%-0.527%)
Breeding	175.0 (95.0-257.5)	0.4 (0.2-0.6)	1.6 (0.9-2.3)	2.6 (1.4-3.9)	0.003% (0.002%-0.005%)	0.011% (0.006%-0.017%)	0.019% (0.010%-0.028%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.022% (0.008%-0.036%)	0.027% (0.010%-0.044%)	0.080% (0.031%-0.131%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.017% (0.012%-0.021%)	0.020% (0.015%-0.026%)	0.060% (0.044%-0.077%)
Annual Total	7,211.5 (3,228.3-11,533.8)	18.0 (8.1-28.8)	22.7 (10.3-36.1)	66.0 (29.6-105.3)	0.130% (0.058%-0.209%)	0.164% (0.074%-0.262%)	0.477% (0.214%-0.762%)
Furness Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.089% (0.036%-0.146%)	0.106% (0.043%-0.176%)	0.319% (0.130%-0.527%)
Breeding	1,109.5 (417.5-1,777.8)	2.8 (1.0-4.4)	10.0 (3.8-16.0)	16.6 (6.3-26.7)	0.020% (0.008%-0.032%)	0.072% (0.027%-0.116%)	0.120% (0.045%-0.193%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.022% (0.008%-0.036%)	0.027% (0.010%-0.044%)	0.080% (0.031%-0.131%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.017% (0.012%-0.021%)	0.020% (0.015%-0.026%)	0.060% (0.044%-0.077%)
Annual Total	8,146.0 (3,550.8-13,054.0)	20.4 (8.9-32.6)	31.1 (13.2-49.8)	80.0 (34.5-128.2)	0.147% (0.064%-0.236%)	0.225% (0.095%-0.361%)	0.579% (0.249%-0.927%)
ObSERVE Population - 27,025 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.431% (0.176%-0.712%)	0.518% (0.211%-0.855%)	1.553% (0.633%-2.565%)
Breeding	175.0 (95.0-257.5)	0.4 (0.2-0.6)	1.6 (0.9-2.3)	2.6 (1.4-3.9)	0.015% (0.008%-0.023%)	0.056% (0.030%-0.082%)	0.093% (0.050%-0.136%)

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)	Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.108% (0.041%-0.177%)	0.130% (0.050%-0.212%)	0.389% (0.149%-0.637%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.081% (0.059%-0.104%)	0.097% (0.071%-0.125%)	0.290% (0.212%-0.374%)
Annual Total	7,211.5 (3,228.3-11,533.8)	18.0 (8.1-28.8)	22.7 (10.3-36.1)	66.0 (29.6-105.3)	0.635% (0.284%-1.016%)	0.799% (0.361%-1.274%)	2.324% (1.044%-3.713%)
Furness Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.431% (0.176%-0.712%)	0.518% (0.211%-0.855%)	1.553% (0.633%-2.565%)
Breeding	1,109.5 (417.5-1,777.8)	2.8 (1.0-4.4)	10.0 (3.8-16.0)	16.6 (6.3-26.7)	0.098% (0.037%-0.157%)	0.352% (0.132%-0.564%)	0.586% (0.221%-0.940%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.108% (0.041%-0.177%)	0.130% (0.050%-0.212%)	0.389% (0.149%-0.637%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.081% (0.059%-0.104%)	0.097% (0.071%-0.125%)	0.290% (0.212%-0.374%)
Annual Total	8,146.0 (3,550.8-13,054.0)	20.4 (8.9-32.6)	31.1 (13.2-49.8)	80.0 (34.5-128.2)	0.718% (0.313%-1.150%)	1.096% (0.464%-1.756%)	2.818% (1.214%-4.516%)
Regional Population - 632,453 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.018% (0.008%-0.030%)	0.022% (0.009%-0.037%)	0.066% (0.027%-0.110%)
Breeding	175.0 (95.0-257.5)	0.4 (0.2-0.6)	1.6 (0.9-2.3)	2.6 (1.4-3.9)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)	0.004% (0.002%-0.006%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.005% (0.002%-0.008%)	0.006% (0.002%-0.009%)	0.017% (0.006%-0.027%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.003% (0.003%-0.004%)	0.004% (0.003%-0.005%)	0.012% (0.009%-0.016%)
Annual Total	7,211.5 (3,228.3-11,533.8)	18.0 (8.1-28.8)	22.7 (10.3-36.1)	66.0 (29.6-105.3)	0.027% (0.012%-0.043%)	0.034% (0.015%-0.054%)	0.099% (0.045%-0.159%)
Furness Approach to Bio-seasons							

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)	Developer (25%,1%)	Guidance (30%,1% and 3%)	Guidance (30%,3% and 5%)
Autumn	4,895.8 (1,994.6-8,086.6)	12.2 (5.0-20.2)	14.7 (6.0-24.3)	44.1 (18.0-72.8)	0.018% (0.008%-0.030%)	0.022% (0.009%-0.037%)	0.066% (0.027%-0.110%)
Breeding	1,109.5 (417.5-1,777.8)	2.8 (1.0-4.4)	10.0 (3.8-16.0)	16.6 (6.3-26.7)	0.004% (0.002%-0.007%)	0.015% (0.006%-0.024%)	0.025% (0.009%-0.040%)
Winter	1,225.3 (469.7-2,009.7)	3.1 (1.2-5.0)	3.7 (1.4-6.0)	11.0 (4.2-18.1)	0.005% (0.002%-0.008%)	0.006% (0.002%-0.009%)	0.017% (0.006%-0.027%)
Spring	915.3 (669.0-1,180.0)	2.3 (1.7-3.0)	2.7 (2.0-3.5)	8.2 (6.0-10.6)	0.003% (0.003%-0.004%)	0.004% (0.003%-0.005%)	0.012% (0.009%-0.016%)
Annual Total	8,146.0 (3,550.8-13,054.0)	20.4 (8.9-32.6)	31.1 (13.2-49.8)	80.0 (34.5-128.2)	0.031% (0.013%-0.049%)	0.047% (0.020%-0.075%)	0.120% (0.052%-0.193%)

5.4.2.3.3 Population size: Disturbance and Displacement (Operation)

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the razorbill population size of the NWIS as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for razorbill from operation and maintenance activities.

The summed mean peak abundance of razorbill in the PFI plus a 2km buffer during the breeding and non-breeding bio-seasons is estimated at 7,112 individuals. Based on 50% displacement and 1% mortality this equates to 36.1 razorbill mortalities per annum across all bio-seasons (Table A5.20).

Displacement impacts apportioned to the razorbill populations of Ireland's Eye and Lambay Island SPAs during the breeding and non-breeding bio-seasons can be found in Sections 5.4.11 and 5.4.13, respectively. The assessments for both sites concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the total annual unapportioned impacts on razorbill to the non-breeding NWIS DAS peak count of 131,615 individuals, and an associated background mortality of 13,820 individuals, the increase in baseline mortality would be 0.261%. The level of impact would be indistinguishable from natural fluctuations in the population.

Table A5-21 presents the displacement consequent mortalities as per NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 5% mortality) and for the other reference population sizes. As the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in Table A5.21. Across all assessment scenarios, only the most precautionary scenario (ObSERVE reference population, see Section 5.4.1.1.2 for further details and NatureScot high displacement rates, see Section 5.4.1.3.1 and for more details) resulted in a population growth rate exceeding a 0.5% reduction compared with an unimpacted population. This remains the case when using the unrealistically small reference population of 27,025 from the ObSERVE dataset (given that more than 100,000 razorbill have been recorded within the NWIS cSPA on a single day) and the highly precautionary and biologically unrealistic assumptions embedded within the NatureScot low and high approach mortality rates. As such, these scenarios should not be afforded substantive weight when reaching a conclusion on AEoI.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.20:Estimated Mortalities During the Operation and Maintenance Phase for Razorbill at NWIS cSPA (replaces Table 5.20 of the NIS 2024).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)	Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)
NWIS DAS Population - 131,615 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.177% (0.072%-0.293%)	0.213% (0.087%-0.351%)	0.638% (0.260%-1.053%)
Breeding	175.0 (95.0-257.5)	0.9 (0.5-1.3)	3.2 (1.7-4.6)	5.3 (2.9-7.7)	0.006% (0.003%-0.009%)	0.023% (0.012%-0.034%)	0.038% (0.021%-0.056%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.044% (0.017%-0.073%)	0.053% (0.020%-0.087%)	0.160% (0.061%-0.262%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.033% (0.024%-0.043%)	0.040% (0.029%-0.051%)	0.119% (0.087%-0.154%)
Annual Total	7,211.5 (3,228.3-11,533.8)	36.1 (16.1-57.7)	45.4 (20.5-72.3)	131.9 (59.2-210.7)	0.261% (0.117%-0.417%)	0.328% (0.148%-0.523%)	0.954% (0.429%-1.525%)
Furness Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.177% (0.072%-0.293%)	0.213% (0.087%-0.351%)	0.638% (0.260%-1.053%)
Breeding	1,109.5 (417.5-1,777.8)	5.5 (2.1-8.9)	20.0 (7.5-32.0)	33.3 (12.5-53.3)	0.040% (0.015%-0.064%)	0.145% (0.054%-0.232%)	0.241% (0.091%-0.386%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.044% (0.017%-0.073%)	0.053% (0.020%-0.087%)	0.160% (0.061%-0.262%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.033% (0.024%-0.043%)	0.040% (0.029%-0.051%)	0.119% (0.087%-0.154%)
Annual Total	8,146.0 (3,550.8-13,054.0)	40.7 (17.8-65.3)	62.2 (26.3-99.7)	159.9 (68.9-256.3)	0.295% (0.128%-0.472%)	0.450% (0.190%-0.721%)	1.157% (0.499%-1.855%)
ObSERVE Autumn Population - 27,025 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.863% (0.351%-1.425%)	1.035% (0.422%-1.710%)	3.106% (1.265%-5.130%)

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)	Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)
Breeding	175.0 (95.0-257.5)	0.9 (0.5-1.3)	3.2 (1.7-4.6)	5.3 (2.9-7.7)	0.031% (0.017%-0.045%)	0.111% (0.060%-0.163%)	0.185% (0.100%-0.272%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.216% (0.083%-0.354%)	0.259% (0.099%-0.425%)	0.777% (0.298%-1.275%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.161% (0.118%-0.208%)	0.194% (0.141%-0.250%)	0.581% (0.424%-0.749%)
Annual Total	7,211.5 (3,228.3-11,533.8)	36.1 (16.1-57.7)	45.4 (20.5-72.3)	131.9 (59.2-210.7)	1.271% (0.569%-2.032%)	1.599% (0.723%-2.548%)	4.648% (2.088%-7.425%)
Furness Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.863% (0.351%-1.425%)	1.035% (0.422%-1.710%)	3.106% (1.265%-5.130%)
Breeding	1,109.5 (417.5-1,777.8)	5.5 (2.1-8.9)	20.0 (7.5-32.0)	33.3 (12.5-53.3)	0.195% (0.074%-0.313%)	0.704% (0.265%-1.128%)	1.173% (0.441%-1.879%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.216% (0.083%-0.354%)	0.259% (0.099%-0.425%)	0.777% (0.298%-1.275%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.161% (0.118%-0.208%)	0.194% (0.141%-0.250%)	0.581% (0.424%-0.749%)
Annual Total	8,146.0 (3,550.8-13,054.0)	40.7 (17.8-65.3)	62.2 (26.3-99.7)	159.9 (68.9-256.3)	1.435% (0.626%-2.300%)	2.192% (0.927%-3.512%)	5.636% (2.429%-9.032%)
Regional Population - 632,453 individuals							
Site Specific Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.037% (0.015%-0.061%)	0.044% (0.018%-0.073%)	0.133% (0.054%-0.219%)
Breeding	175.0 (95.0-257.5)	0.9 (0.5-1.3)	3.2 (1.7-4.6)	5.3 (2.9-7.7)	0.001% (0.001%-0.002%)	0.005% (0.003%-0.007%)	0.008% (0.004%-0.012%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.009% (0.004%-0.015%)	0.011% (0.004%-0.018%)	0.033% (0.013%-0.054%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.007% (0.005%-0.009%)	0.008% (0.006%-0.011%)	0.025% (0.018%-0.032%)

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)	Developer (50%,1%)	Guidance (60%,1% and 3%)	Guidance (60%,3% and 5%)
Annual Total	7,211.5 (3,228.3-11,533.8)	36.1 (16.1-57.7)	45.4 (20.5-72.3)	131.9 (59.2-210.7)	0.054% (0.024%-0.087%)	0.068% (0.031%-0.109%)	0.199% (0.089%-0.317%)
Furness Approach to Bio-seasons							
Autumn	4,895.8 (1,994.6-8,086.6)	24.5 (10.0-40.4)	29.4 (12.0-48.5)	88.1 (35.9-145.6)	0.037% (0.015%-0.061%)	0.044% (0.018%-0.073%)	0.133% (0.054%-0.219%)
Breeding	1,109.5 (417.5-1,777.8)	5.5 (2.1-8.9)	20.0 (7.5-32.0)	33.3 (12.5-53.3)	0.008% (0.003%-0.013%)	0.030% (0.011%-0.048%)	0.050% (0.019%-0.080%)
Winter	1,225.3 (469.7-2,009.7)	6.1 (2.3-10.0)	7.4 (2.8-12.1)	22.1 (8.5-36.2)	0.009% (0.004%-0.015%)	0.011% (0.004%-0.018%)	0.033% (0.013%-0.054%)
Spring	915.3 (669.0-1,180.0)	4.6 (3.3-5.9)	5.5 (4.0-7.1)	16.5 (12.0-21.2)	0.007% (0.005%-0.009%)	0.008% (0.006%-0.011%)	0.025% (0.018%-0.032%)
Annual Total	8,146.0 (3,550.8-13,054.0)	40.7 (17.8-65.3)	62.2 (26.3-99.7)	159.9 (68.9-256.3)	0.061% (0.027%-0.098%)	0.094% (0.040%-0.150%)	0.241% (0.104%-0.386%)

Table 5.21: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Razorbill at NWIS cSPA Based on a Range of Displacement Impacts and the ObSERVE Autumn Population.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
NWIS DAS Population - 131,615 individuals				
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.989	0.031	1.137
Guidance (60%,1% and 3%)	1.000	0.986	0.039	1.401
Guidance (60%,3% and 5%)	0.999	0.960	0.114	4.033
Furness Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.987	0.036%	1.289
Guidance (60%,1% and 3%)	0.999	0.981	0.055%	1.933
Guidance (60%,3% and 5%)	0.999	0.951	0.140%	4.907
ObSERVE Autumn Population - 27,025 individuals				
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	0.998	0.946	0.155	5.422
Guidance (60%,1% and 3%)	0.998	0.933	0.193	6.676
Guidance (60%,3% and 5%)	0.994	0.818	0.558	18.245
Furness Approach to Bio-seasons				
Developer (50%,1%)	0.999	0.949	0.145	5.149
Guidance (60%,1% and 3%)	0.998	0.920	0.231	7.996
Guidance (60%,3% and 5%)	0.994	0.810	0.583	19.007

5.4.2.3.4 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for spatial distribution, the target for which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the razorbill spatial distribution within the NWIS as a result of disturbance and displacement.

Note that Appendix A21: Additional Guillemot Evidence, provides additional ecological evidence to supplement the main assessment presented in the NIS. This focuses primarily on guillemot due in response to RFI Section 8(e)vi, however, the core evidence is relevant for razorbill and other seabirds. The appendix expands on key areas where further context and supporting information are required, including:

- Consequences of displacement
- Effects of increased density on the prey base
- Capacity of the wider SPA to absorb displaced birds
- Existing natural variability and patchiness
- Behavioural flexibility of seabirds
- Project footprint in the context of the wider SPA
- Non-breeding season sensitivity.

Distributional responses to the proposed development are assessed on the basis that displacement represents behavioural redistribution rather than permanent habitat loss, consistent with the CO to maintain the extent, distribution and availability of suitable habitat supporting the razorbill population within the NWIS cSPA. A clear distinction is made between permanent physical habitat loss associated with infrastructure and temporary, potentially reversible changes in spatial use arising from turbine presence.

Permanent habitat loss is confined to the seabed footprint of turbine foundations and associated infrastructure, with no loss of water surface or water column habitat. This footprint is highly localised, amounting to approximately 0.53 km² or 0.02% of the NWIS cSPA, and represents a negligible reduction in suitable habitat. For further details see the Section 5.4.2.3.1 above.

Displacement effects are therefore assessed in terms of changes in utilisation and density within the remaining SPA, rather than as a loss of habitat extent, as the latter would not adversely affect razorbills using the SPA. Even under precautionary assumptions, a proportion of razorbill are predicted to continue to use the array area, confirming that habitats within and around the development remain available and ecologically functional. Any redistribution is expected to be limited, temporary and reversible, and does not represent a level of disturbance or barrier to connectivity that would affect population size or conservation status within the SPA. This is reinforced by the population-size attribute continuing to be achieved.

Seasonal variation in razorbill abundance and distribution further indicates limited potential for ecological impact. Use of the PFI is relatively low during the breeding season (175 individuals in the PFI plus 2km buffer), when birds are concentrated in near-colony coastal waters, such that displacement would not affect breeding birds. Peak use occurs during post-breeding and non-breeding periods, when razorbill are highly mobile, disperse widely, and utilise the SPA as part of a broader regional habitat network. During these periods, the PFI functions as a temporary or transit habitat rather than a core foraging area, with extensive alternative habitat available within and beyond the SPA, maintaining functional connectivity (Appendix A21: Additional Guillemot Evidence, Sections 3.5 to 3.7).

The area over which razorbill could be displaced within the NWIS cSPA as a result of the construction, operation and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA (6.9%).

During the breeding season, when breeding birds are most sensitive to impacts, razorbill have a large foraging range (mean max +1SD of 164.6km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is expected to cause minimal alteration to foraging habitat usage, given that individuals often travel beyond the NWIS cSPA boundaries to forage. This is evidenced by the low abundances within the PFI +2km buffer during the core breeding season.

A proportion of the NWIS cSPA razorbill population makes use of the PFI plus 2 km buffer, with peak representation ranging from 2.4% in the breeding season and 10.51% during the winter period. Even applying precautionary displacement assumptions of 50–60%, the number of birds redistributed into the remainder of the SPA is small relative to the scale of the site. During the highest-use period (autumn), displacement would increase densities across the rest of the SPA by only 1.9–2.3%, and during the breeding season effects are minimal (1.2–1.5%). These levels of redistribution fall well within natural seasonal variability and do not indicate any meaningful compression of birds into suboptimal habitat. Crucially, even in the most precautionary scenario, displaced birds could remain fully accommodated within the SPA. Overall spatial distribution is therefore maintained, and the changes described do not approach a level capable of undermining the CO .

Razorbill have moderate/medium sensitivity to disturbance, primarily from ship and helicopter traffic (Garthe and Hüppop, 2004; Furness and Wade, 2012; Langston, 2010; and Bradbury et al., 2014). Evidence has suggested that the Developer's displacement rate of 50% is precautionary, with the NatureScot's advised 60% is likely over-precautionary. Post-consent monitoring and wider Europeans Studies of OWFs has shown an overall weak displacement response to OWFs (Dierschke et al., 2016; Peschko et al., 2020; APEM, 2022; Vanermen et al., 2023). Additionally post-construction monitoring at Beatrice OWF suggest that 30% displacement rate may be overly precautionary for razorbill, with this species exhibiting possible attraction to the OWF (MacArthur Green, 2023; Vanermen et al., 2023). Furthermore, the mortality rates recommended by NatureScot are also considered highly precautionary with research indicating little evidence to support mortality rates above 1% (Searle et al., 2014; 2018; van Kooten et al., 2018). Overall, evidence suggest that the displacement rate of 50% and the mortality rate of 1% is considered to be suitable for assessment, indicating that complete displacement from the PFI is unlikely. For further details on evidence of displacement of razorbill from European OWF see Appendix A17: Offshore and Intertidal Displacement Analysis. Also see Appendix A21: Additional Guillemot Evidence, Section 3.1.

In addition, there is no evidence that the array footprint is of particular importance for razorbill foraging, nor that displacement from this area would have a disproportionate effect on the population. Some redistribution of razorbills may occur, but the predicted increases in density outside the footprint are modest. Given the highly dynamic and seasonal nature of razorbill presence, such small shifts are unlikely to place undue pressure on prey resources (Appendix A21: Additional Guillemot Evidence, Sections 3.1 to 3.7).

Table A5.22: Increase in Density of Razorbill Within the Remainder of the NWIS cSPA During the Summer, Autumn, and Winter Following 50% and 60% Displacement (replaces Table 5.21 of the NIS 2024).

Season	Estimated number of individuals displaced from PFI (plus 2km buffer)		Estimated increase in density in remainder of NWIS cSPA (%)	
	50% displacement	60% displacement	50% displacement	60% displacement
Breeding	88	105	1.23%	1.48%
Autumn	2,448	2,937	1.93%	2.32%
Winter	613	735	5.87%	7.05%
Spring	458	549	2.72%	3.27%

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.3.5 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.3.6 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of razorbill. The Developer has therefore undertaken an assessment of potential impacts on the razorbill forage spatial distribution, extent, abundance and availability within the NWIS as a result of disturbance and displacement. A full assessment of impacts to preferred forage fish for razorbill is presented in the Forage spatial distribution, extent, abundance and availability of Section 5.4.1.1.2 and summarised below.

The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA razorbill feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO relates specifically to the forage resource itself, not to the behaviour or spatial distribution of razorbill.

Razorbill typically feed on schooling fish such as sand eel and herring, as well as crustaceans and polychaetes (Lavers et al., 2020), as such razorbill exhibit a reasonably varied diet. Moreover, because razorbills routinely forage over large distances (mean max +1 SD of 164.6 km; Woodward et al., 2019), the proportion of their range affected by the proposed development is small, and any resulting change in foraging habitat use is likely to be minimal. Given their broad prey base and extensive foraging ranges, razorbills are considered adaptable to localised changes in prey abundance and availability.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to not result in population level effects therefore, it is reasonable to assume any potential indirect effects on ornithological receptors in this case razorbill can also be ruled out.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure, and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA (Section 0). Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by razorbill are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for razorbill foraging, and consistent with conclusions reached for guillemot within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of razorbill prey resources. Given the highly dynamic and seasonal nature of razorbill foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the razorbill population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, suitable habitat area, and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.2.3.7 Barriers to connectivity (Operation)

The CO for the razorbill feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for barriers to connectivity, the target for which requires the number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the razorbill barriers to connectivity.

As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of razorbill from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The closest SPA to the proposed development (excluding the NWIS cSPA) is Lambay Island SPA, located 14.4km from the array area. Tracking data from Lambay Island SPA presented by Baer and Newton (2012) indicates that razorbill foraging activity occurs within 31km of the Island, with a maximum distance of 40km, therefore partial overlap with the proposed development is a potential risk. However, the tracking data and Kernel analysis shows the foraging hotspot for razorbill is situated due east of Lambay Island SPA up to 31km away from the island, but there is very little overlap with the PFI or 2km buffer (Appendix A14). There is, therefore, no evidence to suggest razorbill from the colony at Lambay Island SPA forage in the waters on the far side of the array area or that the development will act as a barrier to movement during the breeding season. The vast majority of the tracking data was collected during the razorbill incubation period. Although birds are constrained during this time, they are less constrained than during the chick rearing period, where foraging intensifies (shorter, more frequent trips) in order to provision young. As such, overall interaction between this species and the proposed development during the breeding season is likely to be lower than demonstrated by these tracking data.

Razorbill densities during the breeding season (Jessopp et al., 2018; NWIS DAS) were highest to the south and east of Lambay Island SPA. This spatial pattern suggests that the majority of birds from Lambay and

other nearby colonies are primarily utilising waters within and immediately adjacent to the SPA, with limited evidence of regular foraging activity extending into or beyond the proposed development (PFI).

On this basis, connectivity between the SPA and key foraging areas is unlikely to involve movements through the PFI, and the potential for the proposed development to give rise to barrier effects is therefore considered negligible.

The high densities recorded to the south and east of Lambay Island indicate that suitable foraging habitat is available to support the relatively small number of birds that may be displaced by the proposed development. Similarly, the consistently moderate densities to the northwest suggest that these waters can also support substantial numbers of auks and therefore readily accommodate any birds redistributed from the development footprint. Very high densities of auks were noted in this area during autumn surveys (in September) (Jessopp et al., 2018 & NWIS DAS). This suggests that this area is well used by birds in the post breeding dispersal period, which suggests that it supports foraging suitable to sustain much higher numbers of birds than use these areas during the breeding season. Again, this suggests that any displaced birds should be able to find alternative suitable foraging areas without expending excessive additional energy.

Tracking of razorbill at Lambay Island during the breeding season indicates that this species foraging occurs across a range of foraging areas (Newton et al., 2011) Thus, displacement from one particular area is unlikely to have sustained impact as a displaced bird will simply relocate to another suitable area, and barrier effects are unlikely to be encountered on numerous occasions (assuming that birds learn when a particular area is no longer available to them), thus reducing the energetic cost of having to fly around a perceived barrier.

Therefore, there is no evidence that any changes to movement or connectivity would be sufficiently frequent, widespread or persistent to affect the population's ability to access key habitats (both within the SPA and outside the SPA) necessary to maintain the SPA population. Although it cannot be completely ruled out that, on occasion, razorbill from the colony at Lambay Island SPA might forage in the waters on the far side of the array area, the evidence suggests that events would be rare and would have negligible consequence to the fitness of the individual involved or the wider colony.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.3.8 Summary of AEoI Conclusions for Razorbill at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.4 Puffin

Puffin have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the Puffin assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. Furthermore, puffin were raised in RFI 8 (c) (iv) in relation to the NWIS cSPA CO and the use of the NatureScot (2023a) displacement and mortality rates. In response to this RFI, puffin have been assessed for NWIS cSPA using the industry standard recommended rates (NatureScot, 2023a). As puffin was initially screened out, the following text is additional to Section 5.4.2 of the 2024 NIS.

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Puffin are susceptible to potential disturbance and displacement from OWF(s) and have therefore been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases

within the array area. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for puffin (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

In recognition of the limitations associated with the NWIS cSPA puffin citation population, population-level effects have been evaluated across multiple, ecologically relevant population contexts. These include:

(1) breeding populations of abutting SPAs (Lambay Island SPA) during the breeding season;

(2) the NWIS cSPA citation population of 5,980 individuals, recognising its precautionary but limited nature;

(3) the relevant regional population for the applicable bio-season of 300,427, which represents the wider pool of individuals that may have connectivity with, and utilise, the SPA during the non-breeding period; and

(4) maximum population estimated from NWIS DAS undertaken by the Developer of 674 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that puffin use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the ObSERVE DAS because the latest Developer led NWIS DAS provided a very low population relative to the known breeding populations in the region and the ObSERVE surveys.

5.4.2.4.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)(vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. The Developer has substantially reduced the area of overlap between the Proposed Development and the site by reducing the original MAC boundary of 195.9 km² (representing 8.4% of the NWIS cSPA or 15.2% when a displacement buffer of 2 km is applied) to the array area coving 88.5 km2 in the Planning Application (which equates to 3.8% of the NWIS cSPA or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI Section (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development. .

5.4.2.4.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the puffin population size of the NWIS cSPA as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.23:. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.1 individuals per annum across all bio-seasons. These values are extremely small relative to baseline mortality (0.014%) and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the puffin QI of the NWIS cSPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.23: Estimated Mortalities During the Construction and Decommissioning Phase for Puffin at NWIS cSPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
NWIS DAS Population - 674 individuals							
Breeding	17.3 (7.0-30.8)	0.0 (0.0-0.1)	0.2 (0.1-0.3)	0.3 (0.1-0.5)	0.068% (0.028%-0.121%)	0.245% (0.099%-0.437%)	0.408% (0.166%-0.728%)
Non-breeding	14.2 (2.8-40.2)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.4)	0.056% (0.011%-0.159%)	0.067% (0.013%-0.190%)	0.202% (0.040%-0.571%)
Annual Total	31.5 (9.8-71.0)	0.1 (0.0-0.2)	0.2 (0.1-0.4)	0.4 (0.1-0.8)	0.124% (0.039%-0.280%)	0.312% (0.113%-0.627%)	0.610% (0.206%-1.299%)
ObSERVE Autumn Population - 5,980 individuals							
Breeding	17.3 (7.0-30.8)	0.0 (0.0-0.1)	0.2 (0.1-0.3)	0.3 (0.1-0.5)	0.008% (0.003%-0.014%)	0.028% (0.011%-0.049%)	0.046% (0.019%-0.082%)
Non-breeding	14.2 (2.8-40.2)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.4)	0.006% (0.001%-0.018%)	0.008% (0.001%-0.021%)	0.023% (0.004%-0.064%)
Annual Total	31.5 (9.8-71.0)	0.1 (0.0-0.2)	0.2 (0.1-0.4)	0.4 (0.1-0.8)	0.014% (0.004%-0.032%)	0.035% (0.013%-0.071%)	0.069% (0.023%-0.146%)
Regional Population - 300,427 individuals							
Breeding	17.3 (7.0-30.8)	0.0 (0.0-0.1)	0.2 (0.1-0.3)	0.3 (0.1-0.5)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)	0.001% (0.000%-0.002%)
Non-breeding	14.2 (2.8-40.2)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.4)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Annual Total	31.5 (9.8-71.0)	0.1 (0.0-0.2)	0.2 (0.1-0.4)	0.4 (0.1-0.8)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.001%)	0.001% (0.000%-0.003%)

5.4.2.4.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the puffin population size of the NWIS cSPA as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects on disturbance and displacement for puffin from operation and maintenance activities.

The summed annual mean peak abundance of puffin in the PFI plus a 2km buffer during the breeding and non-breeding bio-seasons is estimated at 32 (31.5) individuals. Based on 50% displacement and 1% mortality this equates to 0.2 puffin mortalities per annum across all bio-seasons.

Displacement impacts apportioned to the puffin populations of Lambay Island SPA during the breeding and non-breeding bio-seasons can be found in Section 5.4.13. The assessments for both sites concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the annual total unapportioned impacts on puffin to the non-breeding NWIS cSPA count informed by the ObSERVE surveys (5,980 individuals), the increase in baseline mortality relative to this citation count (5,980 individuals) and an associated background mortality of 562 (562.1) individuals would be 0.028%. Table A5.24: presents the displacement consequent mortalities as per NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 5% mortality) and for the other reference population sizes.

The ObSERVE count is derived from a sample of birds using the area during a single survey. However, these birds are likely to be from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season and therefore it is not considered to be appropriate to assess against this population size. As explained in Appendix A18: Offshore and Intertidal Apportioning, the appropriate regional population is 300,427 individuals.

Across all assessment scenarios, the level of impact did not exceed a 1% increase in baseline mortality, below which it can be confidently concluded that the predicted effects are indistinguishable from natural variation and will not give rise to an AEoI.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.24: Estimated Mortalities During the Operation and Maintenance Phase for Puffin at NWIS cSPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%))	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%))
NWIS DAS Population - 674 individuals							
Breeding	17.3 (7.0-30.8)	0.1 (0.0-0.2)	0.3 (0.1-0.6)	0.5 (0.2-0.9)	0.136% (0.055%-0.243%)	0.490% (0.199%-0.874%)	0.817% (0.331%-1.456%)
Non-breeding	14.2 (2.8-40.2)	0.1 (0.0-0.2)	0.1 (0.0-0.2)	0.3 (0.1-0.7)	0.112% (0.022%-0.317%)	0.134% (0.027%-0.381%)	0.403% (0.080%-1.142%)
Annual Total	31.5 (9.8-71.0)	0.2 (0.0-0.4)	0.4 (0.1-0.8)	0.8 (0.3-1.6)	0.248% (0.077%-0.560%)	0.625% (0.225%-1.254%)	1.220% (0.411%-2.598%)
ObSERVE Population - 5,980 individuals							
Breeding	17.3 (7.0-30.8)	0.1 (0.0-0.2)	0.3 (0.1-0.6)	0.5 (0.2-0.9)	0.015% (0.006%-0.027%)	0.055% (0.022%-0.098%)	0.092% (0.037%-0.164%)
Non-breeding	14.2 (2.8-40.2)	0.1 (0.0-0.2)	0.1 (0.0-0.2)	0.3 (0.1-0.7)	0.013% (0.002%-0.036%)	0.015% (0.003%-0.043%)	0.045% (0.009%-0.129%)
Annual Total	31.5 (9.8-71.0)	0.2 (0.0-0.4)	0.4 (0.1-0.8)	0.8 (0.3-1.6)	0.028% (0.009%-0.063%)	0.070% (0.025%-0.141%)	0.138% (0.046%-0.293%)
Regional Population - 300,427 individuals							
Breeding	17.3 (7.0-30.8)	0.1 (0.0-0.2)	0.3 (0.1-0.6)	0.5 (0.2-0.9)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.002%)	0.002% (0.001%-0.003%)
Non-breeding	14.2 (2.8-40.2)	0.1 (0.0-0.2)	0.1 (0.0-0.2)	0.3 (0.1-0.7)	0.000% (0.000%-0.001%)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.003%)
Annual Total	31.5 (9.8-71.0)	0.2 (0.0-0.4)	0.4 (0.1-0.8)	0.8 (0.3-1.6)	0.001% (0.000%-0.001%)	0.001% (0.001%-0.003%)	0.003% (0.001%-0.006%)

5.4.2.4.4 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for spatial distribution, the target for which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the puffin spatial distribution within the NWIS as a result of disturbance and displacement.

Distributional responses to the proposed development are assessed on the basis that displacement represents behavioural redistribution rather than permanent habitat loss, consistent with the CO attribute to maintain the extent, distribution and availability of suitable habitat supporting the puffin population within the NWIS cSPA. A clear distinction is made between permanent physical habitat loss associated with infrastructure and temporary, potentially reversible changes in spatial use arising from turbine presence.

Permanent habitat loss is confined to the seabed footprint of turbine foundations and associated infrastructure, with no loss of water surface or water column habitat. This footprint is highly localised, amounting to approximately 0.64 km² or 0.02% of the NWIS cSPA, and represents a negligible reduction in suitable habitat. For further details see the Section 5.4.2.3.1 above.

Displacement effects are therefore assessed in terms of changes in utilisation and density within the remaining SPA, rather than as a loss of habitat extent, as the latter would not adversely affect puffins using the SPA. Even under precautionary assumptions, a proportion of puffin is predicted to continue to use the array area, confirming that habitats within and around the development remain available and ecologically functional. Any redistribution is expected to be limited, temporary and reversible, and does not represent a level of disturbance or barrier to connectivity that would affect population size or conservation status within the SPA.

Seasonal variation in puffin abundance and distribution further indicates limited potential for ecological impact. Use of the PFI is very low during the breeding season (367 individuals in the PFI plus a 2km buffer), when birds are concentrated in near-colony coastal waters, such that displacement would not affect breeding birds. Peak use occurs during post-breeding and non-breeding periods, when puffin are highly mobile, disperse widely, and utilise the SPA as part of a broader regional habitat network. During these periods, the PFI functions as a temporary or transit habitat rather than a core foraging area, with extensive alternative habitat available within and beyond the SPA, maintaining functional connectivity.

The area over which puffin could be displaced within the NWIS cSPA as a result of the construction, operation and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA. Furthermore, based on tracking data, it is clear that puffin have a large foraging range (mean max +1SD of 265.4km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is expected to cause minimal alteration to foraging habitat usage, given that individuals often travel beyond the NWIS cSPA boundaries to forage. This is evidenced by the low abundances within the PFI +2km buffer during the core breeding season.

A proportion of the NWIS cSPA puffin population makes use of the PFI plus 2 km buffer, with peak representation ranging from 4.7% in the breeding season and 2.1% during the winter period (Table A5.25:). Even applying precautionary displacement assumptions of 50–60%, the number of birds redistributed into the remainder of the SPA is small relative to the scale of the site. During the highest-use period (breeding), displacement would increase densities across the rest of the SPA by only 2.5–3.0%. These levels of redistribution fall well within natural seasonal variability and do not indicate any meaningful compression of birds into suboptimal habitat. Crucially, even in the most precautionary scenario, displaced birds could remain fully accommodated within the SPA. Overall spatial distribution is therefore maintained, and the changes described do not approach a level capable of undermining the CO for spatial distribution.

Puffin have moderate/medium sensitivity to disturbance, primarily from ship and helicopter traffic (Garthe and Hüppop, 2004; Furness and Wade, 2012; Langston, 2010; and Bradbury et al., 2014). Evidence has

suggested that the Developer's displacement rate of 50% is precautionary, with the NatureScot's advised 60% is likely over-precautionary.

Post-consent monitoring and wider Europeans Studies of OWFs has shown an overall weak displacement response to OWFs (Dierschke et al., 2016; Peschko et al., 2020; APEM, 2022; Vanermen et al., 2023). Additionally post-construction monitoring at Beatrice OWF suggest that 30% displacement rate is suitably precautionary for puffin (MacArthur Green, 2023). Furthermore, the mortality rates recommended by NatureScot are also considered highly precautionary with research indicating little evidence to support mortality rates above 1% (Searle et al., 2014; 2018; van Kooten et al., 2018). Overall, evidence suggest that the displacement rate of 50% and the mortality rate of 1% is considered to be suitable for assessment, indicating that complete displacement from the PFI is unlikely. For further details on evidence of displacement of puffin from European OWF see Appendix A17: Offshore and Intertidal Displacement Analysis.

In addition, there is no evidence that the PFI is of particular importance for puffin foraging, nor that displacement from this area would have a disproportionate effect on the population. Some redistribution of puffin may occur, but the predicted increases in density outside the footprint are modest. Given the highly dynamic and seasonal nature of puffin presence, such small shifts are unlikely to place undue pressure on prey resources.

Table A5.25: Increase in Density of Puffin Within the Remainder of the NWIS cSPA During the Summer, Autumn, and Winter Following 50% and 60% Displacement.

Season	Estimated number of individuals displaced from PFI (plus 2km buffer)		Estimated increase in density in remainder of NWIS cSPA (%)	
	50% displacement	60% displacement	50% displacement	60% displacement
Breeding	9	10	2.47%	2.97%
Non-breeding	7	9	1.08%	1.29%

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.4.5 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.4.6 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14nd Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of puffin. The Developer has therefore undertaken an assessment of potential impacts on the puffin forage spatial distribution, extent, abundance and availability within the NWIS as a result of disturbance and displacement. A full assessment of impacts to preferred forage fish for puffin is presented in the Forage spatial distribution, extent, abundance and availability of Section 5.4.1.1.2 and summarised below.

Puffin typically feed on schooling fish such as sprat, sandeel and herring (St John Glew et al., 2019), as such puffin exhibit a reasonably varied diet. Moreover, because puffins routinely forage over large distances (mean max +1 SD of 265.4 km; Woodward et al., 2019), the proportion of their range affected by the proposed development is small, and any resulting change in foraging habitat use is likely to be minimal. Given their broad prey base and extensive foraging ranges, puffins are considered adaptable to localised changes in prey abundance and availability.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to not result in population level effects therefore, it is reasonable to assume any potential indirect effects on ornithological receptors in this case puffin can also be ruled out.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure, and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA (Section 0). Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by puffin are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the PFI is of particular importance for puffin foraging, and consistent with conclusions reached for guillemot within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of puffin prey resources. Given the highly dynamic and seasonal nature of puffin foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the puffin population, and no meaningful effects on prey availability or foraging opportunity are expected. Consequently, there is no evidence that any changes to movement or connectivity would be sufficiently frequent, widespread or persistent to affect the population’s ability to access key habitats (both within the SPA and outside the SPA) necessary to maintain the SPA population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site’s COs to restore the favourable conservation condition of the puffin QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.4.7 Barriers to connectivity (Operation)

The CO for the puffin feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the puffin barriers to connectivity.

As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of puffin from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The closest SPA to the proposed development (excluding the NWIS cSPA) is Lambay Island SPA, located 14.4km from the array area. Puffin densities during the breeding season (Jessopp et al., 2018; NWIS DAS) were highest to the south and east of Lambay Island SPA. This spatial pattern suggests that the majority of birds from Lambay and other nearby colonies are primarily utilising waters within and immediately adjacent to the SPA, with limited evidence of regular foraging activity extending into or beyond the proposed development (PFI). On this basis, connectivity between the SPA and key foraging areas is unlikely to involve movements through the PFI, and the potential for the proposed development to give rise to barrier effects is therefore considered negligible.

The high densities recorded to the south and east of Lambay Island indicate that suitable foraging habitat is available to support the relatively small number of birds that may be displaced by the proposed development. Similarly, the consistently moderate densities to the south off the coast of Wexford suggest that these waters can also support substantial numbers of auks and therefore readily accommodate any birds redistributed from the development footprint. Very low densities of puffin were seen in this area during autumn surveys (in September) (Jessopp et al*.,* 2018 & NWIS DAS). However, this was noted as an underestimation with puffin likely to characterised into unidentified auks during the migration seasons which were also observed east of Wexford. This potentially suggests this area supports suitable foraging area for those in the autumn migration as such any displaced birds should be able to find alternative suitable foraging areas without expending excessive additional energy.

Tracking of puffin at Little Saltee during the breeding season shows that this species can foraging across various locations (Jessopp and Bennison, 2017). Thus, displacement from one particular area is unlikely to have sustained impact as a displaced bird will simply relocate to another suitable area, and barrier effects are unlikely to be encountered on numerous occasions (assuming that birds learn when a particular area is no longer available to them), thus reducing the energetic cost of having to fly around a perceived barrier.

Therefore, there is no evidence that any changes to movement or connectivity would be sufficiently frequent, widespread or persistent to affect the population’s ability to access key habitats (both within the SPA and outside the SPA) necessary to restore the SPA population. Although it cannot be completely ruled out that, on occasion, puffin from the colony at Lambay Island SPA might forage in the waters on the far side of the array area, the evidence suggests that events would be rare and would have negligible consequence to the fitness of the individual involved or the wider colony.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site’s COs to restore the favourable conservation condition of the puffin QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.4.8 Summary of AEoI Conclusions for Puffin at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.5 Kittiwake

Kittiwake have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, kittiwake is now assessed for potential impacts from disturbance and displacement in response to RFI Section 8 (c)ii, and the assessment has also been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.2.5 of the 2024 NIS.

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the PFI. Population-level effects are addressed through the assessment of collision risk and disturbance and displacement separately. The CO attributes for Kittiwake (NPWS, 2023) within the NWIS cSPA are as follows:

- Population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

Kittiwake are not considered vulnerable to impacts from disturbance and displacement (Bradbury et al., 2014) and are not assessed for this impact in England. However, within RFI Section (8) (c), An Bord Pleanála disagreed with the screening out of Black-legged kittiwake for displacement and requested the use of the displacement matrix approach. Consequently, Kittiwake has been screened in to assess for the potential for an AEoI from displacement from the proposed development alone during the construction and decommissioning and operational phase alongside the potential for an AEoI from collision during the operational phase. However, based on available evidence, the Developer Approach of not assessing kittiwake for displacement, remains the most appropriate basis for evaluating impacts on this species.

The assessment of potential effects on Kittiwake has been undertaken using an updated and evidence-led assessment approach, consistent with that applied to other species within the NWIS cSPA, including guillemot. This approach reflects recent site-specific survey data, updated design mitigation, and the best available post-construction evidence on seabird species responses to OWFs.

Population-level effects on kittiwake have been evaluated across multiple, ecologically relevant population contexts. These include:

(1) breeding populations of abutting SPAs (Lambay Island SPA, Ireland's Eye SPA and Howth Head SPA) during the breeding season;

(2) the NWIS cSPA citation population of 2,858 individuals, recognising its precautionary but limited nature;

(3) the relevant regional population for the non-breeding bio-season (933,197 individuals), which represents the wider pool of individuals that may have connectivity with, and utilise, the SPA during the non-breeding period; and

(4) maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 4,664 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that Kittiwake use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

Collision risk and displacement impacts to kittiwake from Ireland's Eye SPA, Lambay Island SPA and Howth Head SPA have been assessed for the full breeding season (March – August), and the migration-free breeding bio-season, in addition to the post-breeding migration bio-season and the return migration bio-season, as defined by Furness (2015). Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

5.4.2.5.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. The latter is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT can decrease collisions by up to 80% for kittiwake from the Proposed Development and has provided a demonstrable reduction in collision risk.

The Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.2.5.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS cSPA as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.26:. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total 3.2 individuals per annum across all assessed bio-seasons. These values are small relative to baseline mortality (0.470%) and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the NWIS cSPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.26: Estimated Mortalities During the Construction and Decommissioning Phase for Kittiwake at NWIS cSPA.

Bio-season	Apportioned abundance	Estimated mortality		% increase in baseline mortality	
	Mean (95% LCI – UCI)	Guidance (30%,1%)	Guidance (30%,3%)	Guidance (30%,1%)	Guidance (30%,3%)
NWIS DAS population - 4,664					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	1.4 (0.6-2.4)	4.2 (1.7-7.1)	0.205% (0.085%-0.349%)	0.615% (0.256%-1.046%)
Breeding	593.8 (290.5-979.5)	0.9 (0.4-1.5)	2.7 (1.3-4.4)	0.131% (0.064%-0.216%)	0.392% (0.192%-0.647%)
Spring	611.7 (297.3-1,182.7)	0.9 (0.4-1.8)	2.8 (1.3-5.3)	0.135% (0.065%-0.261%)	0.404% (0.196%-0.782%)
Annual Total	2,135.8 (975.8-3,745.0)	3.2 (1.5-5.6)	9.6 (4.4-16.9)	0.470% (0.215%-0.825%)	1.411% (0.645%-2.475%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	0.7 (0.3-1.3)	2.2 (1.0-3.9)	0.107% (0.050%-0.190%)	0.321% (0.151%-0.571%)
Breeding	903.0 (424.8-1,405.5)	1.4 (0.6-2.1)	4.1 (1.9-6.3)	0.199% (0.094%-0.310%)	0.597% (0.281%-0.929%)
Spring	498.0 (210.7-1,046.7)	0.7 (0.3-1.6)	2.2 (0.9-4.7)	0.110% (0.046%-0.231%)	0.329% (0.139%-0.692%)
Annual Total	1,887.0 (863.2-3,316.9)	2.8 (1.3-5.0)	8.5 (3.9-14.9)	0.416% (0.190%-0.731%)	1.247% (0.570%-2.192%)
ObSERVE Autumn population - 2,858					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	1.4 (0.6-2.4)	4.2 (1.7-7.1)	0.334% (0.139%-0.569%)	1.003% (0.418%-1.707%)
Breeding	593.8 (290.5-979.5)	0.9 (0.4-1.5)	2.7 (1.3-4.4)	0.213% (0.104%-0.352%)	0.640% (0.313%-1.056%)
Spring	611.7 (297.3-1,182.7)	0.9 (0.4-1.8)	2.8 (1.3-5.3)	0.220% (0.107%-0.425%)	0.660% (0.321%-1.275%)
Annual Total	2,135.8 (975.8-3,745.0)	3.2 (1.5-5.6)	9.6 (4.4-16.9)	0.768% (0.351%-1.346%)	2.303% (1.052%-4.039%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	0.7 (0.3-1.3)	2.2 (1.0-3.9)	0.175% (0.082%-0.311%)	0.524% (0.246%-0.933%)
Breeding	903.0 (424.8-1,405.5)	1.4 (0.6-2.1)	4.1 (1.9-6.3)	0.325% (0.153%-0.505%)	0.974% (0.458%-1.516%)
Spring	498.0 (210.7-1,046.7)	0.7 (0.3-1.6)	2.2 (0.9-4.7)	0.179% (0.076%-0.376%)	0.537% (0.227%-1.129%)
Annual Total	1,887.0 (863.2-3,316.9)	2.8 (1.3-5.0)	8.5 (3.9-14.9)	0.678% (0.310%-1.192%)	2.035% (0.931%-3.577%)
Regional population - 933,197					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	1.4 (0.6-2.4)	4.2 (1.7-7.1)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)

Bio-season	Apportioned abundance	Estimated mortality		% increase in baseline mortality	
	Mean (95% LCI – UCI)	Guidance (30%,1%)	Guidance (30%,3%)	Guidance (30%,1%)	Guidance (30%,3%)
Breeding	593.8 (290.5-979.5)	0.9 (0.4-1.5)	2.7 (1.3-4.4)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring	611.7 (297.3-1,182.7)	0.9 (0.4-1.8)	2.8 (1.3-5.3)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	2,135.8 (975.8-3,745.0)	3.2 (1.5-5.6)	9.6 (4.4-16.9)	0.002% (0.001%-0.004%)	0.007% (0.003%-0.012%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	0.7 (0.3-1.3)	2.2 (1.0-3.9)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	903.0 (424.8-1,405.5)	1.4 (0.6-2.1)	4.1 (1.9-6.3)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Spring	498.0 (210.7-1,046.7)	0.7 (0.3-1.6)	2.2 (0.9-4.7)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Annual Total	1,887.0 (863.2-3,316.9)	2.8 (1.3-5.0)	8.5 (3.9-14.9)	0.002% (0.001%-0.004%)	0.006% (0.003%-0.011%)

5.4.2.5.3 Population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS cSPA as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects on disturbance and displacement for kittiwake from operation and maintenance activities.

The summed mean peak abundance of kittiwake in the PFI plus a 2km buffer during the migration-free breeding and non-breeding bio-seasons is estimated at 2,136. Based on 30% displacement and 1% mortality this equates to six (6.4) kittiwake mortalities per annum across all bio-seasons (Table A5.27).

Displacement impacts apportioned to the kittiwake populations of Ireland's Eye, Lambay Island and Howth Head SPAs during the migration free breeding and non-breeding bio-seasons can be found in Sections 5.4.11.4.3, 0 and 5.4.12.2.3, respectively. The assessments concluded no AEoI during the migration free breeding and non-breeding bio-seasons.

When assessing the annual total unapportioned impacts of the proposed development on kittiwake to the NWIS DAS population of 4,664 individuals (informed by the latest NWIS DAS surveys), the increase in baseline mortality relative to this regional count and a background mortality of 681 individuals would be 0.941%. This level of impact would be indistinguishable from natural fluctuations in the population. Table A5.27 presents the displacement consequent mortalities as per NatureScot guidance (NatureScot, 2023a) (30% displacement, 1 to 3% mortality). As the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in Table A5.28: .

Across all scenarios based on the NWIS DAS reference population, the predicted reduction in kittiwake population growth rate was <0.5%. A change of this magnitude is ecologically negligible and is highly unlikely to result in further population decline or to meaningfully contribute to the existing population trend.

Scenarios based on the NWIS DAS reference population (4,664 individuals) and ObSERVE population estimate (2,858 individuals) are not considered reliable for assessment, as this value is far too small to be representative of the NWIS cSPA. For context, the breeding populations of Ireland's Eye and Lambay Island SPAs alone exceed these figures, even before accounting for immatures and non-breeders, which typically comprise at least half of the total population.

The ObSERVE count and the NWIS DAS estimate were each derived from a single snapshot survey. Birds present at any given time are drawn from a much larger, mobile pool that uses the NWIS cSPA fluidly throughout the non-breeding season. As explained in Appendix A18: Offshore and Intertidal Ornithology Apportioning , the appropriate regional population for assessment is 933,197 individuals, reflecting connectivity to this wider population rather than a momentary snapshot.

When the annual total unapportioned impacts are compared to the NWIS cSPA regional population (933,197 individuals), the resulting increase in baseline mortality is 0.005%, as shown in Table A5.27, including displacement-related mortality calculated using NatureScot's recommended parameters (30% displacement; 1–3% mortality).

Taking these points together; the small, <0.5% reduction in growth rate under the most appropriate (NWIS DAS) scenario; the precaution embedded within CRM parameters; the conservative nature of all population baselines used; and the clear evidence that the NWIS cSPA is utilised by a much larger regional population, it can be concluded with confidence that the predicted level of impact will not compromise the long-term viability of the kittiwake population and will not give rise to an AEoI of the NWIS cSPA.

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Table A5.27: Estimated Mortalities During the Operation and Maintenance Phase for Kittiwake at NWIS cSPA.

Bio-season	Apportioned abundance	Estimated mortality		% increase in baseline mortality	
	Mean (95% LCI – UCI)	Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
NWIS DAS population - 4,664					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	2.8 (1.2-4.7)	8.4 (3.5-14.2)	0.410% (0.171%-0.697%)	1.230% (0.513%-2.092%)
Breeding	593.8 (290.5-979.5)	1.8 (0.9-2.9)	5.3 (2.6-8.8)	0.262% (0.128%-0.432%)	0.785% (0.384%-1.295%)
Spring	611.7 (297.3-1,182.7)	1.8 (0.9-3.5)	5.5 (2.7-10.6)	0.269% (0.131%-0.521%)	0.808% (0.393%-1.563%)
Annual Total	2,135.8 (975.8-3,745.0)	6.41 (2.9-11.2)	19.22 (8.8-33.7)	0.941% (0.430%-1.650%)	2.823% (1.290%-4.950%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	1.5 (0.7-2.6)	4.4 (2.0-7.8)	0.214% (0.100%-0.381%)	0.642% (0.301%-1.143%)
Breeding	903.0 (424.8-1,405.5)	2.7 (1.3-4.2)	8.1 (3.8-12.6)	0.398% (0.187%-0.619%)	1.193% (0.561%-1.858%)
Spring	498.0 (210.7-1,046.7)	1.5 (0.6-3.1)	4.5 (1.9-9.4)	0.219% (0.093%-0.461%)	0.658% (0.278%-1.383%)
Annual Total	1,887.0 (863.2-3,316.9)	5.66 (2.6-10.0)	16.98 (7.8-29.9)	0.831% (0.380%-1.461%)	2.494% (1.141%-4.384%)
ObSERVE Autumn population - 2,858					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	2.8 (1.2-4.7)	8.4 (3.5-14.2)	0.669% (0.279%-1.138%)	2.007% (0.837%-3.414%)
Breeding	593.8 (290.5-979.5)	1.8 (0.9-2.9)	5.3 (2.6-8.8)	0.427% (0.209%-0.704%)	1.281% (0.627%-2.113%)
Spring	611.7 (297.3-1,182.7)	1.8 (0.9-3.5)	5.5 (2.7-10.6)	0.440% (0.214%-0.850%)	1.319% (0.641%-2.551%)
Annual Total	2,135.8 (975.8-3,745.0)	6.41 (2.9-11.2)	19.22 (8.8-33.7)	1.536% (0.702%-2.692%)	4.607% (2.105%-8.077%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	1.5 (0.7-2.6)	4.4 (2.0-7.8)	0.349% (0.164%-0.622%)	1.048% (0.491%-1.865%)
Breeding	903.0 (424.8-1,405.5)	2.7 (1.3-4.2)	8.1 (3.8-12.6)	0.649% (0.305%-1.011%)	1.948% (0.916%-3.032%)
Spring	498.0 (210.7-1,046.7)	1.5 (0.6-3.1)	4.5 (1.9-9.4)	0.358% (0.151%-0.753%)	1.074% (0.454%-2.258%)
Annual Total	1,887.0 (863.2-3,316.9)	5.66 (2.6-10.0)	16.98 (7.8-29.9)	1.357% (0.621%-2.385%)	4.070% (1.862%-7.154%)
Regional population - 933,197					
Site Specific Approach to Bio-seasons					
Autumn	930.4 (388.0-1,582.8)	2.8 (1.2-4.7)	8.4 (3.5-14.2)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)

Bio-season	Apportioned abundance	Estimated mortality		% increase in baseline mortality	
	Mean (95% LCI – UCI)	Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Breeding	593.8 (290.5-979.5)	1.8 (0.9-2.9)	5.3 (2.6-8.8)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.006%)
Spring	611.7 (297.3-1,182.7)	1.8 (0.9-3.5)	5.5 (2.7-10.6)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)
Annual Total	2,135.8 (975.8-3,745.0)	6.41 (2.9-11.2)	19.22 (8.8-33.7)	0.005% (0.002%-0.008%)	0.014% (0.006%-0.025%)
Furness Approach to Bio-seasons					
Autumn	486.0 (227.8-864.8)	1.5 (0.7-2.6)	4.4 (2.0-7.8)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.006%)
Breeding	903.0 (424.8-1,405.5)	2.7 (1.3-4.2)	8.1 (3.8-12.6)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.009%)
Spring	498.0 (210.7-1,046.7)	1.5 (0.6-3.1)	4.5 (1.9-9.4)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.007%)
Annual Total	1,887.0 (863.2-3,316.9)	5.66 (2.6-10.0)	16.98 (7.8-29.9)	0.004% (0.002%-0.007%)	0.012% (0.006%-0.022%)

Table A5.28: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Kittiwake at NWIS cSPA Based on a Range of Displacement Impacts and the ObSERVE Autumn Population and NWIS DAS Population.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
NWIS DAS Population - 4,664 individuals				
Site Specific Approach to Bio-seasons				
Guidance (30%, 1%)	0.998	0.943	0.163	5.715
Guidance (30%, 3%)	0.995	0.838	0.489	16.185
Furness Approach to Bio-seasons				
Guidance (30%, 1%)	0.999	0.950	0.144	5.026
Guidance (30%, 3%)	0.996	0.855	0.433	14.454
ObSERVE Population - 2,858 individuals				
Site Specific Approach to Bio-seasons				
Guidance (30%, 1%)	0.997	0.907	0.268	9.342
Guidance (30%, 3%)	0.992	0.751	0.793	24.919
Furness Approach to Bio-seasons				
Guidance (30%, 1%)	0.998	0.917	0.238	8.304
Guidance (30%, 3%)	0.993	0.774	0.702	22.558

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.2.5.4 Population size: Collision Risk (Operation)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS cSPA as a result of collision risk.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is 17.9 breeding adults per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the kittiwake populations of Ireland's Eye, Lambay Island and Howth Head SPAs during the breeding and non-breeding bio-seasons can be found in Sections 5.4.11, 5.4.13 and 5.4.12, respectively. The assessments for these sites concluded no AEoI during the breeding and non-breeding bio-seasons.

Assessing the annual total unapportioned impacts on kittiwake to the latest NWIS DAS count (4,664 individuals), with an associated background mortality of 681 individuals, results in an increase in baseline mortality of 2.626% (Table A5.29).

Likewise, this count is derived from a sample of birds using the area during a single survey. However, these birds are likely to be from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season and therefore it is not considered appropriate to assess against this population size. As described in Appendix A18: Offshore and Intertidal Ornithology Apportioning, the appropriate regional population is 933,197 individuals, representing the number of birds considered to more realistically be present within the region.

When assessing the annual total unapportioned impacts on kittiwake to the regional population of 933,197 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 136,247 individuals would be 0.013% (Table A5.29). This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.29: Annual Collision Mortalities During the Operational Phase for Kittiwake at NWIS cSPA (replaced Table 5.22 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality	% increase in baseline mortality	% increase in baseline mortality
	Mean (95% LCI – UCI)	ObSERVE population - 2,858	NWIS DAS population - 4,664	Regional population - 933,197
Site Specific Approach to Bio-seasons				
Autumn	6.4 (0.0-25.7)	1.536% (0.000%-6.152%)	0.941% (0.000%-3.770%)	0.005% (0.000%-0.019%)
Breeding	4.9 (0.0-26.8)	1.181% (0.000%-6.430%)	0.724% (0.000%-3.940%)	0.004% (0.000%-0.020%)
Spring	6.5 (0.2-25.3)	1.567% (0.058%-6.070%)	0.960% (0.035%-3.720%)	0.005% (0.000%-0.019%)
Annual Total	17.9 (0.2-77.8)	4.285% (0.058%-18.652%)	2.626% (0.035%-11.430%)	0.013% (0.000%-0.057%)
Furness Approach to Bio-seasons				
Autumn	3.9 (0.0-12.4)	0.942% (0.000%-2.960%)	0.577% (0.000%-1.814%)	0.003% (0.000%-0.009%)

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality	% increase in baseline mortality	% increase in baseline mortality
	Mean (95% LCI – UCI)	ObSERVE population - 2,858	NWIS DAS population - 4,664	Regional population - 933,197
Breeding	9.6 (0.0-47.9)	2.308% (0.000%-11.487%)	1.414% (0.000%-7.039%)	0.007% (0.000%-0.035%)
Spring	4.3 (0.2-17.6)	1.038% (0.058%-4.206%)	0.636% (0.035%-2.577%)	0.003% (0.000%-0.013%)
Annual Total	17.9 (0.2-77.8)	4.287% (0.058%-18.652%)	2.627% (0.035%-11.430%)	0.013% (0.000%-0.057%)

However, the percentage increase in baseline mortality exceeds 1% for the smaller population estimates and therefore additional analysis has been undertaken using PVA for the NWIS DAS and ObSERVE reference populations. Although both datasets underestimate the true number of birds regularly using the site, the NWIS DAS population is considered the most robust and representative, given its recency and site specificity. Under this scenario, the predicted impacts result in no more than a 0.5% reduction in population growth rate relative to an unimpacted population. Taking into account the precaution built into the CRM parameters and the conservative population baselines applied, it can be concluded beyond reasonable scientific doubt that this level of impact will not affect the long-term viability of the population.

Table A5.30: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Kittiwake at NWIS cSPA Based on a Range of Collision Impacts and the ObSERVE Autumn Population and NWIS DAS.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Site Specific Approach to Bio-seasons				
NWIS DAS Population	0.995	0.850	0.451	14.962
ObSERVE Population	0.993	0.766	0.743	23.391
Furness Approach to Bio-seasons				
NWIS DAS Population	0.995	0.850	0.451	14.962
ObSERVE Population	0.993	0.764	0.739	23.605

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.2.5.5 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for spatial distribution, the target for which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake spatial distribution within the NWIS as a result of disturbance and displacement.

Note that Appendix A21: Additional Guillemot Evidence, provides additional ecological evidence to supplement the main assessment presented in the NIS. This focuses primarily on guillemot due in response to RFI Section 8(e)vi, however, the core evidence is relevant for kittiwake and other seabirds. The appendix expands on key areas where further context and supporting information are required, including:

- Consequences of displacement
- Effects of increased density on the prey base
- Capacity of the wider SPA to absorb displaced birds
- Existing natural variability and patchiness
- Behavioural flexibility of seabirds
- Project footprint in the context of the wider SPA
- Non-breeding season sensitivity.

Distributional responses to the proposed development are assessed on the basis that displacement represents behavioural redistribution rather than permanent habitat loss, consistent with the CO to maintain the extent, distribution and availability of suitable habitat supporting the kittiwake population within the NWIS cSPA. A clear distinction is made between permanent physical habitat loss associated with infrastructure and temporary, potentially reversible changes in spatial use arising from turbine presence.

Permanent habitat loss is confined to the seabed footprint of turbine foundations and associated infrastructure, with no loss of water surface or water column habitat. This footprint is highly localised, amounting to approximately 0.64 km² or 0.02% of the NWIS cSPA, and represents a negligible reduction in suitable habitat. For further details see the Section 5.4.2.5.1 above.

Displacement effects are therefore assessed in terms of changes in utilisation and density within the remaining SPA, rather than as a loss of habitat extent, as the latter would not adversely affect kittiwakes using the SPA. Even under precautionary assumptions, a proportion of kittiwake is predicted to continue to use the PFI, confirming that habitats within and around the development remain available and ecologically functional. Any redistribution is expected to be limited, temporary and reversible, and does not represent a level of disturbance or barrier to connectivity that would affect population size or conservation status within the SPA.

Seasonal variation in kittiwake abundance and distribution further indicates limited potential for ecological impact. Use of the PFI is higher during the breeding season (903 individuals in PFI plus a 2km buffer) compared to the non-breeding season, when birds constrained to near-colony coastal waters. However, the peak density occurred during July to August, where birds would begin transition to the autumn migration season. In these migration seasons kittiwake are highly mobile, disperse widely, and utilise the SPA as part of a broader regional habitat network. As such the PFI functions as a temporary or transit habitat, with extensive alternative habitat available within and beyond the SPA, maintaining functional connectivity.

A proportion of the NWIS cSPA kittiwake population makes use of the PFI plus 2 km buffer, with peak representation ranging from 20.1% in the breeding season and 17.3% during the autumn season (Table A5.31). Even applying precautionary displacement assumptions of 30%, the number of birds redistributed into the remainder of the SPA is small relative to the scale of the site. During the highest-use period (autumn), displacement would increase densities across the rest of the SPA by only 6.3%. These levels of redistribution are over 5%, however displaced birds could remain fully accommodated within the SPA. Overall spatial distribution is therefore maintained, and the changes described do not approach a level capable of undermining the CO for spatial distribution.

The area over which kittiwake could be displaced within the NWIS cSPA as a result of the construction, operation and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA. Furthermore, based on tracking data, it is clear that Kittiwake have a large foraging range (mean max +1SD of 300.6km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is expected to cause minimal alteration to foraging habitat usage, given that individuals often travel beyond the NWIS cSPA boundaries to forage. This is evidenced by the peak breeding season densities observed in the south of the PFI plus a 2km buffer .

There is no evidence that the PFI is of particular importance for kittiwake foraging, nor that displacement from this area would have a disproportionate effect on the population. Additionally, according to Bradbury et al. (2014) kittiwake sensitivity to disturbance and displacement is ‘low’, with evidence reviews and new

studies indicating no evidence of kittiwake displacement occurring at OWFs in the North Sea (Dierschke et al., 2016 ; Lamb et al., 2024; Trinder et al., 2024).Therefore the presence of WTGs is unlikely to deter them from entering the PFI. Given the highly dynamic and seasonal nature of kittiwake foraging behaviour, such small shifts are unlikely to place undue pressure on prey resources.

Table A5.31: Increase in Density of Kittiwake Within the Remainder of the NWIS cSPA During the Breeding, Autumn, and Spring Following 30% Displacement.

Season	Peak abundance in SPA	Number of individuals displaced from PFI (30%)	Estimated increase in density in remainder of NWIS cSPA (%)
Breeding	9,033	545	7.55
Autumn	15,629	812	6.29
Spring	4,041	143	4.02

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.5.6 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.5.7 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of kittiwake. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake forage spatial distribution, extent, abundance and availability within the NWIS as a result of disturbance and displacement. A full assessment of impacts to preferred forage fish for kittiwake is presented in the Forage spatial distribution, extent, abundance and availability of Section 5.4.1.1.2 and summarised below.

Kittiwake are primarily piscivorous feeding on sand eel, herring and gadoids, but this species has been recorded feeding on invertebrates including euphausiids and amphipods (Hatch et al., 2020), as such

kittiwake exhibit a fairly diverse diet. Moreover, based on tracking data, kittiwake have a large foraging range (mean max +1SD of 300.6km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage. In light of the available evidence above kittiwake are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case kittiwake can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by kittiwake are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the PFI is of particular importance for kittiwake foraging, and consistent with conclusions reached for kittiwake within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of kittiwake prey resources. Given the highly dynamic and seasonal nature of kittiwake foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the kittiwake population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.5.8 Barriers to connectivity (Operation)

The CO for the kittiwake feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake barriers to connectivity.

As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of kittiwake from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The presence of WTGs (both operational and during construction and decommissioning phases) has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, the presence of WTGs does not deter them from entering the PFI therefore these birds are unlikely to experience barrier effects. However, a precautionary approach has been taken therefore a review of the available tracking data for kittiwake from the region.

Tracking data of 14 kittiwake from Lambay Island SPA was collected across 20 days between 2010 and 2011, with the maximum distance travelled 40km from the colony and a mean distance of 29.5km (Baer and Newton, 2012). There were no specific foraging hotspots identified during the survey, the feeding activity was widely dispersed with a broad concentration east south-easterly of the colony. Very few individuals were reported foraging beyond 100m sea depth otherwise there was no clear pattern to the foraging activity. It should be noted that this dataset is more than 10 years old and, as such, foraging patterns and distributions may have changed; however, it remains the best available tracking dataset in the public domain.

Breeding season distributions mapped in Jessopp et al. (2018) also indicate a strong preference for areas to the south and east of Lambay and other local colonies. As such, any locally breeding birds displaced by the proposed development should be able to find alternative suitable foraging areas, closer to colonies.

Despite the lack of clear foraging hotpots within the tracking data, it does indicate that the majority of foraging activity occurs south-east from the array area and would therefore not overlap with the site. It should be noted that the tracking data does suggest kittiwake may forage in the waters on the far side of the array area, particularly to the south. However, as per tracking data presented by Woodward et al. (2019) kittiwake have considerable foraging ranges (MMF +1SD 300.6km) over which alternative suitable foraging habitat are likely to be found. This species also exhibits low habitat use specificity. Considering this and the species 'low' sensitivity to the presence of WTGs it is reasonable to conclude that, should this species experience a reduction in available foraging area as a result of the proposed development, it is expected to cause minimal impact, as any displaced birds should be able to find suitable foraging elsewhere. Evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.5.9 Summary of AEoI Conclusions for Kittiwake at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.6 Herring gull

Herring gull have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the herring gull assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within herring gull in Section 5.4.2 of the 2024 NIS.

The CO for herring gull feature of the NWIS cSPA is to restore favourable conservation condition. Herring gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision risk. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for herring gull (NPWS, 2023) within the NWIS cSPA are as follows:

- Population size;
- Spatial distribution;

- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the Site Synopsis, herring gull are listed as a QI at three SPAs that abut the NWIS cSPA, namely Ireland's Eye SPA, Lambay Island SPA and Skerries Island SPA. Breeding herring gull from these SPAs are highly likely to utilise the habitat encompassed within the cSPA while foraging. Therefore, any impacts from collision risk on herring gull within the NWIS cSPA will be apportioned to the breeding populations at these SPAs. Population-level effects have been evaluated across multiple, ecologically relevant population contexts. These include:

(1) breeding populations of abutting SPAs (Ireland's Eye SPA, Lambay Island SPA and Skerries Island SPA) during the breeding season;

(2) the NWIS cSPA citation population of 6,893 individuals, recognising its precautionary but limited nature;

(3) the relevant regional population for the applicable bio-season of 187,094 individuals, which represents the wider pool of individuals that may have connectivity with, and utilise, the SPA during the non-breeding period; and

(4) maximum population estimated from NWIS DAS undertaken by the Developer (26,355).

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that herring gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

Collision risk of herring gull from Skerries Island SPA, Ireland's Eye SPA and Lambay Island SPA has been assessed for the full breeding bio-season (March – August), the non-breeding bio-season (September – February), as defined by Furness (2015).

5.4.2.6.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft. .

In addition, array refinements and a reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.6.2 Population size: Collision Risk (Operation)

The CO for herring gull feature of the NWIS cSPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the herring gull population size of the NWIS as a result of collision risk.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is 42 (42.4) individuals per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the herring gull populations of Ireland's Eye, Lambay Island and Skerries Island SPAs during the breeding and non-breeding bio-seasons can be found in Sections 5.4.11, 5.4.13 and 5.4.10, respectively. The assessments for these sites concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the annual total unapportioned impacts on herring gull to the NWIS DAS population informed by the Developers NWIS DAS surveys (26,355 individuals), with an associated background mortality of 4,375 individuals results in an increase in baseline mortality of 0.968% (Table A5.32).

This population count is based on a single survey snapshot and therefore reflects only the birds present at that moment in time. In reality, birds using the NWIS cSPA during the non-breeding season form part of a much larger and highly mobile regional population. As such, while this is the best available estimate, it remains an underestimate of the true population using the site and therefore provides a precautionary basis for the assessment. As explained in Appendix A18: Offshore and Intertidal Ornithology Apportioning, potentially a more realistic population size for birds with connectivity to the NWIS cSPA is the regional population of 187,094 individuals.

When assessing the annual total unapportioned impacts on herring gull to the regional population of 187,094 individuals, with a background mortality of 31,058 individuals, the increase in baseline mortality would be 0.136% (Table A5.32).

When considering both the NWIS DAS population and the wider regional population, the predicted level of impact is so low that it would not be distinguishable from the natural background variability within the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.32: Annual Collision Mortalities During the Operational Phase for Herring Gull at NWIS cSPA (replaces Table 5.23 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality		
	Mean (95% LCI – UCI)	ObSERVE population – 6,893	NWIS DAS population – 26,355	Regional population – 187,094
Breeding	15.9 (0.0-89.8)	1.390% (0.000%-7.849%)	0.363% (0.000%-2.053%)	0.051% (0.000%-0.289%)
Non-breeding	26.5 (0.9-101.8)	2.312% (0.080%-8.900%)	0.605% (0.021%-2.328%)	0.085% (0.003%-0.328%)
Annual Total	42.4 (0.9-191.7)	3.701% (0.080%-16.749%)	0.968% (0.021%-4.381%)	0.136% (0.003%-0.617%)

5.4.2.6.3 Spatial distribution (Construction, Operation and Decommissioning)

The CO for herring gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA herring gull feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the herring gull spatial distribution within the NWIS.

Herring gull sensitivity to displacement effects is 'very low' according to sensitivity rankings presented in Bradbury et al. (2014) and Dierschke et al. (2016) therefore the presence of WTGs and vessels is unlikely to deter them from entering the array area.

There is also evidence of herring gull roosting on Offshore Wind Turbines (e.g., Leopold et al., 2013; Petersen et al., 2006; Vanermen et al., 2016), this species has even been observed feeding on the epi-fauna on WTG foundations during low tide (Vanerman et al., 2017). Therefore, there is no strong evidence that the presence of an OWF would affect the distribution of herring gull in the NWIS cSPA.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.6.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.6.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for herring gull feature of the NWIS cSPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the CO for the NWIS cSPA herring gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of herring gull. The Developer has therefore undertaken an assessment of potential impacts on the herring spatial distribution within the NWIS as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the herring gull forage spatial distribution, extent, abundance and availability within the NWIS.

Herring gull are generalist and opportunistic feeders that forage across both the marine and terrestrial environment. Their diet includes fish, small crustaceans, fish offal, squid, other birds, eggs, earthworms, berries, carrion, and a wide variety of anthropogenic refuse (Weseloh et al., 2020). As such herring gull

exhibit a highly diverse diet. Moreover, based on tracking data, herring gull have a relatively large foraging range (mean max +1SD of 85.6km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage. In light of the available evidence above herring gull are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case herring gull can also be ruled out. Therefore, the CO's attribute target of 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development area. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by herring gull are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array area within the PFI is of particular importance for herring gull foraging, and consistent with conclusions reached for herring gull within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of herring gull prey resources. Given the highly dynamic and seasonal nature of herring gull foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the herring gull population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.6.6 Barriers to connectivity (Operation)

The CO for herring gull feature of the NWIS cSPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the herring gull barriers to connectivity.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. However, as a precautionary approach, a review of the available tracking data for herring gull from the region has been undertaken.

Tracking data of three herring gull from Ireland's Eye SPA during the breeding season had no overlap with the array area (Auchincloss et al., 2016). Consequently, there is no evidence to suggest that herring gull will regularly experience barrier effects.

Herring gull sensitivity to displacement effects is 'very low' according to sensitivity rankings presented in Bradbury et al. (2014) and Dierschke et al. (2016) therefore the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.6.7 Summary of AEoI Conclusions for Herring Gull at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.7 Lesser Black-backed gull

Lesser black-backed gull have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the lesser black-backed gull assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.5 of the 2024 NIS.

The CO for lesser black-backed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for lesser black-backed gull (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA Site Synopsis, lesser black-backed gull are listed as a breeding QI at Lambay Island SPA, that abuts the NWIS cSPA. Therefore, any impacts from collision risk within the NWIS cSPA will be apportioned to the population of lesser black-backed gull at Lambay Island SPA. The impacts were therefore apportioned appropriately to this population as breeding lesser black-backed gull from Lambay Island SPA are highly likely to utilise the habitat encompassed within the NWIS cSPA; alongside individuals breeding at other colonies and non-breeding individuals. As such the 'Breeding population size' CO attribute has been measured against three defined populations:

(1) the breeding population from Lambay Island SPA,

(2) the regional breeding season population of 171,500 as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline and

(3) maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 3,419 individuals.

There is no lesser black-backed gull NWIS cSPA population cited in the COs for the site, instead the population cited is from Lambay Island SPA. Therefore, breeding population size CO attribute measured against the breeding population from Lambay Island SPA has been assessed is presented within Table A5.92. This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that lesser black-backed gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.7.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 35/40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.7.2 Breeding population size: Collision Risk (Operation)

The CO for lesser black-backed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population size of the NWIS as a result of collision risk.

The site-specific CO for the lesser black-backed gull feature of the NWIS cSPA is that there should be no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is one (1.0) individual per annum (Appendix A19:: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the lesser black-backed gull population at Lambay Island SPA during the breeding bio-season can be found in Section 5.4.13. The assessments for this site concluded no AEoI during the breeding bio-season.

When assessing the annual total unapportioned impacts on lesser black-backed gull to the NWIS DAS population informed by the Developers NWIS DAS surveys (3,419 individuals), with an associated background mortality of 393 individuals results in an increase in baseline mortality of 0.257% (Table A5.33).

The regional population of less black-backed gull is 171,500 individuals. When assessing the annual total unapportioned impacts on lesser black-backed gull to the regional population of 171,500 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 19,723 (19,722.5) individuals would be 0.005% (Table A5.33). When evaluated against both reference populations, the predicted impact lies well within the bounds of natural demographic variability and would not be detectable above baseline population noise.

Table A5.33: Annual Collision Mortalities During the Operational Phase for Lesser Black-backed Gull at NWIS cSPA (replaces Table 5.24 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality	
	Mean (95% LCI – UCI)	NWIS DAS population – 3419	Regional population – 171,500
Autumn	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Breeding	1.0 (0.0-8.8)	0.257% (0.000%-2.228%)	0.005% (0.000%-0.044%)
Spring	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	1.0 (0.0-8.8)	0.257% (0.000%-2.228%)	0.005% (0.000%-0.044%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.7.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for lesser black-backed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA lesser black-backed gull feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull spatial distribution within the NWIS.

According to sensitivity rankings presented in Bradbury et al. (2014) and Dierschke et al. (2016) lesser black-backed gull vulnerability to disturbance and displacement is 'very low' therefore the presence of WTGs is unlikely to deter them from entering the array area. They also utilise extensive foraging ranges that extend well beyond the footprint of the Proposed Development. Any localised avoidance behaviour or redistribution that may occur would be limited in spatial extent, temporary in nature, and likely to affect only a small proportion of the population at any one time. Given the availability of alternative suitable habitat within and beyond the NWIS cSPA, such redistribution would not result in a meaningful reduction in the overall area of habitat used by the species, nor would it constrain the species' ability to access functionally important foraging areas. Consequently, any minor changes in spatial distribution would fall within the bounds of natural variability and would not lead to a measurable effect on population distribution, site usage, or the SPA's ability to support the QI population. On this basis, disturbance and displacement effects are not considered capable of undermining the spatial distribution CO attributes for the NWIS cSPA.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.7.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect

on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.7.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for lesser black-backed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA lesser black-backed gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of lesser black-backed gull. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull spatial distribution within the NWIS as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull forage spatial distribution, extent, abundance and availability within the NWIS.

The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA lesser black-backed gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO relates specifically to the forage resource itself, not to the behaviour or spatial distribution of lesser black-backed gull.

Lesser black-backed gull are generalist and opportunistic feeders that forage across both the marine and terrestrial environment. Their diet includes small fish, fishery discards, bird's eggs, berries and small mammals (Burger et al., 2020). As such lesser black-backed gull exhibit a highly diverse diet. Moreover, based on tracking data, lesser back-backed gull have a large foraging range (mean max +1SD of 233km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage. In light of the available evidence above lesser black-backed gull are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case lesser black-backed gull can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by lesser black-backed gull are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for lesser black-backed gull foraging, and consistent with conclusions reached for lesser black-backed gull within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of lesser black-backed gull prey resources. Given the highly dynamic and seasonal

nature of lesser black-backed gull foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the lesser black-backed gull population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.7.6 Barriers to connectivity (Operation)

The CO for lesser black-backed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the CO requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull barriers to connectivity.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. However, as a precautionary approach, a review of the available tracking data for lesser black-backed gull from the region has been undertaken.

Moss et al. (2016) tracked two lesser black-backed gulls from Lambay Island SPA and found these individuals primarily foraged within terrestrial environments with very little use of the marine area. The minimal tracks within the marine environment also do not overlap with the array area therefore there is no evidence to suggest that lesser black-backed gull forage on the far side of the array area. Consequently, there is no evidence to suggest that lesser black-backed gulls will regularly experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

Summary of AEoI Conclusions for lesser black-backed gull at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.8 Great Black-backed gull

Great black-backed gull have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the great black-backed gull assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the

PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.6 of the 2024 NIS.

The CO for great black-back gull feature of the NWIS cSPA is to maintain favourable conservation condition. Great black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for great black-backed gull (NPWS, 2023) within the NWIS cSPA are as follows:

- Non-breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA Site Synopsis, great black-backed gull are present within the NWIS cSPA during their non-breeding (autumn/winter) season in numbers that equalled or exceeded 1% of the total estimated size of the winter assemblage (2,096 individuals), but this species is not a QI within a proximity SPA. As such the 'Non-breeding population size' CO attribute has been measured against three defined populations:

(1) the NWIS cSPA Citation population (2,096 individuals as stated in the COs),

(2) the regional non-breeding season population as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline of 53,406 individuals; and

(3) maximum population estimated from NWIS cSPA DAS of 2,148 individuals undertaken by the Developer.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that great black-backed gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.8.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

Non-breeding population size: Collision Risk (Operation)

The CO for great black-back gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for non-breeding population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the great black-backed gull non-breeding population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality during the non-breeding bio-seasons is 13 (13.4) individuals per annum (Table A5.34) (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

When assessing the annual total unapportioned impacts on great black-backed gull to the non-breeding NWIS cSPA count informed by the most recent NWIS DAS (2,148 individuals), with an associated background mortality of 247 individuals, the increase in baseline mortality would be 5.417% (Table A5.34).

This count is derived from a sample of birds using the area during a single survey. However, these birds are from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season and therefore it is not considered to be appropriate to assess against this population size. As explained in Appendix A18: Offshore and Intertidal Ornithology Apportioning, the appropriate regional population is 53,406 individuals.

When assessing the annual total unapportioned impacts on great black-backed gull to the regional population of 53,406 individuals, with a background mortality of 6,142 individuals the increase in baseline mortality would be 0.218% (Table A5.34). This level of impact would be indistinguishable from natural fluctuations in the population. As the increase in baseline mortality exceeds 1% for NWIS DAS and NWIS ObSERVE, PVA was carried out the results of which are in Table A5.35.

Across all assessment scenarios, both the ObSERVE population and NWIS DAS derived reference population resulted in a population growth rate slightly exceeding a 0.5% reduction compared with an unimpacted population. However, this outcome reflects the combination of an unrealistically small reference population from the ObSERVE dataset. As such, these scenarios should not be afforded substantive weight when reaching a conclusion an AEoI.

This count is derived from a sample of birds using the area during a single survey. However, these birds are likely to be from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season and therefore it is not considered to be appropriate to assess against this population size.

When assessing the annual total unapportioned collision impact on great black-backed to the regional population of 56,406 individuals the level of impacts would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.34: Annual Collision Mortalities During the Operational Phase for Great Black-backed Gull at NWIS cSPA (replaces Table 5.25 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality		
	Mean (95% LCI – UCI)	ObSERVE population - 2,096	NWIS DAS population – 2,148	Regional population – 53,406
Breeding	2.1 (0.0-12.4)	0.863% (0.000%-5.161%)	0.842% (0.000%-5.036%)	0.034% (0.000%-0.203%)
Non-breeding	11.3 (0.0-41.5)	4.688% (0.000%-17.213%)	4.575% (0.000%-16.796%)	0.184% (0.000%-0.676%)
Annual Total	13.4 (0.0-53.9)	5.551% (0.000%-22.374%)	5.417% (0.000%-21.832%)	0.218% (0.000%-0.878%)

Table A5.35: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Great Black-Backed Gull at NWIS cSPA .

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
NWIS DAS Population - 2,148 individuals				
Project alone	0.993	0.775	0.705	22.480
ObSERVE Population - 2,096 individuals				
Project alone	0.993	0.770	0.723	23.045

5.4.2.8.2 Spatial Distribution (Construction, Operation and Decommissioning

The CO for great black-back gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA great black-backed gull feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the great black-back gull spatial distribution within the NWIS.

According to Bradbury et al. (2014) and Dierschke et al. (2016) great black-backed gull sensitivity to disturbance and displacement effects and is 'low' therefore the presence of WTGs and vessels is unlikely to deter them from entering the array area.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.8.3 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.8.4 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for great black-back gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA great black-backed gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of great black-backed gull. The Developer has therefore undertaken an assessment of potential impacts on the great black-back gull forage spatial distribution, extent, abundance and availability within the NWIS.

Great black-backed gull are generalist feeders that forage across both the marine and terrestrial environment. Their diet includes small fish, fishery discards, bird's eggs, small mammals and a wide variety of anthropogenic refuse (Good, 2020). As such great black-backed gull exhibit a highly diverse diet. Moreover, based on tracking data, great back-backed gull have a moderate foraging range (mean max +1SD of 73km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage. In light of the available evidence

above great black-backed gull are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case great black-backed gull can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by great black-backed gull are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for great black-backed gull foraging, and consistent with conclusions reached for great black-backed gull within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of great black-backed gull prey resources. Given the highly dynamic and seasonal nature of great black-backed gull foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the great black-backed gull population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.8.5 Barriers to connectivity (Operation)

The CO for great black-back gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the great black-back gull barriers to connectivity within the NWIS.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. However, according to Bradbury et al. (2014) and Dierschke et al. (2016) great black-backed gull sensitivity to displacement effects and is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to the barriers to connectivity

attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

Summary of AEoI Conclusions for great black-backed gull at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great black-backed gull QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.9 Common gull

Common gull have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the common gull assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.7 of the 2024 NIS.

The CO for common gull feature of the NWIS cSPA is to maintain favourable conservation condition. Common gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for common gull (NPWS, 2023) within the NWIS cSPA are as follows:

- Non-breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA site synopsis, common gull are present within the NWIS cSPA during their non-breeding (autumn/winter) season in numbers that equalled or exceeded 1% of the total estimated size of the winter assemblage (2,866 individuals), but this species is not a QI within a proximity SPA. As such the 'Non-breeding population size' CO attribute has been measured against three defined populations:

(1) the NWIS cSPA Citation population (2,866 individuals as stated in the COs);

(2) the regional non-breeding season population as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline of 11,030 individuals; and

(3) maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 6,408 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that common gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.9.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.9.2 Non-breeding population size: Collision Risk (operation)

The CO for common gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for non-breeding population size, the target for which is no significant decline in population size. The site-specific CO for the common gull feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the common gull population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality during the non-breeding bio-seasons is three (3.0) breeding adults per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment), provided 100% of the common gull within the array area are deemed to be associated with the NWIS cSPA during non-breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning).

When assessing the annual total unapportioned impacts on great black-backed gull to the non-breeding NWIS cSPA count informed by the Developer's NWIS DAS (6,408 individuals), with an associated background mortality of 2,928 individuals, the increase in baseline mortality would be 0.105% (Table A5.36).

This count is derived from a sample of birds using the area during a single survey. However, these birds are likely to be from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season therefore this population size can be considered highly precautionary. Regardless, this level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.36: Annual Collision Mortalities During the Operational Phase for Common Gull at NWIS cSPA (replaces Table 5.26 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality		
	Mean (95% LCI – UCI)	ObSERVE Autumn population – 2,866	NWIS DAS population – 6,408	Regional population – 11,030
Breeding	0.1 (0.0-0.5)	0.005% (0.000%-0.038%)	0.002% (0.000%-0.017%)	0.001% (0.000%-0.010%)
Non-breeding	3.0 (0.0-12.6)	0.230% (0.000%-0.961%)	0.103% (0.000%-0.430%)	0.060% (0.000%-0.250%)
Annual Total	3.1 (0.0-13.1)	0.234% (0.000%-0.999%)	0.105% (0.000%-0.447%)	0.061% (0.000%-0.260%)

5.4.2.9.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for common gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA common gull feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. The Developer has therefore undertaken an assessment of potential impacts on the common gull spatial distribution within the NWIS.

According to Bradbury et al. (2014) and Dierschke et al. (2016) common gull sensitivity to disturbance and displacement is 'low'. Therefore, the presence of WTGs and vessels is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.9.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.9.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for common gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA common gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common gull. The Developer has therefore undertaken an assessment of potential impacts on the common gull forage spatial distribution, extent, abundance and availability within the NWIS.

Common gull are opportunistic feeders, their diet consists of fish, fishery discards and marine invertebrates (Moskoff et al., 2021). As such common gull exhibit a highly diverse diet. Moreover, based on tracking data, common gull have a moderate foraging range (mean max +1SD of 50km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage. In light of the available evidence above common gull are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment

(Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case common gull can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by common gull are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for common gull foraging, and consistent with conclusions reached for common gull within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of common gull prey resources. Given the highly dynamic and seasonal nature of common gull foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources. Overall, sufficient suitable foraging habitat would remain within the SPA to support the common gull population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.9.6 Barriers to connectivity (Operation)

The CO for common gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the common gull barriers to connectivity within the NWIS.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. However, according to Bradbury et al. (2014) and Dierschke et al. (2016) common gull sensitivity to disturbance and displacement is 'low'. Therefore, the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.9.7 Summary of AEoI Conclusions for common gull at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the

NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common gull QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.10 Black-headed gull

Black-headed gull have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the black-headed gull assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI points were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.8 of the 2024 NIS.

The CO for black-headed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Black-headed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for black-headed gull (NPWS, 2023) within the NWIS cSPA are as follows:

- Non-breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA site synopsis, black-headed gull are present within the NWIS cSPA during their non-breeding (autumn/winter) season in numbers that equalled or exceeded 1% of the total estimated size of the winter assemblage (508 individuals), but this species is not a QI within a proximity SPA. As such the 'Non-breeding population size' CO attribute has been measured against two defined populations:

(1) the NWIS cSPA Citation population (508 individuals as stated in the COs), and;

(2) the maximum population estimated from NWIS cSPA DAS undertaken by the Developer (3,709 individuals).

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that black-headed gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.10.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.10.2 Non-breeding population size: Collision Risk (Operation)

The CO for black-headed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for non-breeding population size, the target for which is no significant decline in population size. The Developer has therefore undertaken an assessment of potential impacts on the black-headed gull population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality during the non-breeding bio-seasons is less than one (<0.1) individuals per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

When assessing the annual total unapportioned impacts on black-headed gull to the non-breeding NWIS cSPA count informed by the Developer's NWIS DAS campaign (3,709 individuals), with an associated background mortality of 649 individuals, the increase in baseline mortality would be 0.005% (**Table A5.37**). This level of impact would be indistinguishable from natural fluctuations in the population. This level of impact would be indistinguishable from natural fluctuations in the population.

This count is derived from a sample of birds using the area during a single survey. However, these birds are likely to be from a much wider pool of the population that use the NWIS cSPA fluidly during the non-breeding season and therefore this assessment can be considered as extremely precautionary.

Table A5.37: Annual Collision Mortalities During the Operational Phase for Black-headed Gull at NWIS cSPA (replaces Table 5.27 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality	
	Mean (95% LCI – UCI)	ObSERVE population – 508	NWIS DAS population – 3,709
Breeding	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Non-breeding	0.0 (0.0-0.3)	0.034% (0.000%-0.292%)	0.005% (0.000%-0.040%)
Annual Total	0.0 (0.0-0.3)	0.034% (0.000%-0.292%)	0.005% (0.000%-0.040%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.10.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for black-headed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA black-headed gull feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

According to Bradbury et al. (2014) and Dierschke et al. (2016) black-headed gull sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area.

Importantly, during the 41 months of DAS a small number of black-headed gull were recorded, a total of five individuals were observed within the array area with 12 individuals within the array area plus a 2km buffer, with no recorded in the PFI and relevant buffers. As such with an low abundance of black-headed gulls with in PFI plus a 2km buffer, the changes in distribution will be undetectable.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.10.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.10.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for black-headed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA black-headed gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO relates specifically to the forage resource itself, not to the behaviour or spatial distribution of black-headed gull.

Black-headed gull are opportunistic feeders, their diet consists of fish, fishery discards and marine invertebrates (Moskoff et al., 2021). As such black-headed gull exhibit a highly diverse diet. Moreover, based on tracking data, black-headed gull have a moderate foraging range (mean max +1SD of 50km) (Woodward et al., 2019) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage.

In light of the available evidence above common gull are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case black-headed gull can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by black-headed gull are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for black-headed gull foraging, and consistent with conclusions reached for black-headed gull within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of black-headed gull prey resources. Given the highly dynamic and seasonal nature of black-headed gull foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the black-headed gull population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.10.6 Barriers to connectivity (Operation)

The CO for black-headed gull feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs attribute requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. However, according to Bradbury et al. (2014) and Dierschke et al. (2016) black-headed gull sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects. Furthermore, with an abundance so low in the PFI plus a 2km buffer, barrier effects will not impact the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.10.7 Summary of AEoI Conclusions for black-headed gull at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the black-headed gull QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.11 Little gull

Little gull have been screened out for assessment during the construction, operational and decommissioning phases. One little gull was recorded within the array area plus a 2km buffer, during the 41 months of DAS. It is therefore considered reasonable to screen this species out for assessment on the basis there is, no potential for an LSE for the little gull QI of NWIS cSPA. Therefore, the paragraphs of Section 5.4.2.9 in the 2024 NIS shall be deleted.

5.4.2.12 Little tern

Little tern have been screened out for assessment during the construction, operational and decommissioning phases. Only six little tern were recorded within the array area plus a 2km buffer, during the 41 months of DAS. Little tern are a designated feature the NWIS cSPA and of Boyne Estuary SPA 10.8km from the onshore infrastructure, however this species mean max foraging range of 5km (Woodward et al., 2019). Considering this species during the breeding season will forage closer to the coastline it is likely those observed in the array area will originate from other colonies around the Irish Coast. It is therefore considered reasonable to screen this species out for assessment on the basis there is no potential for LSE for the little tern QI of NWIS cSPA or Boyne Estuary SPA. Therefore, the paragraphs of Section 5.4.2.10 in the 2024 NIS shall be deleted.

5.4.2.13 Roseate tern

Roseate tern have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the roseate tern assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI points were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.11 of the 2024 NIS.

The CO for roseate tern feature of the NWIS cSPA is to maintain favourable conservation condition. Roseate tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for roseate tern (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA Site Synopsis, roseate tern are listed as a breeding QI at Rockabill SPA, that abuts the NWIS cSPA. Therefore, any impacts from collision risk within the NWIS cSPA will be apportioned to the population of roseate tern at Rockabill SPA. The impacts were therefore apportioned appropriately to this population as breeding roseate tern from Rockabill SPA are highly likely to utilise the habitat encompassed within the NWIS cSPA. As such the 'Breeding population size' CO attribute has been measured against three defined populations:

(1) the 2024 Rockabill SPA population of 3,552 individuals;

(2) the regional non-breeding season population as described and defined within the Ornithology Technical Baseline of 6,375 individuals, and;

(3) maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 4,109 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that roseate tern use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.13.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.13.2 Breeding population size: Collision Risk (Operation)

The CO for roseate tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the roseate tern feature of the NWIS cSPA is that there should be no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the roseate tern population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is one (1.2) individual per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the roseate tern population at Rockabill SPA during the breeding bio-season can be found in Section 5.4.4. The assessments for this site concluded no AEoI during the breeding bio-season.

When assessing the full unapportioned impacts on roseate tern to the NWIS DAS of 4,109 individuals, with a background mortality of 596 individuals, the increase in baseline mortality would be 0.193%. This level of impact would be indistinguishable from natural fluctuations in the population.

When assessing the annual total unapportioned impacts on roseate tern to the regional population of 6,375 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 924.38 individuals would be 0.124%. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.38: Annual Collision Mortalities During the Operational Phase for Roseate tern at NWIS cSPA.

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality	
	Mean (95% LCI – UCI)	NWIS DAS population -	Regional population -
Breeding	1.2 (0.0-6.4)	0.193% (0.000%-1.072%)	0.124% (0.000%-0.691%)
Autumn	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Spring	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	1.2 (0.0-6.4)	0.193% (0.000%-1.072%)	0.124% (0.000%-0.691%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.13.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for roseate tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA roseate tern feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

According to Bradbury et al. (2014) and Dierschke et al. (2016) roseate tern sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area. Although, a total of 124 roseate tern were recorded within the PFI plus a 2km buffer, this species prefers to forage close to shore as reflected by their relatively low foraging range of 23.2km (Woodward et al., 2019) as such the OWF is unlikely to alter their distribution.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.13.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.13.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for roseate tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA roseate tern feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of roseate tern.

The standard approach is to screen out species similar to roseate tern. For example, Rampion 2 screened common tern out based on the species ability to forage widely (and therefore adapt to any changes in food availability, and the temporary nature and low impact of effects on prey species. However, due to the proposed development's proximity to Rockabill SPA, a precautionary approach has been taken and an assessment to assess this species vulnerability to changes in prey species abundance and availability is provided below.

Roseate tern are primarily piscivorous feeding on sand eels clupeids and, to a lesser extent, gadoids (Allbrook et al., 2022). As such roseate tern exhibit a moderately diverse diet. Moreover, based on tracking data, roseate tern have a relatively small foraging range (mean max +1SD of 23.2km). This suggests roseate

tern are more limited in their ability to forage elsewhere and are perhaps less adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case roseate tern can also be ruled out.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by roseate tern are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for roseate tern foraging, and consistent with conclusions reached for roseate tern within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of roseate tern prey resources. Given the highly dynamic and seasonal nature of roseate tern foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the roseate tern population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.13.6 Barriers to connectivity (Operation)

The CO for roseate tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the CO requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of roseate tern from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. However, a precautionary approach has been taken and reviewed the available tracking data for common tern to identify any foraging hotspots within the region.

Boat based, visual tracking of common tern from Rockabill SPA was conducted in 2021 by Power et al. (2022), following the methodology used within a similar studies namely Perrow et al. (2011) and Perrow et al. (2019). A total of 7 roseate tern tracks were recorded during the survey. The majority of the roseate tern activity was concentrated within 8.6km of Rockabill therefore these birds would not overlap with the array area (located 11.9km from Rockabill) while foraging. The main foraging hotspots identified within the

Power et al. (2022) surveys were within the waters around Rockabill and the Skerries (located adjacent to Rockabill) between 0.4km and 7km from the colony. Two roseate terns were also observed foraging within inshore waters (0-25m) up to 23.1km north of Rockabill off the coast of Clogerhead and Termonfeckin.

A similar study conducted by Perrow et al. (2019) found roseate tern foraged within similar inshore areas to Power et al. (2022), with much of the foraging activity during the incubation and intermediate chick development period concentrated within an area of water extending inshore from Rockabill (within 20m to 30m). Perrow *et al*. (2019) reported mean-max distances of <5km to 7km during these periods, this is broadly similar to an early study by Newton and Crowe (2000) that most of roseate tern foraging occurs within 3.5km of the colony and no further than 9.5km. The maximum distance from Rockabill recorded by Perrow et al. (2019) was 29.9km this would result in a partial overlap with the array area.

As such, it can be assumed that displacement and barrier effect impacts will be low for this species as the majority of birds will have no interaction with the array area. The foraging locations highlighted by tracking terns suggest that in the event of displacement, or behaviour being altered by a perceived barrier, the effected birds will be able to find suitable alternative foraging.

Although it cannot be completely ruled out that, on occasion, roseate tern from the colony at Rockabill might forage in the waters on the far side of the array area, the evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the colony.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.13.7 Summary of AEoI Conclusions for roseate tern at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.14 Common tern

Common tern have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the common tern assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.12 of the 2024 NIS.

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Common tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for common tern (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;

- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA Site Synopsis, common tern are listed as a breeding QI at Rockabill SPA, that abuts the NWIS cSPA. Therefore, any impacts from collision risk within the NWIS cSPA will be apportioned to the population of roseate tern at Rockabill SPA. The impacts were therefore apportioned appropriately to this population as breeding roseate tern from Rockabill SPA are highly likely to utilise the habitat encompassed within the NWIS cSPA; alongside individuals breeding at other colonies and non-breeding individuals. As such the 'Breeding population size' CO attribute has been measured against three defined populations:

(1) the Rockabill SPA Citation population of 1,620 individuals;

(2) the regional non-breeding season population as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline of 74,000 individuals, and;

(3) maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 3,934 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that common tern use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.14.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.14.2 Breeding population size: Collision Risk (Operation)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the common tern feature of the NWIS cSPA is that there should be no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the common tern population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is less than one (0.4) individual per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the common tern populations of Rockabill SPA during the breeding and non-breeding bio-seasons can be found in Section 5.4.4. The assessment for this site concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the full unapportioned impacts on common tern to the NWIS DAS of 3,934 individuals, with a background mortality of 460 individuals, the increase in baseline mortality would be 0.133%. This level of impact would be indistinguishable from natural fluctuations in the population.

When assessing the annual total unapportioned impacts on common tern to the regional population of 74,000 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 8,658 individuals would be 0.007%. This level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.14.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA common tern feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

According to Bradbury et al. (2014) and Dierschke et al. (2016) common tern sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area. There is, therefore, no potential for an AEoI to the COs of the common tern QI of NWIS cSPA in relation to disturbance and displacement effects from the proposed development alone and therefore, subject to natural change, the common tern QI will be maintained in the long term with respect to disturbance and displacement.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.14.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.14.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA common tern feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common tern.

The standard approach across other projects is to screen this species out. For example, Rampion 2 screened common tern out based on the species ability to forage widely (and therefor adapt to any changes in food availability, and the temporary nature and low impact of effects on prey species. However, a precautionary approach has been taken and as such carried out an assessment to assess this species vulnerability to changes in prey species abundance and availability.

Common tern are primarily piscivorous feeding on sand eels clupeids and gadoids (Allbrook et al., 2022). This species can also feed on a variety of crustaceans and insects and often has a more diverse diet compared to roseate terns from the same colony (Arnold et al., 2020).As such common tern exhibit a moderately diverse diet. This species tend to forage in coastal waters within 20km of their breeding sites, in coastal waters (Arnold et al., 2020).

In light of the available evidence above common tern are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case common tern can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by common tern are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for common tern foraging, and consistent with conclusions reached for common tern within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of common tern prey resources. Given the highly dynamic and seasonal nature of common tern foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the common tern population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.14.6 Barriers to connectivity (Operation)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of common tern from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. However, a precautionary approach has been taken and reviewed the available tracking data for common tern to identify any foraging hotspots within the region.

Boat based, visual tracking of common tern from Rockabill SPA was conducted in 2021 by Power et al. (2022), following methodology used during a similar study conducted by Perrow et al. (2019). A total of 22 common tern tracks were recorded during the survey. Most common tern activity is concentrated within 14.4km of the colony (68% of all tracks), this would result in a partial overlap with the array area (located 11.9km from Rockabill.

However, tracking data indicates the main foraging hotspots for common tern at this colony are inshore within the shallow water (0-25m) between Skerries and Dunnay point at the southern end of Dundalk Bay which would not overlap with the array area or 2km buffer. This species tends to forage in shallow waters, 53% of all prey caught during the Power et al. (2022) survey occurred within <20m, evidence also suggests individuals that nest on islands 5-15km offshore primarily forage inshore (Arnold et al., 2020).

Common tern were also recorded foraging and within the deeper waters (25-100m) south-east of Rockabill, with the maximum distance of 41.8km travelled by an individual (Power et al., 2022). This survey was conducted within mid-July (13th to 17th) within the fledging period, during a similar survey at Rockabill Island by Perrow et al. (2019) Roseate tern were observed foraging at greater ranges during the fledging period than the incubation period often within deeper waters, therefore the large foraging ranges observed by Power et al. (2022) may have been a result of provisioning prey items to chicks. This suggests a partial overlap with foraging common tern from Rockabill and the proposed boundary could occur, however only 27% of all prey items caught during the Power et al. (2022) were within deeper water >50m. Furthermore, according to Bradbury et al. (2014) and Dierschke et al. (2016) common tern sensitivity to disturbance and displacement is ‘low’ therefore the presence of WTGs is unlikely to deter them from entering the array area.

Although it cannot be completely ruled out that, on occasion, common tern from the colony at Rockabill might forage in the waters on the far side of the array area, the evidence suggests that this would be a very rare occurrence and of negligible consequence to the fitness of the individual involved or the colony.

As such, it can be assumed that displacement and barrier effect impacts will be low for this species as the majority of birds will have no interaction with the array area. The foraging locations highlighted by tracking terns suggest that in the event of displacement, or behaviour being altered by a perceived barrier, the effected birds will be able to find suitable alternative foraging.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site’s COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.14.7 Summary of AEoI Conclusions for common tern at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.15 Arctic tern

Arctic tern have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the Arctic tern assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.13 of the 2024 NIS.

The CO for Arctic tern feature of the NWIS cSPA is to maintain favourable conservation condition. Arctic tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for Arctic tern (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the NWIS cSPA Site Synopsis, Arctic tern are listed as a breeding QI at Rockabill SPA, that abuts the NWIS cSPA. Therefore, any impacts from collision risk within the NWIS cSPA will be apportioned to the population of roseate tern at Rockabill SPA. The impacts were therefore apportioned appropriately to this population as breeding roseate tern from Rockabill SPA are highly likely to utilise the habitat encompassed within the NWIS cSPA; alongside individuals breeding at other colonies and non-breeding individuals. As such the 'Breeding population size' CO attribute has been measured against three defined populations:

(1) the most recent Rockabill SPA population of 64 individuals;

(2) the regional population as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline of 72,238 individuals, and;

(3) the maximum population estimated from NWIS DAS undertaken by the Developer of 3,306 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that Arctic tern use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

5.4.2.15.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.15.2 Breeding population size: Collision Risk (Operation)

The CO for Arctic tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The site-specific CO attribute for the Arctic tern feature of the NWIS cSPA is that there should be no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the Arctic tern population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is less than one (0.3) individual per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the Arctic tern populations of Rockabill SPA during the breeding and non-breeding bio-seasons can be found in Section 5.4.4. The assessment for this site concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the full unapportioned impacts on common tern to the NWIS DAS of 3,306 individuals, with a background mortality of 539 individuals, the increase in baseline mortality would be 0.046%.

When assessing the annual total unapportioned impacts on Arctic tern to the regional population of 72,231 individuals, the increase in baseline mortality relative to this regional count and a background mortality of 11,775 individuals would be 0.002%. For both these population sizes, this level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.15.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The spatial distribution attribute of the COs for the NWIS cSPA Arctic tern feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

According to Bradbury et al. (2014) and Dierschke et al. (2016) Arctic tern sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the

spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.15.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.15.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA Arctic tern feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of Arctic tern.

The standard approach is to screen species similar to Arctic tern out. Rampion 2 screened common tern out based on the species ability to forage widely (and therefor adapt to any changes in food availability, and the temporary nature and low impact of effects on prey species. However, a precautionary approach has been taken and as such carried out an assessment to assess this species vulnerability to changes in prey species abundance and availability.

Arctic tern are primarily piscivorous feeding on sand eels herring, cod and pollock and, (Allbrook et al., 2022). As such Arctic tern exhibit a moderately diverse diet. Moreover, based on tracking data, Arctic tern have a moderate foraging range (mean max +1SD of 40.5km) and therefore the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage.

In light of the available evidence above Arctic tern are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case arctic tern can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the SPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the SPA would be occupied by infrastructure (Section 0), and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the SPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by Arctic tern are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for Arctic tern foraging, and consistent with conclusions reached for Arctic tern within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of Arctic tern prey resources. Given the highly dynamic and seasonal nature of Arctic tern foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the SPA to support the Arctic tern population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.15.6 Barriers to connectivity (Operation)

The CO for common tern feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. However, according to Bradbury et al. (2014) and Dierschke et al. (2016) arctic tern sensitivity to disturbance and displacement is 'low' therefore the presence of WTGs is unlikely to deter them from entering the array area and in turn these birds are unlikely to experience barrier effects.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.15.7 Summary of AEoI Conclusions for Arctic tern at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.16 Fulmar

Fulmar have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the fulmar assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same

established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.14 of the 2024 NIS.

The CO for the fulmar feature of the NWIS cSPA is to restore the favourable conservation condition. Fulmar have been screened in for assessment of all relevant CO attributes during the operation phase within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for fulmar (NPWS, 2023) within the NWIS cSPA are as follows:

- Population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

According to the Site Synopsis, fulmar are listed as a QI at Lambay Island SPA, that abuts the NWIS cSPA. Breeding fulmar from Lambay SPA are highly likely to utilise the habitat encompassed within the cSPA while foraging. Therefore, any impacts from collision risk within the NWIS cSPA will be apportioned to the breeding populations at Lambay Island SPA. As such the 'Population size' CO attribute has been measured against four defined populations:

(1) the Lambay Island SPA Citation population of 272 individuals;

(2) the regional population of 843,783 individuals as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline;

(3) the NWIS cSPA citation population of 11,260 individuals, recognising its precautionary but limited nature; and

(4) the maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 1,846 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that little gull use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area, reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

Collision risk of fulmar from Lambay Island SPA has been assessed for the full breeding bio-season (January – August), the post-breeding migration bio-season (September–October), the return migration bio-season (December–March), and the migration- free winter season (November) as defined by Furness (2015).

5.4.2.16.1 Mitigation

Fulmar are not considered sensitive to collision impacts from wind farms.. However, within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. In particular, this increase will have led to huge reduction in collision risk for fulmar which generally soar close to the sea surface. Based on Johnston et al. (2014) flight height distributions only 0.01% of birds fly higher than 40m above sea level.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.2.16.2 Population size: Collision Risk (Operation)

The CO for the fulmar feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision this section assesses impacts against the attribute for population size, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the fulmar population size of the NWIS as a result of collision.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons is less than one (<0.1) individuals per annum (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment).

Collision risk impacts apportioned to the fulmar populations of Lambay Island SPA during the breeding and non-breeding bio-seasons can be found in Section 5.4.4. The assessment for this site concluded no AEoI during the breeding and non-breeding bio-seasons.

When assessing the annual total unapportioned impacts on fulmar to the non-breeding NWIS cSPA count informed by the ObSERVE surveys (11,260 individuals), the increase in baseline mortality relative to this citation count (11,260 individuals) and an associated background mortality of 721 individuals would be 0.003% (Table A5.39). This level of impact across all reference populations is indistinguishable from background mortality.

Table A5.39: Annual Collision Mortalities During the Operational Phase for Fulmar at NWIS cSPA (replaces Table 5.28 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality		
	Mean (95% LCI – UCI)	ObSERVE population – 11,260	NWIS DAS population – 1,846	Regional population – 843,783
Autumn	0.0 (0.0-0.4)	0.003% (0.000%-0.049%)	0.017% (0.000%-0.296%)	0.000% (0.000%-0.001%)
Breeding	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Spring	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.4)	0.003% (0.000%-0.049%)	0.017% (0.000%-0.296%)	0.000% (0.000%-0.001%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.2.16.3 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for the fulmar feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA fulmar feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

According to sensitivity rankings presented in Bradbury et al. (2014) and Dierschke et al. (2016) fulmar vulnerability to disturbance and displacement is 'very low' therefore the presence of WTGs is unlikely to deter them from entering the array area. They also utilise extensive foraging ranges that extend well beyond the footprint of the Proposed Development. Any localised avoidance behaviour or redistribution that may occur would be limited in spatial extent, temporary in nature, and likely to affect only a small proportion of the population at any one time. Given the availability of alternative suitable habitat within and beyond the NWIS cSPA, such redistribution would not result in a meaningful reduction in the overall area of habitat used by the species, nor would it constrain the species' ability to access functionally important foraging areas. Consequently, any minor changes in spatial distribution would fall within the bounds of natural variability and would not lead to a measurable effect on population distribution, site usage, or the SPA's ability to support the QI population. On this basis, disturbance and displacement effects are not considered capable of undermining the Spatial Distribution or Disturbance CO for the NWIS cSPA.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.16.4 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.16.5 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for the fulmar feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA fulmar feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of fulmar.

Fulmar feed on sand eels, crustaceans, squid and fisheries discards (Philips et al., 1999). As such this species has a reasonably varied diet. Moreover, based on tracking data, fulmar have a large range (mean max +1SD of 1,200.2km) (Woodward et al., 2019). In light of the available evidence fulmar are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development. And therefore, the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any

potential indirect effects on ornithological receptors in this case fulmar can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the cSPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the cSPA would be occupied by infrastructure, and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the cSPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by fulmar are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for fulmar foraging, and consistent with conclusions reached for fulmar within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of fulmar prey resources. Given the highly dynamic and seasonal nature of fulmar foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the cSPA to support the fulmar population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.16.6 Barriers to connectivity (Operation)

The CO for the fulmar feature of the NWIS cSPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.14 and Section 5.4.1.1.2)). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the cSPA or other ecologically important sites outside the cSPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. For the majority of collision risk species, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects.

A peak abundance of only 15 fulmar were recorded within the PFI + 2 km buffer across 41 months of DAS, indicating that the species makes limited use of the area. Fulmar are characterised by very low sensitivity to disturbance and displacement and exhibit exceptionally large foraging ranges, routinely travelling hundreds of kilometres with extremely low energetic cost due to their soaring flight strategy. As a consequence, the presence of WTGs is unlikely to influence their movement through, or use of, the array area. Even if a small number of individuals were to exhibit localised avoidance behaviour, such effects would concern only a negligible proportion of the wider population and would fall well within normal ecological variability. Given the species' high mobility, extensive accessible foraging habitat, and minimal energetic constraints, any potential barrier or redistribution effect would have no meaningful influence on the spatial distribution of fulmar within the NWIS cSPA, nor on the site's ability to support its QI population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.16.7 Summary of AEoI Conclusions for fulmar at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.17 Manx shearwater

Manx shearwater have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the Manx shearwater assessment has been updated solely to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. No specific RFI were raised in relation to this species, and no changes to assessment approach, collision parameters, or design mitigation were required. The updated assessment therefore represents a direct refinement of the baseline and footprint used in the 2024 NIS, with conclusions drawn using the same established methodology applied across the ornithology chapter. The following text is a direct replacement of the text within Section 5.4.2.17 of the 2024 NIS.

The CO for the Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Manx shearwater have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for Manx shearwater (NPWS, 2023) within the NWIS cSPA are as follows:

- Breeding population size;
- Spatial distribution;
- Forage spatial distribution, extent, abundance and availability;
- Disturbance across the site; and
- Barriers to connectivity.

It should be noted Manx shearwater were screened in to assess the potential for an AEoI from collision risk, during the operational phase from the proposed development alone, with regard to the population size within the NWIS cSPA, on a precautionary basis. However, following CRM no adverse impacts were found therefore this level of impact can be considered no material contribution and will, therefore, will not affect the achievement of the COs for the NWIS cSPA and as a result will not have an adverse effect on the integrity of the cSPA

According to the Site Synopsis, Manx shearwater are present within the NWIS cSPA during their breeding (summer) season in numbers in numbers of international importance (13,010 individuals), but this species is not a QI within a proximal SPA. Therefore, any impacts from disturbance and displacement within the NWIS cSPA will be measured against three defined populations:

(1) the regional population of 1,585,521 individuals as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline;

(2) the NWIS cSPA citation population of 13,010 individuals, recognising its precautionary but limited nature, and;

(3) the maximum population estimated from NWIS cSPA DAS undertaken by the Developer of 49,312 individuals.

This multi-population approach ensures that potential effects are contextualised appropriately, avoids over-reliance on highly precautionary snapshot values, and aligns with the ecological reality that Manx shearwater use the NWIS cSPA as part of a much wider and highly mobile marine population, particularly outside the core breeding season. The Developer has placed greatest emphasis on the maximum population estimated from the NWIS DAS because it is directly derived from surveys within the assessment area,

reflects the most recent and comprehensive dataset available, and therefore provides a more reliable basis for population-level conclusions than the other options.

Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

Manx shearwater were screened in to assess for changes in distribution, during the construction, operation and decommissioning phases within the array area on a precautionary basis, despite the species' vast foraging ranges (mean max +1SD 2,365.5km) (Woodward et al., 2019) and very low vulnerability to displacement by offshore wind farms (Bradbury et al., 2014; Furness et al., 2013). To assess potential changes in distribution of Manx shearwater and in turn changes in habitat availability and range within the NWIS cSPA, the increase in densities outside of the array area within the rest of the NWIS cSPA, following a displacement of 10% of birds, has been calculated.

5.4.2.17.1 Mitigation

Manx shearwaters are not considered sensitive to displacement or collision impacts from windfarms. However, ,within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).)

The Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km², which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation for guillemot. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.2.17.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The site-specific CO attribute for the Manx shearwater feature of the NWIS cSPA is that there should be no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the Manx shearwater breeding population size of the NWIS as a result of disturbance and displacement during the construction and decommissioning phases.

Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the NWIS cSPA, based on 10% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total two (2.2) individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality (0.035%) and fall well within natural annual variability for the population.

Given the short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the Manx shearwater QI of the NWIS cSPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement

during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.17.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The site-specific CO attribute for the Manx shearwater feature of the NWIS cSPA is that there should be no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the Manx shearwater breeding population size of the NWIS as a result of disturbance and displacement during the operational phase.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects on disturbance and displacement for Manx shearwater from operation and maintenance activities.

The annual total summed mean peak abundance of Manx shearwater in the PFI plus a 2km buffer is estimated at 3,975 individuals. Based on 10% displacement and 1% mortality this equates to four (4.4) Manx shearwater mortalities per annum.

When assessing the annual total unapportioned impacts on Manx shearwater to the recent NWIS DAS count informed by the Developer's surveys (49,312 individuals), the increase in baseline mortality relative to this count (49,312 individuals) and an associated background mortality of 6,411 individuals would be 0.069%. Table A5.40 also presents the displacement consequent mortalities when 30% displacement, 1% mortality have been applied and for the full range of impacts against all population scales. At all population scales, this level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.40: Estimated Mortalities During the Operation and Maintenance Phase for Manx shearwater at NWIS cSPA (replaces Table 5.29of the 2024 NIS).

Bio-season	Abundance of adults apportioned to cSPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality (%)	
		10%,1%	30%,1%	10%,1%	30%,1%
NWIS DAS Population - 49,312					
Autumn	458.0 (211.3-758.8)	0.5 (0.2-0.8)	1.4 (0.6-2.3)	0.007% (0.003%-0.012%)	0.021% (0.010%-0.036%)
Breeding	3,975.3 (2,164.5-5,939.8)	4.0 (2.2-5.9)	11.9 (6.5-17.8)	0.062% (0.034%-0.093%)	0.186% (0.101%-0.278%)
Spring	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	4,433.3 (2,375.8-6,698.5)	4.4 (2.4-6.7)	13.3 (7.1-20.1)	0.069% (0.037%-0.104%)	0.207% (0.111%-0.313%)
ObSERVE Population - 13,010					
Autumn	458.0 (211.3-758.8)	0.5 (0.2-0.8)	1.4 (0.6-2.3)	0.027% (0.012%-0.045%)	0.081% (0.037%-0.135%)
Breeding	3,975.3 (2,164.5-5,939.8)	4.0 (2.2-5.9)	11.9 (6.5-17.8)	0.235% (0.128%-0.351%)	0.705% (0.384%-1.054%)
Spring	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	4,433.3 (2,375.8-6,698.5)	4.4 (2.4-6.7)	13.3 (7.1-20.1)	0.262% (0.140%-0.396%)	0.786% (0.421%-1.188%)
Regional Population - 1,585,521					
Autumn	458.0 (211.3-758.8)	0.5 (0.2-0.8)	1.4 (0.6-2.3)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)
Breeding	3,975.3 (2,164.5-5,939.8)	4.0 (2.2-5.9)	11.9 (6.5-17.8)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.009%)
Spring	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	4,433.3 (2,375.8-6,698.5)	4.4 (2.4-6.7)	13.3 (7.1-20.1)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)

5.4.2.17.4 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The spatial distribution attribute of the COs for the NWIS cSPA Manx shearwater feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

Bradbury et al. (2014) and Dierschke et al. (2016) considered Manx shearwater vulnerability to disturbance and displacement to be low to very low, with Wade et al., (2016) noting uncertainty within displacement risk. Therefore the presence of WTGs is unlikely to deter all individuals from entering the array area. They also utilise extensive foraging ranges that extend well beyond the footprint of the Proposed Development. Any localised avoidance behaviour or redistribution that may occur would be limited in spatial extent, temporary in nature, and likely to affect only a small proportion of the population at any one time.

A proportion of the NWIS cSPA Manx shearwater population makes use of the PFI plus 2 km buffer, with peak representation ranging from 3.1% in the breeding season and 6.6% during the autumn period (Table A5.41). Even applying precautionary displacement assumptions of 10–30%, the number of birds redistributed into the remainder of the cSPA is small relative to the scale of the site. During the highest-use period (breeding), displacement would increase densities across the rest of the cSPA by only 0.71–2.14%. These levels of redistribution fall well within natural seasonal variability and do not indicate any meaningful compression of birds into suboptimal habitat. Crucially, even in the most precautionary scenario, displaced birds could remain fully accommodated within the cSPA. Overall spatial distribution is therefore maintained, and the changes described do not approach a level capable of undermining the CO for spatial distribution.

Given the availability of alternative suitable habitat within and beyond the NWIS cSPA, such redistribution would not result in a meaningful reduction in the overall area of habitat used by the species, nor would it constrain the species' ability to access functionally important foraging areas. Consequently, any minor changes in spatial distribution would fall within the bounds of natural variability and would not lead to a measurable effect on population distribution, site usage, or the cSPA's ability to support the QI population. On this basis, disturbance and displacement effects are not considered capable of undermining the Spatial Distribution or Disturbance CO of the Manx shearwater QI for the NWIS cSPA.

Conclusion of AEoI:

It is therefore concluded beyond reasonable scientific doubt that the proposed development, alone, would not adversely affect the integrity of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to the spatial distribution attribute which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

Table A5.41: Increase in Density of Manx Shearwater Within the Remainder of the NWIS cSPA During the Breeding Season, Autumn, and Spring Following 10% and 30% Displacement (replaces Table 5.30 of the 2024 NIS).

Season	Estimated number of individuals displaced array area (plus 2km buffer)		Estimated increase in density in remainder of NWIS cSPA (%)	
	10% displacement	30% displacement	10% displacement	30% displacement
Breeding	307	921	0.71%	2.14%
Autumn	152	457	0.32%	0.96%
Spring	0	0	-	-

5.4.2.17.5 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in

an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.17.6 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA Manx shearwater feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of Manx shearwater.

Manx shearwater are known to utilise productive areas of the western Irish Sea, including stratified waters such as Dundalk Bay, which support spawning stocks of clupeid fish, notably Atlantic herring, and are used by individuals originating from multiple colonies across Britain and Ireland. During the breeding season, Manx shearwater predominantly target small pelagic fish, particularly clupeiforms, while outside the breeding bio-season their diet broadens to include squid and other marine invertebrates (Brooke, 1990). This combination of strong association with pelagic forage fish and demonstrated dietary flexibility indicates that Manx shearwater are capable of exploiting a range of prey resources across wide spatial scales.

Tracking studies consistently show that Manx shearwater have exceptionally large foraging ranges (mean max +1 SD of 2,365 km), with individuals routinely exploiting distant feeding areas in response to prey availability (Woodward et al., 2019). In this context, the area influenced by the proposed development represents a very small fraction of the species' functional foraging range. The PFI would occupy approximately 2.5% of the NWIS cSPA and considerably less than 0.1% of the area available for Manx shearwater based on their foraging range. In addition, the Proposed Development would not alter the wider hydrographic processes, primary productivity, or pelagic prey dynamics that underpin the importance of Dundalk Bay and the western Irish Sea more generally for Manx shearwater.

Potential indirect effects on key forage fish species, including Atlantic herring, sprat and sandeels, and on the habitats that support these prey resources, have been assessed in detail within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). These assessments conclude that effects on prey populations, spawning activity, and prey availability would be localised, temporary and not significant at a population or stock level. Given the highly mobile nature of pelagic forage fish, their natural spatio-temporal variability, and the absence of any mechanism for the proposed development to influence prey biomass or distribution at the scale relevant to Manx shearwater foraging ecology, no meaningful reduction in forage availability is predicted.

While it is acknowledged that large numbers of Manx shearwater may utilise the western Irish Sea over time and that displacement processes are inherently complex and not yet fully understood for this species, the assessment demonstrates that changes to the distribution or abundance of prey resources arising from the proposed development would be negligible in the context of the very large spatial scale over which Manx shearwater forage. Consequently, even if a small proportion of individuals were to exhibit localised foraging redistribution, sufficient alternative prey habitat would remain available within and beyond the NWIS cSPA to support the population without constraint.

On this basis, there is no credible mechanism by which the proposed development would materially alter the spatial distribution, extent, abundance or availability of forage resources for Manx shearwater within the

NWIS cSPA. The CO for forage spatial distribution, extent, abundance and availability would therefore be maintained.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.17.7 Barriers to connectivity (Operation)

The CO for Manx shearwater feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2)). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the cSPA or other ecologically important sites outside the cSPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments. However, available tracking data of Manx shearwater from the region has also been reviewed to determine whether there are any site-specific foraging hotspots or distributional trends that should be considered in the assessment.

The nearest breeding colony of Manx Shearwater to array area is on Lambay Island SPA (estimated 25 pairs in 2002) (NPWS, 2014a). There is no tracking data available for Manx shearwater from Lambay Island SPA, however this species has a significant large foraging range (MMF +SD) of 2,365.5km (Woodward et al., 2019). Other colonies that are within foraging range of the proposed development, include the Copeland Islands (Northern Ireland), Bardsey Island (Wales) and Skomer, Midland Island and Skokholm (Wales), from which Manx shearwater tracking data is available. Tracking data of Manx shearwater these colonies have been presented by Guilford et al. (2008) (Skomer), Dean et al. (2013) (Skomer and Copeland Islands) and Spivey et al. (2014) (Bardsey Island). Similar findings were found across these studies, Manx shearwater foraging activity is concentrated to the north and west of the Irish Sea front, off the north-east coast of Ireland, likely due to the high marine productivity associated with the QIs and the stratified waters west of the front.

Therefore, it cannot be completely ruled out that, on occasion, Manx shearwater might forage in the waters on the far side of the array area, however as per Woodward et al. (2019), this species has a large foraging range over which suitable foraging habitat are likely to be found. Furthermore, this species was screened in for displacement assessment on a precautionary basis despite Manx Shearwater's 'very low' sensitivity to disturbance and displacement (Bradbury et al., 2014). Manx Shearwater exhibit exceptionally large foraging ranges, routinely travelling hundreds of kilometres with extremely low energetic cost due to their soaring flight strategy. As a consequence, the presence of WTGs is unlikely to influence their movement through, or use of, the array area. Even if a small number of individuals were to exhibit localised avoidance behaviour, such effects would concern only a negligible proportion of the wider population and would fall well within normal ecological variability. Given the species' high mobility, extensive accessible foraging habitat, and minimal energetic constraints, any potential barrier or redistribution effect would have no meaningful influence on the spatial distribution of Manx shearwater within the NWIS cSPA, nor on the site's ability to support its QI population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Man shearwater QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.17.8 Summary of AEoI Conclusions for Manx shearwater at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the Manx shearwater QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.18 Common scoter

Common scoter have been screened in for assessment during the construction, operational and decommissioning phases in relation to disturbance and displacement effects associated with the offshore ECC + 2 km buffer. For this addendum, the common scoter assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. The onshore assessment remains the same as that presented at 5.4.2.19 of the 2024 NIS.

Common scoter were raised in RFI Section 8(aii) in relation to the baseline data underpinning the common scoter assessment. These baseline data concerns have been addressed through the inclusion of the Developer's NWIS DAS data, which now form the primary evidence base for the assessment of divers and seaducks.

The assessment focuses on the potential for disturbance and displacement-related effects on common scoter arising from vessel activity within the ECC, taking account of species-specific sensitivity, spatial usage patterns, relative to the wider NWIS cSPA. The following text is a direct replacement of the text within Section 5.4.2.16 of the 2024 NIS.

The CO for the common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Common scoter have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the ECC +2km buffer. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for common scoter (NPWS, 2023) within the NWIS cSPA are as follows:

1. Non-breeding population size;
2. Spatial distribution;
3. Forage spatial distribution, extent, abundance and availability;
4. Disturbance across the site; and
5. Barriers to connectivity.

5.4.2.18.1 Mitigation

The key mitigation employed to reduce impacts to divers and seaducks is the Environmental Vessel Management Plan (EVMP; Appendix 11: Environmental Vessel Management Plan of the 2024 NIS). This aims to minimise vessel disturbance to divers in the ECC by following strict vessel protocol which are outlined in the EVMP. By employing these mitigation measures any impacts to divers should reduce considerably. . Mitigation in relation to the array area is less relevant due to the low numbers of birds observed offshore.

5.4.2.18.2 Disturbance and Displacement

Across 41 months, no common scoter were recorded in the PFI or PFI +2km buffer, with raw counts of two and four individuals recorded with the array plus 4 km buffer in November 2024 and March 2025 respectively (estimated abundances of 10 and 20) during the NWIS DAS. Therefore, this species has been screened out for disturbance and displacement within the array area during both the construction and decommissioning and operational phase of the proposed development.

This species has been screened in for disturbance and displacement within the proposed ECC during both the construction and decommissioning and operational phase of the proposed development on a precautionary basis.

Common scoter are considered to be highly sensitive to disturbance from boat and helicopter traffic (Garthe and Huppop, 2004 Schwemmer et al., 2011; Furness et al., 2013; Bradbury et al., 2014, Mendel et al. 2019), with individuals exhibiting disturbance responses at distances of over 1km from boats (Kaiser et al., 2006; Schwemmer et al., 2011). This species is highly sensitive to non-physical disturbance by noise and visual presence during the winter (Garthe and Hüppop 2004, Furness et al. 2013, Dierschke et al. 2017). There is limited evidence regarding displacement of this species in response to permanent infrastructure; Dierschke et al. (2016) reports this species shows a weak avoidance in response of OWFs (with most impacts resulting from boat and helicopter traffic). Additionally, minimal evidence of displacement impacts on common scoter was found during the post-consent monitoring at the Gwynt y Mor OWF (APEM, 2019).

In the absence of Irish-specific guidance regarding common scoter displacement and mortality rates a precautionary approach has been taken and a mortality rate of 1% and a displacement rate of 90-100% has been applied. It is noted that displacement caused by vessels is temporary and reversible in nature (birds returning once the vessel has passed), therefore a mortality rate of 1% are likely to over-estimate mortality. Therefore, solely a 1% mortality rate has been presented for potential disturbance for the construction and operation of the ECC.

As per Section 0, there will be a maximum of one cable installation vessel operating within the Proposed ECC, with associated support vessels. For the assessment of displacement impacts within the ECC, the assessment considers the impacts of one vessel cluster, with a surrounding 3km buffer. It is noted that a 2km buffer round vessels is standard use, but a 3km buffer is used here as a precautionary approach, accounting for the fact that vessels may be up to a km apart from each other at a given point. Based on this, the area disturbed from the vessel cluster was calculated to be 28.3km^2, from which birds could be displaced.

This species has been assessed using the NWIS DAS population only, as the Jessopp et al. (2018) dataset does not differentiate between diver species. Given the robustness of the NWIS DAS dataset, it is considered the most appropriate basis for assessment and sufficient to inform the conclusions with confidence.

5.4.2.18.3 Non-breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the common scoter feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the common scoter non-breeding population size of the NWIS cSPA as a result of disturbance and displacement during the construction and decommissioning phases.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects on disturbance and displacement from construction and decommissioning activities.

ECC

During the non-breeding bio-season, the density of common scoter present within the Proposed ECC (plus a 2km buffer) is 26.7 birds/km^2. Based on a total disturbance area of 28.3km^2, a total of 754 common scoter are at risk of displacement. Of these, the total displacement consequent mortality is estimated to be eight (7.5) individuals, based on 100% displacement and 1% mortality.

Based on the NWIS cSPA peak abundance (estimated from the NWIS DAS data) of 21,387 individuals, with an annual baseline mortality of 4,876 individuals per annum (based on an average mortality rate of 0.228), the addition of eight individuals would represent a 0.156% increase in baseline mortality based on 100% displacement and 1% mortality. Potential effects based on a displacement range of 90% to 100% and a mortality range of 1% to 10% are presented in Table A5.42. This level of impact would be indistinguishable from natural fluctuations in the population (Table A5.42).

Displacement caused by vessels is temporary and reversible, so the impacts presented here are likely to over-estimate mortality. Where established shipping lanes are used, displacement may be reduced as birds sensitive to disturbance from shipping may avoid such areas. Measures to reduce displacement and disturbance are outlined in Appendix 11: Environmental Vessel Management Plan of the 2024 NIS

Table A5.42: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Common Scoter in the ECC (replaces Table 5.31of the 2024 NIS).

Bio-season	Density of birds within the ECC +2km buffer (km-2)	Estimated increase in mortality		% increase in baseline mortality (citation count)	
		100% displacement, 1% mortality	90-100% displacement, 1 - 10% mortality	100% displacement, 1% mortality	90-100% displacement, 1 - 10% mortality
Total Non-breeding	26.7	7.5	6.8 – 7.5	0.156%	0.139% – 0.156%

Intertidal

During the construction and decommissioning phases, there is potential for disturbance and displacement impacts due to vessel activity, and construction work in the intertidal area. The installation method used at landfall is HDD, a trenchless technique which minimises disruption to the structures and environment above, including birds in the intertidal zone. Considering the entrance pit will be landward of HWM and the HDD exit pits seaward of LWM, the whole intertidal zone will be bypassed. Consequently, the main disturbance impact at landfall will be from vessel disturbance at the exit pit and therefore it can be assessed in the same way as the remainder of the offshore ECC. See the section above regarding the displacement assessment for common scoter within the ECC.

A peak of 3,440 common scoter were recorded during landfall surveys (see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline), with individuals consistently present across winter months. Despite their presence at the landfall site, risk to this species is considered to be low because any potential disturbance and displacement impacts will be spatially and temporally limited. As outlined above, works at the landfall site will be undertaken using HDD, which will limit any potential disturbance impacts in the intertidal zone, leaving vessel activity at the exit pit as the main disturbance in the intertidal zone. Works undertaken at the exit pit will be localised and carried out over a short time period with the HDD drilling activities expected to operate continuously over a 24-hour period until each bore is complete. Meanwhile any vessel disturbance is considered to be sufficiently covered within the ECC displacement assessment above, which accounts for vessel activity in the ECC during the full construction period.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases within the proposed ECC and intertidal area will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.18.4 Non-breeding population size: Disturbance and Displacement (Operation)

The CO for common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the common scoter feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the common scoter non-breeding population size of the NWIS cSPA as a result of disturbance and displacement during the operational phase.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same spatial footprint for the assessment (PFI), therefore both Options have the same potential for adverse effects on disturbance and displacement from operation and maintenance activities.

Common scoter are at risk of disturbance as a result of vessel movements from maintenance activities during the operational phase of the wind farm. It should be noted only a small number of common scoter were recorded during the 41 months of aerial surveys therefore common scoter have not been assessed for disturbance within the PFI during the operational phase. However, a precautionary approach has been taken by screening in common scoter for displacement within the Proposed ECC during the operational phase.

The absence of common scoter records throughout the aerial surveys is likely due to the large volumes of baseline vessel traffic in and around the array area and ECC. According to data collected during seasonal

site-specific surveys in December 2021 and July 2022, a total of 61 vessels (22 and 39 vessels, respectively) were observed intersecting with the array area and ECC per day.

Approximately 17% (4 vessels) of the vessels recorded during the December 2021 survey overlapped with the Proposed ECC while 14% of the vessels recorded in the summer survey (July 2022) crossed over into the Proposed ECC. The majority of the vessels recorded were cargo vessels, fishing vessels and recreational vessels. For further information regarding the vessel traffic around the proposed development and the site-specific surveys see the Environmental Vessel Management Plan (Appendix 11: Environmental Vessel Management Plan of the 2024 NIS).

There are several important commercial ports within the region. Drogheda Port is the closest to the proposed development, with the port entrance located approximately 17km (9nm) from the array. The Dublin port is located 20nm south-west of the proposed development which handles approximately 50% of all trade in the Republic of Ireland (Dublin Port Company, 2022). A number of smaller harbours used by emergency vessels and smaller crafts can also be found in the region. In addition, nine commercial shipping routes have been identified to intersect with the array area and/or the ECC (see the Environmental Vessel Management Plan (Appendix 11: Environmental Vessel Management Plan of the 2024 NIS) for further information).

During the operational phase of the proposed development a maximum of 21 vessels could be in transit and/or operation within the offshore development area at one time, equating to a total of 1,018 round trips per year. It is proposed that operational vessels utilised during the operational phase will transit from the proposed Greenore Port, located approximately 38km north of the array area. The Greenore Port currently handles a range of non-containerised cargo including rock, steel, fertiliser as well as general cargo like WTGs (Greenore Port, 2023). The operational vessels will likely utilise one or more of the identified commercial shipping routes that are already frequented by high volumes of vessels in transit across the NWIS cSPA. Therefore, common scoter within the cSPA are likely already affected by the shipping activity within the Proposed ECC and the additional vessels associated with the operational phase of the proposed development will not adversely affect the common scoter population.

It should be noted appropriate mitigation has already been committed to regarding vessel impacts as per the Environmental (Appendix 11: Environmental Vessel Management Plan of the 2024 NIS). During the operational phase the proposed development will reduce vessel activity in the ECC during the most sensitive months for coastal divers (November to March 1st inclusive), where practicable.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.18.5 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA common scoter feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

There will be a maximum of one cable laying vessel operating within the ECC during the construction phase at any one time (). Assuming common scoter flush 3km from approaching vessels, the maximum area within which the birds are at risk of disturbance is 28.3km^2. The NWIS cSPA has a total area of 2,333km^2, therefore common scoter are at risk of being displaced from 1% (1.2%) of the cSPA during the cable laying activities associated with the proposed development. As a result, the density within the remainder of the cSPA may increase by up to 1.2%.

Importantly, the area where the ECC is proposed does not appear to be optimal or preferred habitat for common scoter. For example, Common scoter densities within the ECC + 2 km buffer are approximately half

of those recorded within the wider ECC + 4 km buffer. This pattern indicates that the proposed ECC lies to the south of key common scoter activity hotspots, which represent more important habitat for the species.

Finally, the area over which common scoter could be displaced within the NWIS cSPA as a result of the construction and decommissioning phases is minimal compared to the total area of habitat available in the cSPA. Furthermore, changes to common scoter distribution within the cSPA are likely to have occurred already due to the large volume of vessel movement. This is reflected in the low numbers of common scoter recorded within the PFI plus 4km during aerial surveys. Considering the small number of common scoter potentially affected by vessel disturbance and the minimal area within which disturbance could occur, the potential for any adverse impact is minimal.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases within the Proposed ECC will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.18.6 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.18.7 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (ssee Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA common scoter feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common scoter.

Common scoter primarily feed on bivalve molluscs and occasionally on crustaceans, gastropods and small fish (Kaiser et al., 2006). As such this species has a reasonably varied diet.

According to Jessopp et al. (2018) common scoter tend to aggregate in waters close to the shore often with a preference for water depths around 10m, although individuals were observed further offshore. During these surveys this species was concentrated in the northernmost section of the survey area around Dundalk Bay, similarly to the divers (red-throated diver and great northern diver) (Jessopp et al., 2018).

In light of the available evidence above common scoter are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development. And therefore, the potential for some birds to be temporarily displaced from a small proportion of suitable foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage, especially over the long-term.

Potential effects on prey species and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case common scooter can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

There is no evidence that the array footprint is of particular importance for common scoter foraging, and consistent with conclusions reached for common scoter within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of common scoter prey resources. Given the highly dynamic and seasonal nature of common scoter foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources. Overall, sufficient suitable foraging habitat would remain within the cSPA to support the common scoter population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.18.8 Barriers to connectivity (Operation)

The CO for common scoter feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the cSPA or other ecologically important sites outside the cSPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution.

The presence of wind turbine generators has the potential to result in opportunistic avoidance behaviour by flying birds during migratory movements. During aerial surveys, no common scoter were recorded within the array area or the PFI + 2 km buffer. Only very low numbers were observed within the wider array + 4 km buffer, with raw counts of two and four individuals recorded in November 2024 and March 2025, respectively (estimated abundances of 10 and 20 individuals). This indicates that Common scoter do not regularly transit through the proposed development area. Therefore, common scoter, any such responses are expected to be limited to isolated, one-off avoidance events whereby individuals may adjust their flight path to avoid the array.

This interpretation is supported by regional distribution patterns reported by Jessopp et al. (2018), which show that Common scoter predominantly aggregate in inshore areas associated with preferred benthic foraging habitat. Given the very low frequency of flights through the array area, any avoidance behaviour associated with the wind farm would be infrequent, short-lived and energetically negligible, and would not give rise to meaningful population-level effects. Consequently, the potential for adverse effects on Common scoter from barrier effects is considered to be minimal.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.18.9 Non-breeding population size: Migratory Collision Risk (Operation)

An assessment of migratory collision risk for red-throated diver at North-West Irish Sea cSPA is provided in Section 5.4.31, concluding no AEoI for all species.

5.4.2.18.10 Summary of AEoI Conclusions for common scoter at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the common scoter QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.19 Red-throated Diver

Red-throated diver have been screened in for assessment during the construction, operational and decommissioning phases in relation to disturbance and displacement effects associated with the offshore ECC +2km buffer and the PFI +10km buffer. For this addendum, the red-throated diver assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI.

Red-throated diver were raised in the RFI in relation to the baseline data underpinning the assessment. These baseline data concerns have been addressed through the inclusion of the Developer's NWIS DAS data, which now form the primary evidence base for the assessment of divers across the NWIS cSPA because this dataset is derived directly from surveys undertaken within the assessment area and represents the most recent and comprehensive evidence available, providing a more robust and reliable basis for establishing a baseline than alternative data sources.

The assessment focuses on the potential for disturbance- and displacement-related effects on red-throated diver arising from vessel activity within the ECC, and from the presence of wind turbine generators and associated infrastructure within the PFI. The assessment takes account of the species' heightened sensitivity to disturbance, observed spatial usage patterns derived from site-specific survey data, and the refined spatial extent of the PFI relative to the wider NWIS cSPA. The following text is a direct replacement of the text within Section 5.4.2.17 of the 2024 NIS.

The CO for the red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Red-throated diver have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the ECC +2km buffer. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for red-throated diver (NPWS, 2023) within the NWIS cSPA are as follows:

1. Non-breeding population size;
2. Spatial distribution;
3. Forage spatial distribution, extent, abundance and availability;
4. Disturbance across the site; and
5. Barriers to connectivity.

5.4.2.19.1 Mitigation

The key mitigation employed to reduce impacts to divers is the Environmental Vessel Management Plan (Appendix 11: Environmental Vessel Management Plan of the 2024 NIS). This aims to minimise vessel disturbance to divers in the ECC by following strict vessel protocol which are outlined in the EVMP. This mitigation was not considered in the assessment and therefore by employing these measures any impacts to divers should reduce considerably. Following submission of the proposed development Planning Application, submissions/observations were received from interested parties in September and October 2024, and Requests for Further Information (RFI) from An Bord Pleanála were received in April 2025. Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer undertook considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km

is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. Removal of the northern sections of the array area eliminated overlap with high red-throated diver density areas ('Hotspots') during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.2.19.2 Disturbance and displacement

Non-breeding red-throated divers are highly sensitive to disturbance as a result of noise and visual presence (Garthe and Hüppop 2004, Furness et al. 2013), therefore this species is at risk of disturbance and displacement as a result of offshore cable laying vessel activity throughout the NWIS cSPA. Minimal noise is emitted during offshore cable installation activity especially in comparison to activities like pilling, therefore red-throated diver are likely to be disturbed by the presence of the vessels rather than any associated noise (Schwemmer et al., 2011). There is evidence to suggest red-throated diver avoid approaching vessels at a distance of up to 2km, however the majority are expected to flush at 1km or less (Bellebaum et al., 2006; Schwemmer et al., 2011; Jarrett et al., 2018; Topping and Petersen, 2011).

There is also evidence of red-throated diver being displaced out to 10km from wind turbine generators (Heinänen et al*.,* 2016; Mendel et al., 2019). A total of five red-throated diver were recorded in the PFI +4km buffer, during 41 months of aerial surveys. Although red-throated diver are highly sensitive to vessel disturbance, the low abundances recorded during the aerial surveys are more likely to reflect underlying habitat suitability, particularly water depth and distance from the coast, with the survey area lying outside the species' preferred nearshore foraging zones. However, it is likely that the large amounts of vessel traffic intersecting with the array area and ECC is a key contributing factor in the low abundances of red-throated divers observed during the aerial surveys. The Dublin port is located 20nm south-west of the proposed development, approximately 50% of all trade in the Republic of Ireland is handled at this port (Dublin Port Company, 2022). Therefore, there is extensive existing vessel traffic around the array area and ECC. A total of 22 and 39 unique vessels were observed overlapping with the array area and the ECC per day, during 14-day site-specific shore-based vantage-point surveys during December 2021 and July 2022, respectively. During the winter survey (December 2021) four unique vessels were recorded within the Proposed ECC per day (17% of vessels observed) while six vessels crossed the Proposed ECC per day during the summer survey. The majority of vessels recorded were cargo vessels, fishing vessels and recreational vessels; for further information regarding the vessel traffic around the proposed development and the site-specific surveys see the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS).

As per , there will be a maximum of one cable installation vessel operating within the Proposed ECC, with associated support vessels. For the assessment of displacement impacts within the ECC, the assessment considers the impacts of one vessel cluster, with a surrounding 3km buffer. It is noted that a 2km buffer around vessels may be considered the standard approach, but a 3km buffer is used here as a precautionary approach, accounting for the fact that vessels may be up to one km apart from each other at any given point. Based on this, the area disturbed from the vessel cluster was calculated to be 28.3km^2, from which birds could be displaced.

According to the Site Synopsis, red-throated diver are present within the NWIS cSPA primarily during the non-breeding season, when the site supports numbers of national importance. Red-throated diver are not a QI of any proximate breeding SPA; therefore, potential effects on this species have been assessed against two relevant population contexts. These comprise: (1) the wider regional population of 8,230 individuals, as described and defined within Appendix A14 Offshore and Intertidal Ornithology Technical Baseline; and (2) the maximum population estimate of 1,512 individuals derived from the Developer's site-specific NWIS DAS.

This multi-population approach ensures that potential effects are appropriately contextualised and avoids over-reliance on highly precautionary snapshot values. The greatest weight has been placed on the NWIS

DAS-derived population estimate, as it is based on targeted surveys within the assessment area, represents the most recent and comprehensive dataset available, and therefore provides the most robust and reliable basis for population-level conclusions.

5.4.2.19.3 Non-breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the red-throated diver feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the red-throated diver population size of the NWIS as a result of disturbance and displacement during the construction and decommissioning phases.

As determined in Table A5.9, Project Option 1 has a greatest potential for adverse effects on disturbance and displacement than Project Option 2 for red-throated diver from construction and decommissioning activities.

During the autumn migration and spring migration bio-season the density of red-throated diver present within the ECC is 2.4 birds/km^2 and 1 bird/km^2 respectively. Based on a total disturbance area of 28.3km^2, a non-breeding migration total of 94.5 red-throated diver are at risk of displacement. Of these, the total displacement consequent mortality is estimated at a one individual (0.7 and 0.3 individuals), based on 100% displacement and 1% mortality.

Based on the Developer's NWIS DAS count of 1,512 individuals, with an annual baseline mortality of 345 individuals per annum (based on an average mortality rate of 0.228), the addition of less than one individual would represent a 0.193% and 0.081% increase in baseline mortality during the autumn and spring migration based on 100% displacement and 1% mortality. Potential impacts based on a displacement range of 90% to 100% and a mortality rate of 1% are presented in Table A5.43.

During the migration- free winter bio-season, the density of birds present within the ECC is 1.6 birds/km^2. Based on a total disturbance area of 28.3km^2, a total of 45 (44.7) red-throated divers are at risk of displacement. Of these, the total displacement consequent mortality is estimated at less than one (0.4) individual, based on 100% displacement and 1% mortality.

Based on the 2016 citation count of 538 individuals, with an annual baseline mortality of 126 (126.4) individuals per annum (based on an average mortality rate of 0.235),the addition of less than one individual would represent a 0.0130% increase in baseline mortality based on 100% displacement and 1% mortality. Potential effects based on a displacement range of 90% to 100% and a mortality range of 1% to 10% are presented in Table A5-44. This equates to a total consequent mortality from displacement across the entire non-breeding bio-season of less than one (0.4) individual per annum. This represents an increase of 0.024% in baseline mortality of the 2016 citation population.

The non-breeding total of birds within the PFI is 21 within the PFI + 4km and 365 in the 4-10km buffer area, resulting in a predicted 1.1 mortalities when applying 50% displacement and 1% mortality within the PFI + 4km and 26% displacement and 1% mortality in the 4-10km buffer.

Based on the Developer's NWIS DAS count of 1,512 individuals, with an annual baseline mortality of 344 individuals (based on an average mortality of 0.228), the mortality of just over one (1.1) additional individual throughout the non-breeding season would result in an increase of 0.306% in baseline mortality. All predicted impacts to red-throated diver in the PFI are presented in Table A5.44. This level of impact would be indistinguishable from natural fluctuations in the population (Table A5.44).

During the construction and decommissioning phases, there is potential for disturbance and displacement impacts due to vessel activity, and construction work in the intertidal area. The installation method used at landfall is HDD, a trenchless technique which minimises disruption to the structures and environment above, including birds in the intertidal zone. Considering the entrance pit will landward of the HWM and the HDD exit pit seaward of LWM, the whole intertidal zone will be bypassed. Consequently, the main disturbance impact at landfall will be from vessel disturbance at the exit pit and therefore it can be assessed in the same way as the remainder of the offshore ECC. See the section above regarding the displacement assessment for common scoter within the ECC.

A total of 220 red-throated diver were recorded during landfall surveys (see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline), with individuals consistently present across winter months. Despite their presence at the landfall site, risk to this species is considered to be low because any potential disturbance and displacement impacts will be spatially and temporally limited. As outlined above, works at the landfall site will be undertaken using HDD, which will limit any potential disturbance impacts in the intertidal zone, leaving vessel activity at the exit pit as the main disturbance in the intertidal zone. Works undertaken at the exit pit will be localised and carried out over a short time period with only 24 hours required to complete excavation of the exit pit and transition zone. Meanwhile any vessel disturbance is considered to be sufficiently covered within the ECC displacement assessment above, which accounts for vessel activity in the ECC during the full construction period.

Table A5.43: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases within the ECC for Red-Throated Diver at NWIS cSPA (replaces Table 5.32 of the 2024 NIS).

Bio-season	Peak density of birds within the ECC +2km buffer (km-2)	Total disturbed birds	Estimated increase in mortality		% increase in baseline mortality (citation count)	
			100% displacement, 1% mortality	90-100% displacement, 1 - 10% mortality	100% displacement, 1% mortality	90-100% displacement, 1 - 100% mortality
ObSERVE population - 8,230						
Autumn migration	2.4	66.5	0.7	0.6-0.7	0.035%	0.032%-0.035%
Spring migration	1.0	28.0	0.3	0.3-0.3	0.015%	0.013%-0.015%
Migration-free winter	1.6	44.7	0.4	0.4-0.4	0.024%	0.021%-0.024%
Total non-breeding	-	139.2	1.4	1.3-1.4	0.074%	0.067%-0.074%
NWIS DAS population - 1,512						
Autumn migration	2.4	66.5	0.7	0.6-0.7	0.193%	0.174%-0.193%
Spring migration	1.0	28.0	0.3	0.3-0.3	0.081%	0.073%-0.081%
Migration-free winter	1.6	44.7	0.4	0.4-0.4	0.130%	0.117%-0.130%
Total non-breeding	-	139.2	1.4	1.3-1.4	0.404%	0.364%-0.404%

Table A5.44: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases within the PFI for Red-Throated Diver at NWIS cSPA

Bio-season (months)	Bio-season mean peak abundance (PFI plus relevant buffer)	Estimated mortality (individuals)		Percentage increase in baseline mortality	
		50% displacement, 1% mortality (PFI + 4km buffer)	45% - 50% displacement, 1% mortality (PFI + 4km buffer)	50% displacement, 1% mortality (PFI + 4km buffer)	45% - 50% displacement, 1% mortality (PFI + 4km buffer)
		26% displacement, 1 % mortality (4-10km buffer)	26% displacement, 1 % mortality (4-10km buffer)	26% displacement, 1 % mortality (4-10km buffer)	26% displacement, 1 % mortality (4-10km buffer)
Return migration	0 (PFI + 4km)	0.30	0.31	0.088%	0.088%
	117 (4km – 10km)				
Post-breeding migration	7 (PFI + 4km)	0.46	0.46 - 0.46	0.133%	0.132% - 0.133%
	163 (4km – 10km)				
Migration-free winter	14 (PFI + 4km)	0.29	0.28 – 0.29	0.085%	0.083% – 0.085%
	85 (4km – 10km)				
Non-breeding total	21 (PFI + 4km)	1.05	1.04 – 1.05	0.306%	0.303% - 0.306%
	365 (4km – 10km)				

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases within the proposed ECC and PFI will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.19.4 Non-breeding population size: Disturbance and Displacement (Operation)

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (ssee Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the red-throated diver feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the red-throated diver population size of the NWIS as a result of disturbance and displacement during the operational phase.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for red-throated diver from operation and maintenance activities.

There are several important commercial ports within the region. Drogheda Port is the closest to the proposed development, with the port entrance is located approximately 17km (9nm) from the array area. Dublin port is located 20nm south-west of the proposed development which handles approximately 50% of all trade in the Republic of Ireland (Dublin Port Company, 2022). A number of smaller harbours used by emergency vessels and smaller crafts can also be found in the region. In addition, nine commercial shipping routes have been identified to intersect with the array area and/or the ECC (see the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS) for further information).

During the operational phase of the project a maximum of 21 vessels could be in transit and/or operation within the array area at one time, equating to a total of 1,018 round trips per year. It is proposed that the operational vessels that will be utilised during the operational will transit from the Greenore Port, located approximately 38km north of the array area. The Greenore Port currently handles a range of non-containerised cargo including rock, steel, fertiliser as well as general cargo like WTGs (Greenore Port, 2023). The operational vessels will likely utilise one or more of the identified commercial shipping routes that are already frequented by high volumes of vessels in transit across the NWIS cSPA.

Therefore, red-throated diver within the cSPA are likely already affected by the shipping activity within the site and the Proposed ECC and the additional vessels associated with the operational phase of the proposed development will not adversely affect the red-throated diver population.

It should be noted the Developer has referred to NE best practice for appropriate mitigation regarding vessel impacts as per the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS). During the operational phase the proposed development will reduce vessel activity in the ECC during the most sensitive months for coastal divers (November to March 1st inclusive), where practicable. Furthermore, the operational port is located outside of the NWIS cSPA therefore vessel movement can be diverted around the inshore areas within the cSPA where the divers and sea ducks like red-throated diver are likely to forage and reside and in turn reduce potential disturbance and displacement of such species, should this be required. The current assessment has been made based on the assumption that this mitigation has not been introduced.

The non-breeding total of birds within the PFI + 4km is very low at 21, likely due to the large volumes of vessel traffic in and around the PFI and ECC. According to data collected during seasonal site-specific surveys in December 2021 and July 2022, a total of 61 vessels (22 and 39 vessels, respectively) were observed intersecting with the array area and ECC per day. Approximately 17% (4 vessels) of the vessels recorded during the December 2021 survey overlapped with the Proposed ECC while 14% of the vessels recorded in the summer survey (July 2022) crossed over into the Proposed ECC. The majority of the vessels recorded were cargo vessels, fishing vessels and recreational vessels. For further information regarding the vessel traffic around the proposed development and the site-specific surveys see the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS).

The non-breeding total is higher in the larger 4-10km buffer area at 265 birds, resulting in a predicted 2.11 mortalities when applying 100% displacement and 1% mortality within the PFI + 4km and 52% displacement and 1% mortality in the 4-10km buffer.

Based on the Developer's NWIS DAS count of 1,512 individuals, with an annual baseline mortality of 344 individuals (based on an average mortality of 0.228), the mortality of just over one (1.05) addition individual throughout the non-breeding season would result in an increase of 0.306% in baseline mortality. All predicted impacts to red-throated diver in the PFI are presented in Table A5.45.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase within he Proposed ECC and PFI will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

Table A5.45: Range-Based Displacement Mortalities During the Operational Phase within the PFI for Red-Throated Diver at NWIS cSPA

Bio-season (months)	Bio-season mean peak abundance (PFI plus relevant buffer)	Estimated mortality (individuals)		Percentage increase in baseline mortality	
		100% displacement, 1% mortality (PFI + 4km buffer)	90% to 100% displacement, 1% to 10% mortality (PFI + 4km buffer)	100% displacement, 1% mortality (PFI + 4km buffer)	90% to 100% displacement, 1% to 10% mortality (PFI + 4km buffer)
		52% displacement, 1 % mortality (4-10km buffer)	52% displacement, 1 % mortality (4-10km buffer)	52% displacement, 1 % mortality (4-10km buffer)	52% displacement, 1 % mortality (4-10km buffer)
Spring migration	0 (PFI + 4km) 117 (4km – 10km)	0.61	0.61	0.177	0.177
Autumn migration	7 (PFI + 4km) 163 (4km – 10km)	0.92	0.91 – 1.55	0.267	0.265 – 0.451
Migration-free winter	14 (PFI + 4km) 85 (4km – 10km)	0.58	0.57 – 1.84	0.169	0.166 – 0.535
Non-breeding total	21 (PFI + 4km) 365 (4km – 10km)	2.11	2.09 – 4.00	0.613	0.608 – 1.163

5.4.2.19.5 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA red-throated diver feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

There will be a maximum of one cable laying vessel operating within the ECC during the construction phase (). Assuming red-throated diver flush 2km from approaching vessels, the maximum area within which the birds are at risk of disturbance is 28.3km^2. The NWIS cSPA has a total area of 2,333km^2, therefore red-throated divers are at risk of being displaced from 1% (1.2%) of the cSPA during the cable laying activities associated with the proposed development. Provided 100% of red-throated diver are displaced from around the cable laying vessel and that displacement was local (remain within the NWIS cSPA) the density within the remainder of the cSPA will increase by 1% (1.2%).

The area over which red-throated diver could be displaced within the NWIS cSPA as a result of the construction and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA (1.2%). Furthermore, changes to red-throated diver distribution within the cSPA are likely to have occurred already due to the large existing volume of vessel movements. This is further reflected in the low numbers of red-throated divers recorded within the PFI plus 4km during aerial surveys. Considering the small number of red-throated divers potentially affected by vessel disturbance and the minimal area within which disturbance could occur the potential for any adverse impact is unlikely.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.19.6 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.19.7 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA red-throated diver feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO

attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of red-throated diver.

Red-throated diver are opportunistic feeders, their diet is composed primarily of fish and to a less extent crustaceans, polychaetes molluscs and aquatic insects (Madsen, 1957; Palmer, 1962; Kleinschmidt et al., 2019). As such this species has a reasonably varied diet.

This species tend to forage close to the coast especially during adverse weather, however red-throated diver can travel further offshore during call conditions (Furness, 1983).

Based on tracking data, red-throated diver have a small foraging range (mean max +1SD of 9km) (Woodward et al., 2019). This suggests red-throated diver are more limited in their ability to forage elsewhere and are perhaps less adaptable to potential changes to prey species abundance and availability as a result of the proposed development.

However, as per the Jessopp et al (2018) surveys divers (red-throated diver and/or great northern diver) were concentrated in the northern coastal areas with a notable preference for shallow waters between 5 to 20m depth. The highest density of divers was in the northwest of the survey area around Dundalk Bay (Jessopp et al., 2018). During the autumn and winter these birds remained largely concentrated along the north coast, with a slight southwardly distribution down to the north of Wexford harbour (Jessopp et al., 2018).

In light of the available evidence above red-throated diver are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development. And therefore, the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage.

Potential effects on prey species namely, sandeels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species are addressed within the Approach to Assessment (Section 5.4.1.1.2 Forage spatial distribution, extent, abundance and availability). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case red-throated diver can also be ruled out. Therefore, the CO's target regarding 'Forage spatial distribution, extent, abundance and availability' will be preserved.

The offshore environment within the cSPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the cSPA would be occupied by infrastructure, and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the cSPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer *et al*., 2020; Watson *et al*., 2025). Prey species targeted by red-throated diver are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for red-throated diver foraging, and consistent with conclusions reached for red-throated diver within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of red-throated diver prey resources. Given the highly dynamic and seasonal nature of red-throated diver foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the cSPA to support the red-throated diver population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the re-throated diver QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.19.8 Barriers to connectivity (Operation)

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the cSPA or other ecologically important sites outside the cSPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds.

The disturbance and displacement assessment for the proposed development considered both flying and sitting birds, therefore any potential impacts on resident birds are already accounted for. By including sitting birds within the analysis those potentially displaced from an area of sea they reside are assessed, meanwhile the inclusion of flying birds provides for an assessment of potential barrier effects to birds moving through the area of interest. This approach is supported by NatureScot guidance (NatureScot 2023a), which states that the displacement assessment is considered to cover all distributional responses (i.e., disturbance and displacement impacts and barrier effects).

A total of two red-throated diver were recorded in the array area plus a 4km buffer during the 29 months of DAS, one in August 2020 and another in December 2020, this suggests that this species do not fly through the array area or forage within the water on the seaward side of the array area.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.19.9 Non-breeding population size: Migratory Collision Risk (Operation)

An assessment of migratory collision risk for red-throated diver at North-West Irish Sea cSPA is provided in Section 5.4.31, concluding no AEoI for all species.

5.4.2.19.10 Summary of AEoI Conclusions for red-throated diver at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the red-throated diver QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.20 Great northern diver

Great northern diver have been screened in for assessment during the construction, operational and decommissioning phases in relation to disturbance and displacement effects associated with the offshore ECC + 2 km buffer. For this addendum, the great northern diver assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI.

The assessment focuses on the potential for disturbance- and displacement-related effects on great northern fiver arising from vessel activity within the ECC, taking account of species-specific sensitivity, spatial usage patterns relative to the wider NWIS cSPA. The following text is considered a direct replacement of the text within Section 5.4.2.18 of the 2024 NIS.

The CO for the great-northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Great northern diver have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the ECC +2km buffer. Population-level effects are addressed through the assessment of disturbance and displacement. The CO attributes for great northern diver (NPWS, 2023) within the NWIS cSPA are as follows:

1. Non-breeding population size;
2. Spatial distribution;
3. Forage spatial distribution, extent, abundance and availability;
4. Disturbance across the site; and
5. Barriers to connectivity.

5.4.2.20.1 Disturbance and distribution

There is limited evidence regarding the sensitivity of great northern divers, compared to red-throated divers. According to Bradbury et al. (2014) this species are highly vulnerable to disturbance and displacement, while results from study in Ireland by Gittings et al. (2015) indicated that great northern diver did not exhibit a flush response to boat traffic, despite the boat passing within 10 to 20m of individuals. Jarrett et al (2022) also describe minimal meaningful impact on great northern diver from the presence of vessels, with the majority opting to dive or swim away, and virtually no flight response to vessels at any proximity. A precautionary approach has been taken within this assessment and great northern diver has been assumed to show high sensitivity to vessel disturbance.

A total of 7 great northern diver were recorded within the array area plus a 4km buffer during the 29 months of DAS while 30 birds were recorded within the ECC plus 4km buffer during the additional 12 months of DAS. This species has been screened out for displacement and disturbance within the array area during all phases of the proposed development. However, since great norther diver are assumed to be highly sensitive to vessel disturbance they have been assessed for disturbance within the Proposed ECC, despite their low abundance in the array area.

As per , there will be a maximum of one cable installation vessel operating within the Proposed ECC, with associated support vessels. For the assessment of displacement impacts within the ECC, the assessment considers the impacts of one vessel cluster, with a surrounding 3km buffer. It is noted that a 2km buffer round vessels is standard use, but a 3km buffer is used here as a precautionary approach, accounting for the fact that vessels may be up to a km apart from each other at a given point. Based on this, the area disturbed from the vessel cluster was calculated to be 28.3km2, from which birds could be displaced.

5.4.2.20.2 Mitigation

The key mitigation employed to reduce impacts to divers is the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS). This aims to minimise vessel disturbance to divers in the ECC by following strict vessel protocol which are outlined in the Environmental Vessel Management Plan. This mitigation was not considered in the assessment and therefore by employing these measures any impacts to divers should reduce considerably.

5.4.2.20.3 Non-breeding population size: Disturbance and displacement (Construction and Decommissioning)

The CO for great northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO attribute for the great northern diver feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the great northern diver population size of the NWIS as a result of disturbance and displacement during the construction and decommissioning phases.

Non-breeding Bio-season

As determined in Table A5.9, Project Option 1 has a greatest potential for adverse effects on disturbance and displacement than Project Option 2 for great northern diver from construction and decommissioning activities.

During the non-breeding bio-season, the density of great northern divers present within the ECC is 0.3 birds/km^2. Based on a total disturbance area of 28.3km2, a total of eight (8.5) great northern divers are at risk of displacement. Of these, the total displacement consequent mortality is estimated at less than one (0.1) individual, based on 100% displacement and 1% mortality.

The impact on baseline mortality has been estimated using 2016 citation count of 478 individuals, however, it should be notes that 126 individuals were estimated from the Developer's NWIS DAS, the citation count is used in this case as it is relatively precautionary. Based on the 2016 citation count of 478 individuals, with an annual baseline mortality of 53 (53.1) individuals per annum (based on an average mortality rate of 0.111), the addition of less than one individual would represent a 0.160% increase in baseline mortality based on 100% displacement and 1% mortality. Potential effects based on a displacement range of 90% to 100% and a mortality range of 1% to 10% are presented in Table A5.46.

Table A5.46: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Great Northern Diver within the ECC at NWIS cSPA (replaces Table 5.33 of the 2024 NIS).

Bio-season	Density of birds within the ECC +4km buffer (km-^{2})	Estimated increase in mortality		% increase in baseline mortality (citation count)	
		100% displacement, 1% mortality	90-100% displacement, 1 – 10% mortality	100% displacement, 1% mortality	90-100% displacement, 1 – 100% mortality
Total non-breeding	0.3	0.09	0.08 – 0.85	0.160	0.144 – 1.602

During the construction and decommissioning phases, there is potential for disturbance and displacement impacts due to vessel activity, and construction work in the intertidal area. The installation method used at landfall is HDD, a trenchless technique which minimises disruption to the structures and environment above, including birds in the intertidal zone. Considering the input pit will be behind the beach, the whole intertidal zone will be bypassed. Consequently, the main disturbance impact at landfall will be from vessel disturbance at the exit pit and therefore it can be assessed in the same way as the remainder of the offshore ECC. See the section above regarding the displacement assessment for common scoter within the ECC.

A total of 20 great northern diver were recorded during landfall surveys (see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline), with individuals consistently present across winter months. Despite their presence at the landfall site, risk to this species is considered to be low because any potential disturbance and displacement impacts will be spatially and temporally limited. As outlined above, works at the landfall site will be undertaken using HDD, which will limit any potential disturbance impacts in the intertidal zone, leaving vessel activity at the exit pit as the main disturbance in the intertidal zone. Works undertaken at the exit pit will be localised and carried out over a short time period with only 24 hours required to complete excavation of the exit pit and transition zone. Meanwhile any vessel disturbance is considered to be sufficiently covered within the ECC displacement assessment above, which accounts for vessel activity in the ECC during the full construction period.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.20.4 Non-breeding population size: Disturbance and Displacement (Operation)

The CO for great northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The site-specific CO for the great northern diver feature of the NWIS cSPA is that there should be no significant decline in non-breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the great northern diver population size of the NWIS as a result of disturbance and displacement during the operational phase.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for great northern diver from operation and maintenance activities.

Great northern diver are at risk of disturbance as a result of vessel movements from maintenance activities during the operational phase of the wind farm. It has been assumed within this assessment that 100% displacement of great northern diver will occur within 3km of the operational vessels in the Proposed ECC, although recent analyses suggest this may be highly precautionary. It should be noted that great northern diver have not been assessed for disturbance within the array area during the operational phase due to the trivial numbers recorded during the 29 months of aerial surveys; a total of seven great northern divers were observed within the array area plus a 4km buffer (during February and May 2021). However, a precautionary approach has been taken by screening in great northern diver for displacement within the Proposed ECC during the operational phase.

The low numbers of great northern divers recorded throughout the aerial surveys are likely due to the large volumes of vessel traffic in and around the array area and ECC. According to data collected during seasonal site-specific surveys in December 2021 and July 2022, a total of 61 vessels (22 and 39 vessels, respectively) were observed intersecting with the array area and/or ECC per day. Approximately 17% (four vessels) of the vessels recorded during the December 2021 survey overlapped with the Proposed ECC while 14% of the vessels recorded in the summer survey (July 2022) crossed over into the Proposed ECC. The majority of the vessels recorded were cargo vessels, fishing vessels and recreational vessels. For further information regarding the vessel traffic around the proposed development and the site-specific surveys see the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS).

There are several important commercial ports within the region. Drogheda Port is the closest to the proposed development, with the port entrance is located approximately 17km (9nm) from the array area. The Dublin port which handles approximately 50% of all trade in the Republic of Ireland (Dublin Port Company, 2022) is located 20nm south-west of the proposed boundary. A number of smaller harbours used by emergency vessels and smaller crafts can also be found in the region. In addition, nine commercial shipping routes have been identified to intersect with the array area and/or the ECC (see the Environmental Vessel Management Plan (Appendix 11of the 2024 NIS) for further information).

During the operational phase of the project a maximum of 21 vessels could be in transit and/or operation within the proposed development at one time, equating to a total of 1,018 round trips per year. It is proposed that the operation and maintenance vessels that will be utilised during the operational phase will transit from the Greenore Port, located approximately 38km north of the array area. The Greenore Port currently handles a range of non-containerised cargo including rock, steel, fertiliser as well as general cargo like WTGs (Greenore Port, 2023). The operational vessels will likely utilise one or more of the identified commercial shipping routes that are already frequented by high volumes of vessels in transit across the NWIS cSPA. Therefore, great northern diver within the cSPA are likely already affected by the shipping activity within the site and the Proposed ECC and the additional vessels associated with the operational phase of the proposed development are unlikely to adversely affect the great northern diver population.

It should be noted appropriate mitigation has already been taken regarding vessel impacts as per the Environmental Vessel Management Plan (Appendix 11 of the 2024 NIS).

During the operational phase the proposed development will reduce vessel activity in the ECC during the most sensitive months for coastal divers (November to March 1st inclusive), where practicable.

Furthermore, the operational port is located outside of the NWIS cSPA therefore vessel movement can easily be directed away from the inshore areas within the cSPA where the divers and sea ducks like great northern diver are likely to forage and reside and in turn reduce potential disturbance and displacement of such species.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase within he Proposed ECC and PFI will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the non-breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.2.20.5 Spatial Distribution (Construction, Operation and Decommissioning)

The CO for great northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The spatial distribution attribute of the COs for the NWIS cSPA great northern diver feature requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population. This attribute does not require uniform use of all areas within the cSPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs.

There will be a maximum of one cable laying vessels operating within the Proposed ECC during the construction phase (). Assuming great northern diver flush 3km from approaching vessels, the maximum area within which the birds are at risk of disturbance is 28.3km^2. The NWIS cSPA has a total area of 2,333km^2, therefore great northern diver are at risk of being displaced from 1% (1.2%) of the cSPA during the cable laying activities associated with the proposed development. Provided 100% of great northern diver are displaced from around the cable laying vessel and that displacement was local (remain within the NWIS cSPA) the density within the remainder of the cSPA will increase by 1% (1.2%).

The area over which great northern diver could be displaced within the NWIS cSPA as a result of the construction and decommissioning phases is relatively small compared to the total area of habitat available in the cSPA. Furthermore, changes to great northern diver distribution within the cSPA are likely to have occurred already due to the large volume of vessel movement. This is reflected in the low numbers of great northern divers recorded within the array area plus a 4km during DAS. Considering the small number of great northern potentially affected by vessel disturbance and the minimal area within which disturbance could occur the potential for any adverse impact is unlikely.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on spatial distribution during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the spatial distribution attribute target which requires there to be a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, for Project Option 1 or Project Option 2.

5.4.2.20.6 Disturbance across the site (Construction, Operation and Decommissioning)

The CO for 'Disturbance across the site' requires that the intensity, frequency, timing and duration of disturbance do not significantly affect the achievement of the targets for population size and spatial distribution. As set out above, the assessment has concluded that the proposed development does not result in an adverse effect on population size or spatial distribution for the QI. In the absence of any measurable effect on these underpinning attributes, it follows that the levels of disturbance arising from the proposed development are within acceptable limits and do not undermine the CO attribute.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on disturbance across the site during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the disturbance across the site attribute target of intensity, frequency, timing and duration of disturbance that occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution, for Project Option 1 or Project Option 2.

5.4.2.20.7 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for great northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA great northern diver feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of great northern diver.

Great northern diver piscivorous although their diet frequently includes marine invertebrates (Paruk et al., 2021). As such this species has a reasonably varied diet. This species tend to forage to forage close to the shore within 50-150m of the shoreline, in shallow waters of less than 5m depth, during the breeding season (Ruggles, 1994).

Moreover, as per the Jessopp et al (2018) surveys divers (red-throated diver and/or great northern diver) were concentrated in the northern coastal areas with a notable preference for shallow waters between 5 to 20m depth. The highest density of divers was in the northwest of the survey area around Dundalk Bay (Jessopp et al., 2018). During the autumn and winter these birds remained largely concentrated along the north coast, with a slight southwardly distribution down to the north of Wexford harbour (Jessopp et al., 2018).

In light of the available evidence above great northern diver are considered to be adaptable to potential changes to prey species abundance and availability as a result of the proposed development. And therefore, the reduction in available foraging area as a result of the proposed development is likely to cause minimal alteration to foraging habitat usage.

Furthermore, potential effects on prey species namely, sand eels, herring and sprat, that are key prey species for various seabirds, and the habitats that support these species have been covered within the Fish and Shellfish Ecology Baseline (Appendix A16). Impacts were found to be non-significant therefore, it is reasonable to assume, regardless of the sensitivity of the receptor, any potential indirect effects on ornithological receptors in this case great northern diver is extremely low.

The offshore environment within the cSPA is largely homogeneous, with similar habitat widely available beyond the development footprint. Only 0.02% of the cSPA would be occupied by infrastructure, and this small physical footprint would not alter benthic processes, wider marine dynamics, or prey habitats at the scale of the cSPA. Indeed, turbine foundations may even provide minor local enhancements to prey availability through artificial-reef effects (Degraer et al., 2020; Watson et al., 2025). Prey species targeted by great northern diver are inherently mobile and naturally variable over spatial scales far larger than the area influenced by the proposed development.

There is no evidence that the array footprint is of particular importance for great northern diver foraging, and consistent with conclusions reached for great northern diver within the NWIS cSPA, there is no credible mechanism by which the development would materially alter the spatial distribution, extent, abundance, or availability of great northern diver prey resources. Given the highly dynamic and seasonal nature of great northern diver foraging behaviour, any small shifts in distribution that may occur are unlikely to place undue pressure on prey resources.

Overall, sufficient suitable foraging habitat would remain within the cSPA to support the great northern diver population, and no meaningful effects on prey availability or foraging opportunity are expected.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, area of suitable habitat and available forage biomass to support the population targets, for Project Option 1 or Project Option 2.

5.4.2.20.8 Barriers to connectivity (Operation)

The CO for great northern diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.14 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the cSPA or other ecologically important sites outside the cSPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. As per NatureScot guidance, barrier effects are part of broader distributional responses, and as such are accounted for within displacement assessments.

The presence of WTGs (both operational and during construction and decommissioning phases) has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds.

The disturbance and displacement assessment for the proposed development considered both flying and sitting birds, therefore any potential impacts on resident birds are already accounted for. By including sitting birds within the analysis those potentially displaced from an area of sea they reside are assessed, meanwhile the inclusion of flying birds provides for an assessment of potential barrier effects to birds moving through the area of interest. This approach is supported by NatureScot guidance (NatureScot 2023a), which states that the displacement assessment is considered to cover all distributional responses (i.e., disturbance and displacement impacts and barrier effects).

A total of ten great northern diver were recorded in the array area plus a 4km buffer during the 29 months of DAS, the majority were observed in February 2021, six individuals were recorded during this month, the remaining great northern diver was observed in May 2021. This suggests that this species do not fly through the array area or forage within the water on the seaward side of the array area.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to the barriers to connectivity attribute target regarding number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA, for Project Option 1 or Project Option 2.

5.4.2.20.9 Non-breeding population size: Migratory Collision Risk (Operation)

An assessment of migratory collision risk for great northern diver at North-West Irish Sea cSPA is provided in Section 5.4.31, concluding no AEoI for all species.

5.4.2.20.10 Summary of AEoI Conclusions for great northern diver at the NWIS cSPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the NWIS cSPA, in view of the site's COs to maintain the favourable conservation condition of the great northern diver QI, with specific regard to population size, spatial distribution, disturbance across the site, forage spatial distribution, extent, abundance and availability, and barrier to connectivity attributes, for Project Option 1 or Project Option 2.

5.4.2.21 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.2.19 in the 2024 NIS.

5.4.2.21.1 Surface Water Run-off of Suspended Sediment/Deposition (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.2.19.1 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no further changes to this section. Refer to Section 5.4.2.19.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

With the implementation of best practice construction methods and additional specific water quality mitigation measures outlined in CEMP (Appendix A9), it is concluded beyond reasonable scientific doubt that the construction of onshore elements of the proposed development (alone) will not have an AEoI on the marine habitats utilised by designated QIs of the North-West Irish Sea cSPA, in view of the site's COs in

relation to surface water run-off of suspended sediment/deposition arising from the onshore elements of the proposed development.

5.4.2.21.2 Accidental Pollution (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.2.19.2 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no further changes to this section. Refer to Section 5.4.2.19.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

With the implementation of mitigation measures set out in the CEMP (Appendix A9), it is concluded beyond reasonable scientific doubt that the construction of onshore elements of the proposed development (alone) will not have an AEoI on the marine habitats utilised by designated QIs of the North-West Irish Sea cSPA, in view of the site's COs in relation to accidental pollution arising from the onshore elements of the proposed development.

5.4.2.21.3 Dust Deposition (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.2.19.3 in the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.4.2.19.3 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

With the implementation of mitigation measures set out in the CEMP (Appendix A9), it is concluded beyond reasonable scientific doubt that the construction of onshore elements of the proposed development (alone) will not have an AEoI on the marine habitats utilised by designated QIs of the North-West Irish Sea cSPA, in view of the site's COs in relation to dust arising from the onshore elements of the proposed development.

5.4.2.21.4 Disturbance and Displacement (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.2.19.4 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no further changes to this section. Refer to Section 5.4.2.19.4 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

With the implementation of mitigation measures including noise barriers, which also act as visual mitigation set out in the CEMP (Appendix A9), it is concluded beyond reasonable scientific doubt that the construction and decommissioning of onshore and nearshore elements of the proposed development (alone) will not have an AEoI on designated QIs of the North-West Irish Sea cSPA, in view of the site's COs in relation to disturbance and displacement arising from the onshore and nearshore elements of the proposed development.

5.4.2.21.5 Migratory Collision Risk

There is no change to this section, for the purposes of clarity, an assessment of migratory collision risk for great northern diver at North-West Irish Sea SPA is provided in Section 5.4.30.2, concluding no AEoI for this species.

5.4.3 Malahide Estuary SPA

There are no changes to this section. Refer to Section 5.4.3 in the 2024 NIS.

5.4.3.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.3.1 in the 2024 NIS.

5.4.3.2 Impacts Arising from the Onshore Elements of the Proposed Development

The change required to this section is an update to the survey results for wintering waterbirds. Results of update surveys undertaken in 2023 and 2024 reflect a change of Malahide Estuary SPA SCI species occurring in numbers greater than 1% of the national population at this location. This includes observations of greater than 1% of the national population of black-tailed godwit and red-breasted merganser at Malahide Estuary. The mitigation and conclusion of AEoI remains unchanged.

5.4.3.2.1 Dust Deposition (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.3.2.1 in the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.4.3.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

The predicted impacts are expected to be minimal and temporary during the nearest construction works of the onshore infrastructure. Therefore, it is concluded beyond reasonable scientific doubt that the construction and decommissioning of onshore elements of the proposed development (alone) will not have an AEoI on the wetland habitats utilised by designated QIs of the Malahide Estuary, in view of the site's COs in relation to dust arising from the onshore elements of the proposed development.

5.4.3.2.2 Surface Water Run-off of Suspended Sediment/Deposition (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.3.2.2 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.3.2.2 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the construction and decommissioning of onshore elements of the proposed development (alone) will not have an AEoI on the wetland habitats utilised by designated QIs of the Malahide Estuary, in view of the site's COs in relation to surface water run-off of suspended sediment/deposition arising from the onshore elements of the proposed development.

5.4.3.2.3 Accidental Pollution (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.3.2.3 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.3.2.3 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the construction and decommissioning of onshore elements of the proposed development (alone) will not have an AEoI on the habitats utilised by designated QIs of the Malahide Estuary, in view of the site's COs in relation to accidental pollution arising from the onshore elements of the proposed development.

5.4.3.2.4 Disturbance and Displacement (Construction and Decommissioning)

The changes required to Section 5.4.3.2.4 of the 2024 NIS are in relation to updating the species that occur in numbers greater than 1% of national population at this location.

The following text from Section 5.4.3.2.4 of the 2024 NIS shall be deleted:

Construction and decommissioning works occurring adjacent to the Malahide Estuary SPA have the potential to cause disturbance and displacement to QIs arising from an increased presence of machinery, construction personnel, noise impacts, lighting impacts and the overall construction works. The proposed onshore cable route runs adjacent to the SPA for c. 2.3km. Wintering waterbirds that occurred in numbers of up to national importance at the landfall site and/or Malahide Estuary (i.e. in numbers greater than 1% of the national population) were golden plover, light-bellied brent goose and great crested grebe. While it is not expected that disturbance impacts affecting QIs will extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate close to background levels at that distance (Cutts et al., 2009), QIs occurring within the 300m ZoI would potentially be displaced form this area during works. At a distance of greater than 300m visual disturbance from the works area is not expected to persist.

And replaced by:

Construction and decommissioning works occurring adjacent to the Malahide Estuary SPA have the potential to cause disturbance and displacement to QIs arising from an increased presence of machinery, construction personnel, noise impacts, lighting impacts and the overall construction works. The proposed onshore cable route runs adjacent to the SPA for c. 2.3km. Wintering waterbirds that occurred in numbers of up to national importance at the landfall site and/or Malahide Estuary (i.e. in numbers greater than 1% of the national population) were black-tailed godwit, golden plover, light-bellied brent goose, great crested grebe and red-breasted merganser. While it is not expected that disturbance impacts affecting QIs will extend beyond a distance of c. 300m, as noise levels associated with general construction activities would attenuate close to background levels at that distance (Cutts et al., 2009), QIs occurring within the 300m ZoI would potentially be displaced form this area during works. At a distance of greater than 300m visual disturbance from the works area is not expected to persist.

There are no further changes required to this section. Refer to Section 5.4.3.2.4 of the 2024 NIS.

Mitigation

However, there are no changes to this section. Refer to Section 5.4.3.2.4 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

The first measure will be to avoid works along the Estuary Road during the period September to March when wintering birds are present. Where this is not practicable, the implementation of the noise barriers along the works area on Estuary Road, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of onshore elements of the proposed development (alone) will not have an AEoI on the habitats utilised by designated QIs of the Malahide Estuary, in view of the site's COs in relation to disturbance and displacement arising from the onshore elements of the proposed development.

5.4.3.3 Migratory Collision Risk (Operation)

An assessment of the project option with the greatest potential for AEoI (as presented in) for migratory collision risk for QIs screened in for that impact at Malahide Estuary SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

Given the extremely low level of impact predicted from both onshore and offshore activities there is no indication that the combined effects from these impacts will alter the conclusions of the assessment. Therefore, it can be concluded that the proposed development alone will not result in an AEoI for Malahide Estuary SPA for any of the species assessed, having regard to their COs.

5.4.4 Rockabill SPA

Rockabill SPA is located 0.2km from the array area, 0.1km from the ECC and c.7km off the coast of Co. Dublin. The nearest onshore works at the landfall site are located 8.3km from the SPA. The SPA encompasses two small, low-lying islets known as Lighthouse Island and Bill, in addition to a distance of 3.5km of the marine area surrounding the islands. The SPA is of ornithological importance as the most important roseate tern population in Europe is supported along with nationally important breeding populations of common tern and Arctic tern and a non-breeding population of purple sandpiper. All three tern species and purple sandpiper have been considered within the ornithological assessments presented here.

5.4.4.1 Qualifying Interests and Conservation Objectives

The following QIs of the Rockabill SPA are considered within this section:

Table A5.47: Qualifying interests and Conservation Objectives of Rockabill SPA (replaces Table 5.35 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Common tern [A193]; Roseate tern [A192]; and Arctic tern [A194].	To maintain the favourable conservation condition of listed species in Rockabill SPA, which is defined by the following list of attributes and targets: • Breeding population abundance: apparently occupied nests (AONs) - no significant decline; • Productivity rate: fledged young per breeding pair – no significant decline; • Distribution: breeding colonies - no significant decline; • Prey biomass available - no significant decline; • No significant increase - no significant decline; • Barriers to connectivity - no significant decline; and • Disturbance at breeding site - human activities should occur at levels that do not adversely affect the breeding (species) population.
Purple sandpiper (Calidris maritima) [A148]	To maintain the favourable conservation condition of Purple Sandpiper in Rockabill SPA, which is defined by the following list of attributes and targets: • Population trend- long term population trend stable or increasing; and • Distribution - no significant decrease in the range, timing or intensity of use of areas by purple sandpiper other than that occurring from natural patterns of variation

5.4.4.2 Common tern

Common tern has been screened in for collision risk during the operational phase, to assess the potential for an AEoI from the proposed development alone. Common tern is also screened in for barrier effects and effects via impacts on prey sources during operation. There were no RFI sections directly related to common tern QI of Rockabill SPA. Therefore, key updates are in relation to the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.4.2 of the 2024 NIS.

In terms of collision risks, the array area is situated 0.2km from Rockabill SPA, which is within the MMF+1SD for common tern (18.0+8.9km) (Woodward et al., 2019) and has therefore been screened in for the breeding season only. During the non-breeding bio-season terns migrate south and therefore very few birds are present only during their migration which will be insufficient to result in LSE. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The CO for common tern feature of the Rockabill SPA is to maintain favourable conservation condition. Common tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for common tern within the Rockabill SPA are as follows:

- Breeding population abundance: apparently occupied nests;
- Prey biomass available;
- Barriers to connectivity; and
- Disturbance at breeding site.

5.4.4.2.1 Mitigation

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

Similarly, the design refinements in response to the RFI (see Appendix A7: Design Refinements) with resulting updates to the WTG layouts for Project Options 1 and 2 has increased the distance between the WTGs and Rockabill SPA. Although the benefits are not quantified in the assessment this refinement will reduce any potential barrier effects on terns from this colony should their foraging area overlap with the Proposed Development.

5.4.4.2.2 Breeding population abundance: Collision Risk (Operation)

Breeding Bio-season

The CO for common tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for population size, the target for which no significant decline in the breeding population abundance, apparently occupied nests. The Developer has therefore undertaken an assessment of potential impacts on the common tern breeding population abundance of the Rockabill as a result of collision risk.

The predicted collision mortality during the breeding bio-season for common tern is one (0.6) individual (Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment). Assuming 59% of individuals are breeding adults (Appendix A18: Offshore and Intertidal Apportioning), the total number of breeding adults in the array impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season.

Provided 100% of these collisions are breeding birds from Rockabill SPA (Appendix A18: Offshore and Intertidal Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.4) breeding adults (Table A5.48).

Considering the latest colony count of 1,620 individuals (the SPA Citation population) and an annual background mortality of 190 (189.5) adults, an impact of less than one adult common terns would represent a 0.189% increase in baseline mortality during the breeding bio-season (Table A5.48).

There were no collision mortalities outside of the breeding season.

Table A5.48: Seasonal Collision Mortalities During the Operational Phase for Common Tern at Rockabill SPA (replaces Table 5.36 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Breeding	0.4 (0.0-2.4)	0.189% (0.000%-1.249%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.4.2.3 Barriers to connectivity (Operation)

The CO for common tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the common tern barriers to connectivity.

The presence of WTGs has the potential to create a barrier to the movement of terns from Rockabill SPA, increasing energy expenditure by causing them to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, like common tern, the evidence suggests that the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. According to Bradbury et al. (2014) and Dierschke et al. (2016) common tern sensitivity to disturbance and displacement is 'low'.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the barriers to connectivity attribute target of no significant increase, for Project Option 1 or Project Option 2.

5.4.4.2.4 Prey biomass available: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for common tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). The prey biomass available attribute of the COs for the Rockabill SPA common tern feature requires there to be a sufficient forage biomass to support the population target.

This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common tern. The Developer has therefore undertaken an assessment of potential impacts on the common tern prey biomass available within Rockabill.

The Rockabill SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.14) for impacts on common tern at the Rockabill SPA.

As detailed in the NWIS cSPA assessment, potential effects on key prey species are all found to be not significant.

Conclusion of AEoI:

It is concluded beyond reasonable scientific that effects on prey biomass availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to the prey biomass availability attribute target of no significant decline, for Project Option 1 or Project Option 2.

Summary of AEoI Conclusions for common tern at the Rockabill SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the common tern QI, with specific regard to population size, barrier to connectivity attributes and prey biomass availability, for Project Option 1 or Project Option 2.

5.4.4.3 Roseate tern

Roseate tern has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. RFI Section 8(a) (i) specifically requested that roseate tern tracking data from Rockabill SPA be presented (Perrow et al., 2018). The following text is a direct replacement of the text within Section 5.4.4.3 of the 2024 NIS.

The array area is situated 0.2km from Rockabill SPA, which is within the MMF+1SD for roseate tern (12.6+10.6km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. During the non-breeding season, terns migrate south, and no roseate tern were recorded within the array area outside the full breeding season during the DAS. As such, birds from this SPA are not expected to occur within the array area in numbers sufficient to result in a LSE, and roseate tern are therefore screened out for the non-breeding season. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The CO for roseate tern feature of the Rockabill SPA is to maintain favourable conservation condition. Roseate tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for roseate tern within the Rockabill SPA are as follows:

- Breeding population abundance: apparently occupied nests;
- Prey biomass available;
- Barriers to connectivity; and
- Disturbance at breeding site.

5.4.4.3.1 Mitigation

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT.

This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

Similarly, the array area refinement process has increased the distance between the WTGs and Rockabill SPA. Although the benefits are not quantified in the assessment this refinement will reduce any potential barrier effects on terns from this colony should their foraging area overlap with the Proposed Development.

5.4.4.3.2 Breeding population abundance: Collision Risk (Operation)

Breeding Bio-season

The CO for roseate tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for population size, the target for which no significant decline in the breeding population

abundance, apparently occupied nests. The Developer has therefore undertaken an assessment of potential impacts on the roseate tern breeding population abundance of the Rockabill as a result of collision risk.

The predicted collision mortality during the breeding bio-season is one (1.2) individual (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 59% of individuals are breeding adults (Appendix A18: Offshore and Intertidal Apportioning), the total number of breeding adults in the array impacted by collision is one (0.7) per annum during the breeding bio-season.

Provided 100% of these collisions are breeding birds from Rockabill SPA (Appendix A18: Offshore and Intertidal Apportioning), then the resultant mortality during the breeding bio-season is estimated to be one (0.7) breeding adults (Table A5.49).

Considering the latest colony count of 3,552 individuals and an annual background mortality of 515 adults, this would represent a 0.131% increase in baseline mortality during the breeding bio-season (Table A5.49).

There were no collision mortalities outside of the breeding season.

Table A5.49: Seasonal Collision Mortalities During the Operational Phase for Roseate Tern at Rockabill SPA (replaces Table 5.37 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Breeding	0.7 (0.0-3.8)	0.131% (0.000%-0.730%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.4.3.3 Barriers to connectivity (Operation)

The CO for roseate tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the roseate tern barriers to connectivity.

There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, like roseate tern, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. According to Bradbury et al. (2014) and Dierschke et al. (2016) roseate tern sensitivity to disturbance and displacement is 'low'. The array area is also located beyond the Rockabill SPA boundary. As such, it can be assumed that displacement and barrier effect impacts will be low for this species.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the barriers to connectivity attribute target of no significant increase, for Project Option 1 or Project Option 2.

5.4.4.3.4 Prey biomass available: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for roseate tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). The prey biomass available attribute of the COs for the Rockabill SPA common tern feature requires there to be a sufficient forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common tern.

The Developer has therefore undertaken an assessment of potential impacts on the roseate tern prey biomass available within Rockabill.

The Rockabill SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.13) for impacts on Roseate tern at the Rockabill SPA.

As detailed in the NWIS cSPA assessment, potential effects on key prey species are all found to be not significant.

Conclusion of AEoI:

It is concluded beyond reasonable scientific that effects on prey biomass availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to the prey biomass availability attribute target of no significant decline, for Project Option 1 or Project Option 2.

Summary of AEoI Conclusions for roseate tern at the Rockabill SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the roseate tern QI, with specific regard to population size, barrier to connectivity attributes and prey biomass availability, for Project Option 1 or Project Option 2.

5.4.4.4 Arctic tern

Arctic tern has been screened in for collision risks during the operational phase, to assess the potential for an AEoI from the proposed development alone. Arctic tern is also screened in for barrier effects and effects via impacts on prey sources during operation. There were no RFI directly related to the Arctic tern QI of Rockabill SPA. Therefore, key updates are in relation to the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.4.4 of the 2024 NIS.

The CO for Arctic tern feature of the Rockabill SPA is to maintain favourable conservation condition. Arctic tern have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for Arctic tern within the Rockabill SPA are as follows:

- Breeding population abundance: apparently occupied nests;
- Prey biomass available;
- Barriers to connectivity; and
- Disturbance at breeding site.

The array area is situated 0.2km from Rockabill SPA, which is within the MMF+1SD for Arctic tern (25.7+14.8km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Arctic tern will disperse throughout the bio-geographic region, during the non-breeding season. During the non-breeding bio-season terns migrate south and therefore very few birds are present only during their migration which will be insufficient to result in LSE. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

5.4.4.4.1 Mitigation

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in a >90% reduction in terns flying within the

rotor risk zone compared to an air draft of 22m. At 40m, this leaves just a 0.22% (Arctic tern) and 0.47% (common tern) probability that a bird is flying within the rotor swept zone, with similar reductions for Roseate tern. Consequently, the number of predicted collisions is extremely small for all tern species.

Similarly, the array area refinement process has increased the distance between the WTGs and Rockabill SPA. Although the benefits are not quantified in the assessment this refinement will reduce any potential barrier effects on terns from this colony should their foraging area overlap with the Proposed Development.

5.4.4.4.2 Breeding population abundance: Collision Risk (Operation)

Breeding Bio-season

The CO for Arctic tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for population size, the target for which no significant decline in the breeding population abundance, apparently occupied nests. The Developer has therefore undertaken an assessment of potential impacts on the Arctic tern breeding population abundance of the Rockabill as a result of collision risk.

The predicted collision mortality during the breeding bio-season is less than one (0.3) individual (CRM Appendix 18). Assuming 66% of Arctic tern are breeding adults (Appendix A18: Offshore and Intertidal Apportioning), the total number of breeding adults in the array impacted by collision is less than one (0.2) per annum during the migration-free breeding bio-season.

Provided 100% of these collisions are breeding birds from Rockabill SPA (Appendix A18: Offshore and Intertidal Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.3) breeding adults (Table A5.50). However, it should be noted that all Arctic terns bar one were recorded in the August DAS, which estimated an abundance of 210 flying Arctic terns. Given this abundance is an order of magnitude greater than the population of Rockabill (40 individuals), it is considered that these birds should not be apportioned at a rate of 100% to Rockabill SPA and that the majority of these birds will be terns migrating south from colonies to the north, or alternatively terns gathering in the NWIS cSPA from other east coast Irish colonies before migrating south. It is therefore considered as a worst case that all 40 breeding birds from Rockabill out of the 210 Arctic terns estimated to be present in the PFI are from Rockabill (i.e. the whole population). If this were the case a more appropriate apportionment would be 19%. Apportioning 19% of total collisions to the Rockabill breeding population would be <0.1 birds, resulting in just a 0.729% increase in baseline mortality.

There were no collision mortalities outside of the full breeding season.

Table A5.50: Seasonal collision mortalities during the operational phase for Arctic tern at Rockabill SPA (replaces Table 5.38 of the 2024 NIS).[2].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Full breeding	0.0 (0.0-0.4)	0.729% (0.000%-6.557%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.4.4.3 Barriers to connectivity (Operation)

The CO for Arctic tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47and Section 5.4.1.1.2). The barriers to connectivity attribute of the COs requires that the number, location, shape

[2] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

and area of barriers do not significantly impede access by the site population to the SPA or other ecologically important sites outside the SPA. This CO attribute relates specifically to the barriers themselves, rather than to species behaviour or population distribution. The Developer has therefore undertaken an assessment of potential impacts on the Arctic tern barriers to connectivity.

The presence of WTGs has the potential to create a barrier to the movement of flying seabirds, increasing energy expenditure by causing some species to detour around the OWF(s). There is potential for barrier effects to impact both migratory and resident birds. For most collision risk species, like common tern, the presence of WTGs does not deter them from entering the array area therefore these birds are unlikely to experience barrier effects. According to Bradbury et al. (2014) and Dierschke et al. (2016) common tern sensitivity to disturbance and displacement is 'low'. The array area is also located beyond the Rockabill SPA boundary. As such, it can be assumed that displacement and barrier effect impacts will be low for this species.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that barriers to connectivity during the operation phase will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the barriers to connectivity attribute target of no significant increase, for Project Option 1 or Project Option 2.

5.4.4.4.4 Prey biomass available: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for Arctic tern feature of the Rockabill SPA is to maintain favourable conservation condition. Favourable conservation conditions is defined by a number of attributed and targets (see Table A5.47 and Section 5.4.1.1.2). The prey biomass available attribute of the COs for the Rockabill SPA Arctic tern feature requires there to be a sufficient forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of common tern. The Developer has therefore undertaken an assessment of potential impacts on the Arctic tern prey biomass available within Rockabill.

The Rockabill SPA is located within the North West Irish Sea cSPA. Therefore, prey impacts assessed within the North West Irish Sea cSPA assessment should be referred to for impacts on Arctic tern at the Rockabill SPA (Section 5.4.2.15).

As detailed in the North West Irish Sea cSPA assessment, potential effects on key prey species are all found to be not significant.

Conclusion of AEoI:

It is concluded beyond reasonable scientific that effects on prey biomass availability (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to the prey biomass availability attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.4.4.5 Summary of AEoI Conclusions for Arctic tern at the Rockabill SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Rockabill SPA, in view of the site's COs to maintain the favourable conservation condition of the Arctic tern QI, with specific regard to population size, barrier to connectivity attributes and prey biomass availability, for Project Option 1 or Project Option 2.

5.4.4.5 Purple sandpiper

Purple sandpiper has been screened in for offshore disturbance and displacement during the construction, operation and decommissioning phases, and migratory collision risk during the operational phase, to assess the potential for an AEoI from the proposed development alone.

The CO for purple sandpiper feature of the Rockabill SPA is to maintain favourable conservation condition. Purple sandpiper has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from the proposed development. Purple sandpiper is also screened in for impacts

arising from the offshore and onshore elements of the proposed development. The CO attributes for purple sandpiper within the Rockabill SPA are as follows:

- Population trend; and
- Distribution.

5.4.4.5.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no changes to this section. Refer to Section 5.4.4.5.1. in the 2024 NIS.

5.4.4.5.2 Impacts Arising from the Offshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.4.5.2. in the 2024 NIS.

5.4.4.5.3 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.4.5.3. in the 2024 NIS.

Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no changes to this section. Refer to Section 5.4.4.5.3. in the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.4.4.5.3 in the 2024 NIS.

Conclusion

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

Therefore, it is concluded beyond reasonable scientific doubt, there is no potential for an AEoI to Rockabill SPA in view of the site's COs for the purple sandpiper QI in relation to disturbance and displacement effects as a result of both onshore and offshore elements of the proposed development during construction and decommissioning. Therefore, subject to natural change, the purple sandpiper QI will be maintained in the long term with respect to potential for disturbance and displacement arising from offshore activities.

5.4.4.6 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Rockabill SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.5 Rogerstown Estuary SPA

There are no changes to this section. Refer to Section 5.4.5 in the 2024 NIS.

5.4.5.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.5.1 in the 2024 NIS.

5.4.5.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.5.2 in the 2024 NIS.

5.4.5.2.1 Dust Deposition (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.5.2.1 in the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.4.5.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

The direct dust impacts are expected to be imperceptible at this site. As such, it is concluded beyond reasonable scientific doubt, the construction and decommissioning of the onshore elements of the proposed development (alone) will not have an AEoI on the wetland habitats utilised by the designated QIs of the Rogerstown SPA in view of the site's COs in relation to dust deposition arising from the onshore elements of the proposed development.

5.4.5.2.2 Surface water-run off of Suspended Sediment/Deposition (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.5.2.2 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

There are no other changes to this section. Refer to Section 5.4.5.2.2 in the 2024 NIS.

Conclusion

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

Considering mitigation measures, it is concluded beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have an AEoI on the wetland habitats utilised by the designated QIs of the Rogerstown SPA in view of the site's COs in relation to surface water run-off of suspended sediment/deposition arising from the onshore elements of the proposed development.

5.4.5.2.3 Accidental Pollution

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.5.2.3 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.5.2.3 in the 2024 NIS.

Conclusion

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

It is concluded beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have an AEoI on the habitats utilised by the designated QIs of the Rogerstown SPA in view of the site's COs in relation to accidental pollution arising from the onshore elements of the proposed development.

5.4.5.2.4 Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

There are no other changes to this section. Refer to Section 5.4.5.2.4 in the 2024 NIS.

Mitigation

However, there are no other changes to this section. Refer to Section 5.4.5.2.3 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

Visual disturbance and noise level from construction activity in relation to the distance between the works and site is not to be expected at this site. It can be concluded beyond reasonable scientific doubt that disturbance and displacement at the site during construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the Rogerstown Estuary SPA in view of the site's CO's with respect to the designated QIs.

5.4.5.3 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Rogerstown Estuary SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.6 Baldoyle Bay SPA

There are no changes to this section. Refer to Section 5.4.6 in the 2024 NIS.

5.4.6.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.6.1 in the 2024 NIS.

5.4.6.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.6.2 in the 2024 NIS.

5.4.6.2.1 Surface Water Run-off of Suspended Sediment/Deposition (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.6.2.1 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.6.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

The two nearest connected watercourse crossings upstream of the site do not involve in-stream works which will reduce the magnitude of any potential effect. With the implementation of the mitigation in the CEMP (Appendix A9) for suspended sediment, the conclusion can be reached beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the wetland habitats utilised by designated QIs of the Baldoyle Bay SPA, in view of the site's COs in relation to surface water run-off of suspended sediment/deposition arising from the onshore elements of the proposed development.

5.4.6.2.2 Accidental Pollution

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.6.2.2 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.6.2.2 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

Watercourse crossing methods at the Cuckoo Stream and Mayne River will not involve in-stream works.

Furthermore, removing the direct connection between stream works and the estuary works reduces the likelihood of such an event.. With the implementation of the mitigation in the CEMP (Appendix A9), the conclusion can be reached beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the QIs utilising Baldoyle Bay SPA, in view of the site's COs in relation to accidental pollution arising from the onshore elements of the proposed development.

5.4.6.2.3 Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.6.2.3 in the 2024 NIS.

Mitigation

However, there are no changes to this section. Refer to Section 5.4.6.2.3 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

Visual disturbance and noise level from construction activity in relation to the distance between the works and site is not to be expected at this site. With the implementation of the mitigation in the CEMP (Appendix A9), the conclusion can be reached beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the QIs utilising Baldoyle Bay SPA, in view of the site's COs in relation to disturbance and displacement arising from the onshore elements of the proposed development.

5.4.6.3 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Baldoyle Bay SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.7 North Bull Island SPA

There are no changes to this section. Refer to Section 5.4.7 in the 2024 NIS.

5.4.7.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.7.1 in the 2024 NIS.

5.4.7.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.7.2 in the 2024 NIS.

5.4.7.2.1 Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.7.2.1 in the 2024 NIS.

Mitigation

However, there are no changes to this section. Refer to Section 5.4.7.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

The implementation of the noise barriers, which also act as visual mitigation, in the CEMP for disturbance and displacement at the site during construction and decommissioning, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the QIs of North Bull SPA in view of the site's COs. It can similarly be concluded beyond reasonable scientific doubt that for QIs of North Bull Island SPA occurring outside of the SPA and utilising Malahide Estuary, that the implementation of the noise barriers, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI of the North Bull Island SPA.

5.4.8 River Nanny Estuary and Shore SPA

There are no changes to this section. Refer to Section 5.4.8 in the 2024 NIS.

5.4.8.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.8.1 in the 2024 NIS.

5.4.8.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.8.2 in the 2024 NIS.

Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.8.2.1 in the 2024 NIS.

Mitigation

There are no changes to this section. Refer to Section 5.4.8.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

It can be concluded beyond reasonable scientific doubt that the implementation of the noise barriers, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning and the available coastline and area of arable fields, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the QIs of River Nanny Estuary and Shore SPA in view of the site's COs.

5.4.8.3 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at River Nanny Estuary and Shore SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.9 South Dublin and River Tolka Estuary SPA

There are no changes to this section. Refer to Section 5.4.9 in the 2024 NIS.

5.4.9.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.9.1 in the 2024 NIS.

5.4.9.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.9.2 in the 2024 NIS.

Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.9.2.1 in the 2024 NIS.

Mitigation

However, there are no changes to this section. Refer to Section 5.4.9.2.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

The implementation of the noise barriers, which also act as visual mitigation, in the CEMP for disturbance and displacement at the site during construction and decommissioning, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on QIs of the South Dublin and River Tolka Estuary SPA in view of the site's COs. It can similarly be concluded beyond reasonable scientific doubt that for QIs of South Dublin and River Tolka Estuary SPA occurring outside of the SPA and utilising Malahide Estuary, that the implementation of the noise barriers, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI of the South Dublin and River Tolka Estuary SPA in view of the site's COs.

5.4.10 Skerries Islands SPA

The Skerries Islands SPA is comprised of Shenick's Island; St. Patrick's Island, Colt Island and an additional 200m seaward marine area surrounding the islands. The SPA is situated 9.3km from the array area and between 0.5km to 1.5km off the north coast of Co. Dublin. The SPA is located 6km from the nearest onshore development area at the landfall site. This SPA is of high ornithological importance for both breeding seabirds and wintering waterfowl.

This site supports an internationally important population of breeding cormorant and nationally important populations of shag and herring gull, in addition to an internationally important wintering population of Light- bellied Brent goose and four other nationally important wintering species (cormorant, herring gull, turnstone and purple sandpiper). Herring gull is the only species to have been considered within the offshore ornithological assessment presented here, as cormorant and shag have been screened out because they are not considered to be vulnerable to OWF impacts (Addendum to SISAA and response to RFI Section 8(b)ii). Light-bellied brent goose, purple sandpiper and turnstone have been assessed for migratory collision risk (See Section 5.4.31). This section also addresses the assessment of effects that arise from works associated with the onshore elements of the proposed development on all QIs.

5.4.10.1 Qualifying Interests and Conservation Objectives

The key change for this section is that the COs for Skerries Islands SPA have been updated by NPWS since the 2024 NIS and have therefore been updated in Table A5.51 below.

The following QIs of the Skerries Islands SPA are considered within this section:

Table A5.51: Qualifying Interests and Conservation Objectives of Skerries Islands SPA (replaces Table 5.44 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Herring gull [A184]; Light-bellied brent goose [A046]; Purple sandpiper [A148]; Turnstone [A169]; Cormorant [A017]; and Shag [A018].	The COs for Skerries Islands SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for the screened in feature of the SPA, in order for favourable conservation status to be achieved is when: • The long-term spa population trend is stable or increasing. (cormorant, shag, herring gull); • The productivity rate is sufficient to maintain or increase the population (cormorant, shag, herring gull); • The long-term winter population trend is stable or increasing. (light-bellied brent goose, purple sandpiper, turnstone, herring gull, cormorant);

Qualifying Interests Screened In	Conservation Objectives
	• There is sufficient availability of suitable nesting sites throughout the spa. (cormorant, shag, herring gull); • There is a sufficient number of locations and area of suitable habitat to support the population. (light-bellied brent goose, purple sandpiper, turnstone, herring gull, cormorant); • There is sufficient forage habitat and biomass to support the population. (all qualifying species); • Disturbance occurs at levels that do not significantly impact the achievement of targets. (all qualifying species); • Disturbance occurs at levels that do not significantly impact breeding populations. (cormorant, shag); • There is a sufficient number of locations and area of suitable roosting habitat. (light-bellied brent goose, purple sandpiper, turnstone, herring gull, cormorant); • There is a sufficient area of utilisable habitat in ecologically important sites outside the spa. (light-bellied brent goose, purple sandpiper, turnstone, herring gull, cormorant); and • Barriers do not significantly impact access to the spa or other ecologically important sites (all qualifying species).

5.4.10.2 Herring gull

Herring gull has been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.10.2 of the 2024 NIS.

The CO for herring gull feature of the Skerries SPA is to restore favourable conservation condition. Herring gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for herring gull within Skerries Islands SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

When considering impacts from the offshore elements of the proposed development, Herring gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 9.3km from Skerries Islands SPA, which is within the MMF+1SD for herring gull (58.8+26.8km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Herring gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk of herring gull from Skerries Islands SPA has been assessed for the full breeding bio-season (March – August) and the non-breeding bio-season (September – February), as defined by Furness (2015).

5.4.10.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.10.2.2 Breeding population size and winter population trend: Collision Risk (Operation)

The CO for herring gull feature of the Skerries SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.51 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for breeding population size and winter population trend, the target of which is that long term SPA population trends is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the herring gull population size of the Skerries as a result of collision risk.

The predicted collision mortality during the breeding bio-season is 16 (15.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 48% of these 16 individuals, are breeding adults and adult herring gull exhibit a sabbatical rate of 35% (Appendix A18: Offshore and Intertidal Apportioning), the total number of breeding adults in the array impacted by collision is four (4.4) per annum during the breeding bio-season.

Provided 0.3% of these collisions are breeding birds from Skerries Islands SPA (Appendix A18: Offshore and Intertidal Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adults per annum (Table A5.52).

Based on the latest count of 364 breeding adults and annual adult background mortality of 60 (60.4) individuals, the addition of almost zero breeding adult mortality would represent a 0.022% increase in baseline mortality during the breeding bio-season (Table A5.52).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is 26 (26.5) individuals. Provided 0.0% of the herring gulls within the array area are deemed to be breeding adults from the Skerries Islands SPA during non-breeding bio-season (Appendix A18: Offshore and Intertidal Apportioning), the consequent mortality of adult birds is less than one (<0.1) during the non-breeding bio-season (Table A5.52).

Based on the latest colony count the addition of less than one predicted breeding adult mortality would indicate an increase in baseline mortality of <0.001% during the non-breeding season (Table A5.52).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Skerries Islands SPA is less than one (<0.1) breeding adults per annum.

The annual predicted mortality of less than one breeding adult from the Skerries Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.022% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population (Table A5.52).

An annual predicted impact less than one breeding adult per annum can be considered a non-material contribution to the baseline mortality of this QI of Skerries Island SPA.

Table A5.52: Seasonal Collision Mortalities During the Operational Phase for Herring Gull at Skerries Islands SPA(replaces Table 5.45 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality (95% LCI - UCI)	% increase in baseline mortality (95% LCI - UCI)
Breeding	0.0 (0.0-0.1)	0.022% (0.000%-0.123%)
Non-breeding	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.1)	0.022% (0.000%-0.123%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Skerries Island SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the breeding population size attribute target of long term SPA population trend being stable or increasing, for Project Option 1 or Project Option 2.

5.4.10.2.3 Forage spatial distribution, extent, abundance and availability: Indirect Effects via Impacts on Prey (Construction, Operation and Decommissioning)

The CO for herring gull feature of the Skerries SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.51 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the NWIS cSPA herring gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of herring gull. The Developer has therefore undertaken an assessment of potential impacts on the herring gull spatial distribution within the Skerries as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the herring gull forage spatial distribution, extent, abundance and availability within the Skerries.

The Skerries Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.14) for impacts on common tern at the Skerries Island SPA.

As detailed in the NWIS cSPA assessment, herring gull are generalist and opportunistic feeders and are adaptable to change in prey species abundance and availability, and potential effects on key prey species are all found to be not significant.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that effects on forage spatial distribution, extent, abundance and availability (winter and breeding) (i.e. indirect effects via impacts on prey) during the construction, operation and decommissioning phases will not result in an AEoI of the NWIS cSPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target requiring a sufficient number of locations, suitable habitat area, and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.10.2.4 Summary of AEoI Conclusions for herring gull at the Skerries Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Skerries Islands SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.10.3 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.10.3 in the 2024 NIS.

5.4.10.3.1 Disturbance and Displacement (Construction and Decommissioning)

There are no changes to this section. Refer to Section 5.4.10.3.1 in the 2024 NIS.

Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.10.3.1 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

It can be concluded that the implementation of the noise barriers, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning, and the available coastline and area of arable fields, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the

proposed development (alone) will not have AEoI on the QIs of the Skerries Islands SPA in view of the site's COs.

5.4.10.4 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Skerries Islands SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.11 Ireland's Eye SPA

Ireland's Eye is a relatively small (c. 24ha) uninhabited island, located 25.1km from the array area and 1.5km north of Howth in Co. Dublin. The SPA boundary encompasses near vertical cliffs along the northern and eastern sides of the Island, stacks, a grassy islet (Thulla) to the south and a sandy beach on the western shore. The SPA boundary extends seaward by 200m to the west of the island and by 500m in the north and east. Ireland's Eye is of high ornithological importance with five designated (nationally important) populations, namely herring gull, kittiwake, guillemot, razorbill, and cormorant, which has been screened out. All of these designated species (except for cormorant) have been considered in the ornithology assessments for offshore elements of the proposed development presented here.

5.4.11.1 Qualifying Interests and Conservation Objectives

The key change for this section is the COs for Ireland's Eye SPA have been updated by NPWS since the 2024 NIS and as such have been updated in Table A5.53 below.

The following QIs of the Ireland's Eye SPA are considered within this section:

Table A5.53: Qualifying interests and Conservation Objectives of the Ireland's Eye SPA (replaces Table 5.46 in the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Guillemot [A199]; Razorbill [A200]; Kittiwake [A188]; and Herring gull [A184].	The COs for Ireland's Eye SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for those screened in features of the SPA, in order for favourable conservation status to be achieved is when: • The long-term SPA population trend is stable or increasing (herring gull, kittiwake); • The long term SPA population trend is stable or increasing: Individual (IND) (guillemot and razorbill); • The productivity rate is sufficient to maintain a stable or increasing population; • There is sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population; • There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on breeding population; and • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA.

5.4.11.2 Guillemot

The key change for this section is guillemot is now being assessed for potential effects via impacts on prey following the updates to the COs by NPWS in 2024. As such an additional section has been added here. In addition, the displacement rates presented have been updated in response to RFI Section 8

(c)i. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.11.2 of the 2024 NIS.

The CO for the guillemot feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Guillemot has been screened in for the construction, operational and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 5.4.1.3.1 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 25.1km from the Ireland's Eye SPA which is within Mean Max Foraging range (MMF) plus one standard deviation (+1SD) for guillemot (73.2+80.5km) (Woodward et al, 2019) and therefore has been assessed for the breeding bio-season. Guillemot will also disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Ireland's Eye SPA are likely to be present within the array area; therefore, guillemot have also been assessed for the non-breeding bio-season.

Two approaches to breeding season definitions were assessed for guillemot because site-specific DAS data suggested that the Furness approach to bio-seasons is not the most ecologically relevant. Though Furness (2015) suggest a breeding season of March to July, project-specific DAS data and available literature (e.g., Dunn et al. 2020) indicate that birds at the early and late stages of this period are not under the same energy constraints as in the core breeding season, and therefore a shorter season not incorporating the early and late stages of the season is considered more appropriate. Additionally, birds present in July are highly likely to be a result of post-breeding dispersal (as opposed to being breeding birds) based on available evidence and site-specific DAS data. Therefore, a more ecologically relevant breeding season of April to June has been used. Consequently, two approaches are laid out in the section below; a 'Site Specific Approach' using the breeding seasons evidenced using site-specific data, and a 'Generic Approach' using the Furness (2015) bio-season definitions. A full justification of this approach is provided in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline.

Guillemot have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The relevant CO attribute for guillemot within Ireland's Eye SPA is breeding population size.

5.4.11.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. The Developer has substantially reduced the area of overlap between the Proposed Development and the site by reducing the original MAC boundary of 195.9 km² (representing 8.4% of the NWIS cSPA or 15.2% when a displacement buffer of 2 km is applied) to the array area coving 88.5 km2 in the Planning Application (which equates to 3.8% of the NWIS cSPA or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi)) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. Furthermore, removal of the northern sections of the array area has eliminated overlap with high guillemot density areas ('Hotspots'; see Appendix A14 Offshore and Intertidal Ornithology Technical Baseline) during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.11.2.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the guillemot feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section

assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of Ireland's Eye as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.54. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.4 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the guillemot QI of the Ireland's Eye SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.54: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Guillemot at Ireland's Eye SPA (replaces Table 5.47 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Breeding	16.0 (11.6-20.7)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.2 (0.2-0.3)	0.013% (0.009%-0.017%)	0.047% (0.034%-0.060%)	0.078% (0.056%-0.101%)
Non-breeding	163.7 (96.2-243.0)	0.4 (0.2-0.6)	0.5 (0.3-0.7)	1.5 (0.9-2.2)	0.133% (0.078%-0.197%)	0.159% (0.094%-0.237%)	0.478% (0.281%-0.710%)
Annual Total	179.6 (107.8-263.7)	0.4 (0.3-0.7)	0.6 (0.4-0.9)	1.7 (1.0-2.5)	0.146% (0.087%-0.214%)	0.206% (0.127%-0.297%)	0.556% (0.337%-0.811%)
Furness Approach to Bio-seasons							
Breeding	263.9 (134.9-419.2)	0.7 (0.3-1.0)	2.4 (1.2-3.8)	4.0 (2.0-6.3)	0.214% (0.109%-0.340%)	0.771% (0.394%-1.224%)	1.285% (0.657%-2.041%)
Non-breeding	145.7 (87.0-206.0)	0.4 (0.2-0.5)	0.4 (0.3-0.6)	1.3 (0.8-1.9)	0.118% (0.071%-0.167%)	0.142% (0.085%-0.201%)	0.426% (0.254%-0.602%)
Annual Total	409.6 (221.9-625.2)	1.0 (0.6-1.6)	2.8 (1.5-4.4)	5.3 (2.8-8.1)	0.332% (0.180%-0.507%)	0.913% (0.479%-1.425%)	1.710% (0.911%-2.642%)

5.4.11.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the guillemot feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of Ireland's Eye as a result of disturbance and displacement.

During the breeding bio-season, 988 guillemot are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the PFI is 49% (Appendix A18: Offshore and Intertidal Apportioning), the total number of breeding adults in the PFI at risk of displacement is 484 during the full breeding bio-season.

Of these 484 breeding adults, 3.3% are predicted to be breeding birds from Ireland's Eye SPA (Appendix A18: Offshore and Intertidal Apportioning). Therefore, 16 (16.0) breeding adults at risk of displacement are attributed to Ireland's Eye SPA during the breeding bio-season (Table A5.55). Applying a displacement rate of 50% and a mortality rate of 1%, the estimated consequent mortality is less than one (0.1) breeding adult. See Table A5.55 for the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3 to 5% mortality). A breeding displacement matrix for predicted impacts apportioned to the guillemot QI of Ireland's Eye SPA is presented within Table A5.56.

Considering the latest colony count of 5,051 individuals and an annual background mortality of 308 adults, this would represent a 0.026% increase in baseline mortality during the breeding bio-season.

During the non-breeding bio-season 21,074 guillemot are estimated to occur in the PFI and 2km buffer. Assuming that 0.8% of these guillemot within the PFI plus 2km buffer are deemed to be breeding adults from Ireland's Eye SPA during the non-breeding bio-season (Appendix A18: Offshore and Intertidal Apportioning), the total abundance of non-breeding adults estimated to be displaced from the array plus 2km buffer is 164 (163.7) (Table A5.55).

Provided, 50% displacement and 1% mortality have been applied, the total predicted consequent mortality from being displaced is estimated as one (0.8) individual during the non-breeding bio-season. Table A5.55 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 3% mortality). A non-breeding displacement matrix for predicted impacts apportioned to the guillemot QI of Ireland's Eye SPA is presented within Table A5.57.

As a result the estimated increase in the baseline mortality during the non-breeding bio-season relative to the latest count of 5,051 breeding adults and annual background mortality of 308 (308.1) individuals would be 0.266%.

Throughout all bio-seasons, the number of guillemot estimated to occur in the PFI plus a 2km buffer is 22,061 individuals, with 180 (179.6) of these being breeding adults from the Ireland's Eye SPA. The total predicted displacement consequent mortality throughout the operation of the proposed development is one (0.9) breeding adult per annum across all bio-seasons. Table 7.30 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 5% mortality).

The predicted mortality of one breeding adult from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.292% when considering the latest colony count (5,051 individuals) and a background mortality of 308 (308.1) individuals. This level of impact would be indistinguishable from natural fluctuations in the population. However, as the increase in baseline mortality exceeds 1% for the upper NatureScot scenario, PVA was carried out the results of which are in presented in Table A5.58.

Across all assessment scenarios, the Ireland's Eye population shows no relative reduction in population growth rate greater than 0.233% when compared with unimpacted populations. This would not cause the population trend to deviate from its current trajectory.

Table A5.55: Range-Based Displacement Mortalities During the Operational Phase for Guillemot at Ireland's Eye SPA (replaces Table 5.49 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Breeding	16.0 (11.6-20.7)	0.1 (0.1-0.1)	0.3 (0.2-0.4)	0.5 (0.3-0.6)	0.026% (0.019%-0.034%)	0.093% (0.068%-0.121%)	0.155% (0.113%-0.201%)
Non-breeding	163.7 (96.2-243.0)	0.8 (0.5-1.2)	1.0 (0.6-1.5)	2.9 (1.7-4.4)	0.266% (0.156%-0.394%)	0.319% (0.187%-0.473%)	0.956% (0.562%-1.420%)
Annual Total	179.6 (107.8-263.7)	0.9 (0.5-1.3)	1.3 (0.8-1.8)	3.4 (2.1-5.0)	0.292% (0.175%-0.428%)	0.412% (0.255%-0.594%)	1.112% (0.675%-1.621%)
Furness Approach to Bio-seasons							
Breeding	263.9 (134.9-419.2)	1.3 (0.7-2.1)	4.7 (2.4-7.5)	7.9 (4.0-12.6)	0.428% (0.219%-0.680%)	1.542% (0.788%-2.449%)	2.569% (1.314%-4.082%)
Non-breeding	145.7 (87.0-206.0)	0.7 (0.4-1.0)	0.9 (0.5-1.2)	2.6 (1.6-3.7)	0.237% (0.141%-0.334%)	0.284% (0.169%-0.401%)	0.851% (0.508%-1.203%)
Annual Total	409.6 (221.9-625.2)	2.0 (1.1-3.1)	5.6 (3.0-8.8)	10.5 (5.6-16.3)	0.665% (0.360%-1.015%)	1.825% (0.958%-2.850%)	3.421% (1.822%-5.285%)

Table A5.56: Mean Breeding Abundance of Guillemot Apportioned to Ireland's Eye SPA During Operational Phase Displacement Matrix (PFI Plus 2km Buffer) – site-specific approach (replaces Table 5.51 of the 2024 NIS).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	1	1	1	1	1	1	2
20	0	0	0	0	0	1	1	1	2	2	2	3	3	3
30	0	0	0	0	0	1	1	2	2	3	3	4	4	5
40	0	0	0	0	1	1	2	3	3	4	4	5	6	6
50	0	0	0	0	1	2	2	3	4	5	6	6	7	8
60	0	0	0	0	1	2	3	4	5	6	7	8	9	10
70	0	0	0	1	1	2	3	4	6	7	8	9	10	11
80	0	0	0	1	1	3	4	5	6	8	9	10	11	13
90	0	0	0	1	1	3	4	6	7	9	10	11	13	14
100	0	0	0	1	2	3	5	6	8	10	11	13	14	16

Table A5.57: Mean Non-breeding Abundance of Guillemot Apportioned to Ireland's Eye SPA During Operational Phase Displacement Matrix (PFI Plus 2km Buffer) – site-specific approach.

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	1	2	3	5	7	8	10	11	13	15	16
20	0	1	1	2	3	7	10	13	16	20	23	26	29	33
30	0	1	1	2	5	10	15	20	25	29	34	39	44	49
40	1	1	2	3	7	13	20	26	33	39	46	52	59	65
50	1	2	2	4	8	16	25	33	41	49	57	65	74	82
60	1	2	3	5	10	20	29	39	49	59	69	79	88	98
70	1	2	3	6	11	23	34	46	57	69	80	92	103	115
80	1	3	4	7	13	26	39	52	65	79	92	105	118	131
90	1	3	4	7	15	29	44	59	74	88	103	118	133	147
100	2	3	5	8	16	33	49	65	82	98	115	131	147	164

Table A5.58: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Guillemot at Ireland's Eye SPA.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.995	0.015	0.542
Guidance (60%,1% and 3%)	1.000	0.991	0.025	0.928
Guidance (60%,3% and 5%)	0.999	0.973	0.074	2.708
Furness Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.984	0.045	1.649
Guidance (60%,1% and 3%)	0.999	0.956	0.125	4.431
Guidance (60%,3% and 5%)	0.998	0.920	0.233	8.041

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.2.4 Summary of AEoI Conclusions for guillemot at the Ireland's Eye SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Skerries Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to population size attributes, for Project Option 1 or Project Option 2.

5.4.11.3 Razorbill

The key change for this section is razorbill is now being assessed for potential effects via impacts on prey following the updates to the COs by NPWS in 2024. As such an additional section has been added here. In addition, the displacement rates presented have been updated in response to RFI Section 8 (c)i. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.11.3 of the 2024 NIS.

The CO for the razorbill feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Razorbill has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 25.1km from the Ireland's Eye SPA which is within MMF+1SD for razorbill (88.7+75.9km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Razorbill will also disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Ireland's Eye SPA are likely to be present within the array area.

Therefore, razorbill have been screened for the post-breeding migration bio-season (August to October), the return migration bio-season (January to March), and the migration-free winter bio-season (November to December) as defined by Furness (2015). It should be noted that two alternative approaches to defining razorbill bio-seasons have been applied. This arises from unusually high numbers recorded in the July 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that razorbill don't continue to breed into July; rather, applying the July 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable outputs. Further detail is provided in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline.

Razorbill have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The relevant CO attribute for Razorbill within Ireland's Eye SPA is breeding population size.

5.4.11.3.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in particular on species sensitive to displacement, through a substantial array area reduction. The Developer has substantially reduced the area of overlap between the Proposed Development and the site by reducing the original MAC boundary of 195.9 km² (representing 8.4% of the NWIS cSPA or 15.2% when a displacement buffer of 2 km is applied) to the array area coving 88.5 km2 in the Planning Application (which equates to 3.8% of the NWIS cSPA or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi)) to provide additional mitigation.

The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the cSPA overlapped by the proposed development. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.11.3.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the razorbill feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of Ireland's Eye as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.59. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 27.4 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the razorbill QI of the Ireland's Eye SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.59: Displacement Mortalities During the Construction and Decommissioning Phases for Razorbill at Ireland's Eye SPA (replaces Table 5.52 of the 2024 NIS)[3]

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum) (95% LCI -UCI)			% increase in baseline (95% LCI -UCI)		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Autumn Migration	12.2 (5.0-20.2)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.017% (0.007%-0.028%)	0.020% (0.008%-0.034%)	0.061% (0.025%-0.102%)
Breeding	7.5 (4.1-11.1)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.1 (0.1-0.2)	0.011% (0.006%-0.015%)	0.038% (0.021%-0.056%)	0.063% (0.034%-0.093%)
Migration-free winter	5.4 (2.1-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.008% (0.003%-0.012%)	0.009% (0.003%-0.015%)	0.027% (0.010%-0.044%)
Spring Migration	2.3 (1.7-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.002%-0.004%)	0.004% (0.003%-0.005%)	0.011% (0.008%-0.015%)
Annual Total	27.4 (12.8-43.1)	0.1 (0.0-0.1)	0.1 (0.1-0.2)	0.3 (0.1-0.5)	0.038% (0.018%-0.060%)	0.071% (0.035%-0.109%)	0.163% (0.078%-0.254%)
Furness Approach to Bio-seasons							
Autumn Migration	12.2 (5.0-20.2)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.017% (0.007%-0.028%)	0.020% (0.008%-0.034%)	0.061% (0.025%-0.102%)
Breeding	47.7 (18.0-76.4)	0.1 (0.0-0.2)	0.4 (0.2-0.7)	0.7 (0.3-1.1)	0.067% (0.025%-0.107%)	0.240% (0.090%-0.384%)	0.400% (0.150%-0.640%)

[3] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum) (95% LCI -UCI)			% increase in baseline (95% LCI -UCI)		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Migration-free winter	5.4 (2.1-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.008% (0.003%-0.012%)	0.009% (0.003%-0.015%)	0.027% (0.010%-0.044%)
Spring Migration	2.3 (1.7-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.002%-0.004%)	0.004% (0.003%-0.005%)	0.011% (0.008%-0.015%)
Annual Total	67.6 (26.7-108.5)	0.2 (0.1-0.3)	0.5 (0.2-0.8)	0.9 (0.3-1.4)	0.094% (0.037%-0.151%)	0.273% (0.105%-0.438%)	0.500% (0.194%-0.801%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.3.3 Breeding population size: Displacement and Disturbance (Operation)

The CO for the razorbill feature of the Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of Ireland's Eye as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 has a greatest potential for adverse effects on disturbance and displacement than Project Option 2 for razorbill from operation and maintenance activities.

During the breeding bio-season, 175 razorbills are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 50% (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array at risk of displacement is 88 during the full breeding bio-season.

Of these 88 breeding adults, 8.6% are predicted to be breeding birds from Ireland's Eye SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, eight (7.5) breeding adults at risk of displacement are attributed to Ireland's Eye SPA during the breeding bio-season (Table A5.60). The consequent mortality is estimated is less than one (<0.1) breeding adult, provided a displacement rate of 50% and a mortality rate of 1% has been applied. Table A5.60 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3 to 5% mortality).

Based on the latest colony count of 1,706 individuals and an annual background mortality of 179 (179.1) adults, the baseline mortality would increase by 0.015% during the breeding bio-season.

The mean-peak number of razorbill estimated to occur in the array area plus the 2km buffer during the autumn migration bio-season is 4,896 individuals, 915 individuals during the spring migration and 1,225 individuals in the migration- free winter bio-season.

Assuming that 0.3% of these razorbill within the array area are deemed to be breeding adults from Ireland's Eye SPA during the migration bio-seasons and 0.4% during the migration-free winter bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer is 12 (12.2) during the autumn migration bio-season, two (2.3) during the spring migration and five (5.4) during the migration free winter bio-season (Table A5.60).

Provided, 50% displacement and 1% mortality have been applied, the total predicted consequent mortality from being displaced is estimated at less than one individual during the autumn migration bio-season, the spring migration, and the migration-free winter bio-season (0.1; <0.1 and <0.1 individuals, respectively). Table A5.60 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3 to 5% mortality).

The consequent estimated mortality of less than one individual equates to an increase in baseline mortality of 0.034% during the autumn migration bio-season, 0.006% during the spring migration and 0.015% during the migration-free winter bio-season based on the latest colony count of 1,706 individuals and an annual background mortality of 179 (179.1) adults.

Throughout all bio-seasons, the number of razorbill estimated to occur in the PFI plus a 2km buffer is 7,211 individuals, with 27 (27.4) of these being breeding adults from the Ireland's Eye SPA.

The total predicted displacement consequent mortality throughout the operational phase of the proposed development is less than one (0.1) breeding adult per annum across all bio-seasons. Table A5.60 presents the

displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1 to 5% mortality).. An annual displacement matrix for predicted impacts apportioned to the razorbill QI of Ireland's Eye SPA is presented within Table A5.62.

The predicted mortality of less than one breeding adult from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.077% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

Table A5.60: Range-Based Displacement Mortalities During the Operational Phase for Razorbill at Ireland's Eye SPA (replaces Table 5.53 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum) (95% LCI -UCI)			% increase in baseline (95% LCI -UCI)		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Autumn Migration	12.2 (5.0-20.2)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.034% (0.014%-0.056%)	0.041% (0.017%-0.068%)	0.123% (0.050%-0.203%)
Breeding	7.5 (4.1-11.1)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.2 (0.1-0.3)	0.021% (0.011%-0.031%)	0.076% (0.041%-0.111%)	0.126% (0.068%-0.185%)
Migration-free winter	5.4 (2.1-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.015% (0.006%-0.025%)	0.018% (0.007%-0.030%)	0.054% (0.021%-0.089%)
Spring Migration	2.3 (1.7-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.006% (0.005%-0.008%)	0.008% (0.006%-0.010%)	0.023% (0.017%-0.030%)
Annual Total	27.4 (12.8-43.1)	0.1 (0.1-0.2)	0.3 (0.1-0.4)	0.6 (0.3-0.9)	0.077% (0.036%-0.120%)	0.142% (0.070%-0.218%)	0.326% (0.156%-0.507%)
Furness Approach to Bio-seasons							
Autumn Migration	12.2 (5.0-20.2)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.034% (0.014%-0.056%)	0.041% (0.017%-0.068%)	0.123% (0.050%-0.203%)
Breeding	47.7 (18.0-76.4)	0.2 (0.1-0.4)	0.9 (0.3-1.4)	1.4 (0.5-2.3)	0.133% (0.050%-0.213%)	0.479% (0.180%-0.768%)	0.799% (0.301%-1.280%)
Migration-free winter	5.4 (2.1-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.015% (0.006%-0.025%)	0.018% (0.007%-0.030%)	0.054% (0.021%-0.089%)
Spring Migration	2.3 (1.7-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.006% (0.005%-0.008%)	0.008% (0.006%-0.010%)	0.023% (0.017%-0.030%)
Annual Total	67.6 (26.7-108.5)	0.3 (0.1-0.5)	1.0 (0.4-1.6)	1.8 (0.7-2.9)	0.189% (0.074%-0.303%)	0.546% (0.210%-0.875%)	0.999% (0.388%-1.602%)

Table A5.61: Mean Breeding Abundance of Razorbill Apportioned to Ireland's Eye SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.54 of the 2024 NIS).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	1	1	1	1
20	0	0	0	0	0	0	0	1	1	1	1	1	1	2
30	0	0	0	0	0	0	1	1	1	1	2	2	2	2
40	0	0	0	0	0	1	1	1	2	2	2	2	3	3
50	0	0	0	0	0	1	1	2	2	2	3	3	3	4
60	0	0	0	0	0	1	1	2	2	3	3	4	4	5
70	0	0	0	0	1	1	2	2	3	3	4	4	5	5
80	0	0	0	0	1	1	2	2	3	4	4	5	5	6
90	0	0	0	0	1	1	2	3	3	4	5	5	6	7
100	0	0	0	0	1	2	2	3	4	5	5	6	7	8

Table A5.62: Mean Total Non-breeding Abundance of Razorbill Apportioned to Ireland's Eye SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	1	1	1	1	1	2	2	2
20	0	0	0	0	0	1	1	2	2	2	3	3	4	4
30	0	0	0	0	1	1	2	2	3	4	4	5	5	6
40	0	0	0	0	1	2	2	3	4	5	6	6	7	8
50	0	0	0	1	1	2	3	4	5	6	7	8	9	10
60	0	0	0	1	1	2	4	5	6	7	8	10	11	12
70	0	0	0	1	1	3	4	6	7	8	10	11	13	14
80	0	0	0	1	2	3	5	6	8	10	11	13	14	16
90	0	0	1	1	2	4	5	7	9	11	13	14	16	18
100	0	0	1	1	2	4	6	8	10	12	14	16	18	20

5.4.11.3.4 Summary of AEoI Conclusions for guillemot at the Ireland's Eye SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to population size attributes, for Project Option 1 or Project Option 2.

5.4.11.4 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c)ii issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is considered a direct replacement of the text within Section 5.4.11.4 of the 2024 NIS.

The CO for the kittiwake feature of the Ireland's Eye SPA is to restore favourable conservation condition. Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 25.1km from Ireland's Eye SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Ireland's Eye SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Ireland's Eye SPA is breeding population size.

5.4.11.4.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied). Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation for guillemot. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.11.4.2 Breeding population size: Disturbance and Displacement (Construction and decommissioning)

The CO for the kittiwake feature of the Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Ireland's Eye as a result of disturbance and displacement during construction and decommissioning.

The Developer's position is that there is inconsistent evidence to support the routine displacement of kittiwake by OWFs (see Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis); however, this assessment has been undertaken in response to RFI Section 8(c)ii from An Bord Pleanála.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.63. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total <0.1 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Ireland's Eye SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.63: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Ireland's Eye SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	0.8 (0.3-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	9.6 (4.7-15.8)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.012% (0.006%-0.021%)	0.037% (0.018%-0.062%)
Spring Migration	0.7 (0.3-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Annual Total	11.1 (5.3-18.5)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.014% (0.007%-0.024%)	0.043% (0.021%-0.072%)
Full breeding					
Autumn Migration	0.4 (0.2-0.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	14.6 (6.8-22.7)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.019% (0.009%-0.030%)	0.057% (0.027%-0.089%)
Spring Migration	0.6 (0.2-1.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.002% (0.001%-0.005%)
Annual Total	15.5 (7.3-24.6)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.020% (0.009%-0.032%)	0.061% (0.028%-0.096%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.4.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Ireland's Eye as a result of disturbance and displacement.

The Developer's position is that there is inconsistent evidence to support the routine displacement of kittiwake by OWFs (see Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis); however, this assessment has been undertaken in response to RFI Section 8(c)ii from An Bord Pleanála.

As determined in Table A5.9, Project Option 1 has a greatest potential for adverse effects on disturbance and displacement than Project Option 2 for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 during the full breeding bio-season.

Of these 281 breeding adults, 3.4% are predicted to be breeding birds from Ireland's Eye SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, ten (9.6) breeding adults at risk of displacement are attributed to Ireland's Eye SPA during the breeding bio-season (Table A5.64). Provided a displacement rate of 30% and a mortality rate of 1 to 3% has been applied the consequent mortality is estimated is between less than one (<0.1) and less than one (0.1) breeding adults.

Based on the latest colony count of 788 individuals and an annual background mortality of 115 (115.0) adults, this would represent a 0.025% to 0.075% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.1% of these kittiwake within the array area plus 2km buffer are deemed to be breeding adults from Ireland's Eye SPA during the autumn bio-seasons and 0.11% during the spring migration bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer is one (0.8) during the autumn migration bio-season and one (0.7) during the spring migration (Table A5.64).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individuals during the autumn migration and the spring migration bio-season, (<0.1 and <0.1individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% to 0.006% during the autumn migration bio-season and 0.002% to 0.005% during the spring migration based on the latest colony count of 788 individuals and an annual background mortality of 115 (115.0) adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with 11 (1.1) of these being breeding adults from the Ireland's Eye SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is between less than one (<0.1) and less than one (0.1) breeding adult per annum across all bio-seasons.

The predicted mortality of less than one in baseline mortality of 0.029% to 0.086% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.64: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Ireland's Eye SPA [4].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	0.8 (0.3-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.004%)	0.006% (0.003%-0.011%)
Breeding	9.6 (4.7-15.8)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.025% (0.012%-0.041%)	0.075% (0.037%-0.123%)
Spring Migration	0.7 (0.3-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.003%-0.010%)
Annual Total	11.1 (5.3-18.5)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.029% (0.014%-0.048%)	0.086% (0.042%-0.145%)
Full breeding					
Autumn Migration	0.4 (0.2-0.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.006%)
Breeding	14.6 (6.8-22.7)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.038% (0.018%-0.059%)	0.114% (0.054%-0.177%)
Spring Migration	0.6 (0.2-1.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.009%)
Annual Total	15.5 (7.3-24.6)	0.1 (0.0-0.1)	0.1 (0.1-0.2)	0.040% (0.019%-0.064%)	0.121% (0.057%-0.192%)

[4] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.4.4 Breeding population size: Collision Risk (Operation)

The CO for the kittiwake feature of the Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Ireland's Eye as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collison Risk Modelling Assessment). Assuming 47% of these five individuals are adult (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the PFI impacted by collision is two (2.3) per annum during the migration-free breeding bio-season.

Provided 3.4% of these collisions are breeding birds from Ireland's Eye SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.1) breeding adult (Table A5.65).

Based on the latest colony count of 788 breeding adults and annual background mortality of 115 (115.0) individuals, the addition of less than one predicted breeding adult mortalities would represent a 0.069% increase in baseline mortality during the migration-free breeding bio-season (Table A5.65).

The predicted collision mortality as a result of the operational phase are six (6.4) and seven (6.5) individuals during the autumn migration bio-season and the spring migration, respectively Provided 0.1% of the kittiwake within the array area are deemed to be breeding adults from the Ireland's Eye SPA during the migration bio- seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is less than one (<0.1) during the autumn and spring migration bio- seasons.

Based on the latest count of 788 breeding adults and annual background mortality of 115 (115.0) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.005% and a 0.006% increase in baseline mortality during the autumn migration bio-season and the spring migration, respectively.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Ireland's Eye SPA is less than one (0.1) breeding adult per annum (Table A5.65).

The annual predicted mortality of less than one breeding adults from the Ireland's Eye SPA across all bio-seasons indicates an increase in baseline mortality of 0.080% when considering the latest colony count.

Table A5.65:Seasonal Collision Mortalities during the Operational Phase for kittiwake at Ireland's Eye SPA (replaces Table 5.55 of the 2024 NIS)[5].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.0)	0.005% (0.000%-0.019%)
Breeding	0.1 (0.0-0.4)	0.069% (0.000%-0.376%)
Spring Migration	0.0 (0.0-0.0)	0.006% (0.000%-0.025%)

[5] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Annual Total	0.1 (0.0-0.5)	0.080% (0.000%-0.420%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.009%)
Breeding	0.2 (0.0-0.8)	0.135% (0.000%-0.671%)
Spring Migration	0.0 (0.0-0.0)	0.004% (0.000%-0.017%)
Annual Total	0.2 (0.0-0.8)	0.142% (0.000%-0.698%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.4.5 Summary of AEoI Conclusions for kittiwake at the Ireland's Eye SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to population size attribute, for Project Option 1 or Project Option 2.

5.4.11.5 Herring gull

Herring gull has been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.11.5 of the 2024 NIS.

The CO for the herring feature of the Ireland's Eye SPA is to restore favourable conservation condition. Herring gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 25.1km from Ireland's Eye SPA, which is within the MMF+1SD for herring gull (58.8+26.8km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Herring gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area plus 2km buffer and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk of herring gull from Ireland's Eye SPA has been assessed for the full breeding bio-season (March – August) and the non- breeding bio-season (September – February) as defined by Furness (2015).

Herring gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attribute for herring gull within Skerries Islands SPA is breeding population size.

5.4.11.5.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.11.5.2 Breeding population size: Collision Risk (Operation)

The CO for the herring feature of the Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.53 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the herring gull breeding population size of Ireland's Eye as a result of collision risk.

The predicted collision mortality during the breeding bio-season is 16 (15.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 48% of these 16 individuals are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) and adult herring gull exhibit a sabbatical rate of 35% (meaning 35% of adults will not be breeding in any given year), the total number of breeding adults in the array impacted by collision is four (4.4) per annum during the full breeding bio-season.

Provided 2.9% of these collisions are breeding birds from Ireland's Eye SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.1) breeding adults (Table A5.66).

Based on the latest colony count of 1,394 breeding adults and annual adult background mortality of 231 (231.4) individuals, the addition of less than one breeding adult mortality would represent a 0.055% increase in baseline mortality during the breeding bio-season (Table A5.66).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is 40 (39.7) individuals, provided 0.3% of the herring gulls within the array area are deemed to be breeding adults from Ireland's Eye SPA during non-breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is less than one (0.1) during the non-breeding bio- season (Table A5.66).

Based on the latest colony of breeding adults the addition of less than one predicted breeding adult mortality would indicate an increase in baseline mortality of 0.039% during the non-breeding season (Table A5.66).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Ireland's Eye SPA is less than one (0.2) breeding adults per annum (Table A5.66).

The annual predicted mortality of less than one breeding adults from Ireland's Eye SPA across all bio-seasons indicates an increase in baseline mortality of 0.094% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population (Table A5.66).

Table A5.66: Seasonal Collision Mortalities During the Operational Phase for Herring gull at Ireland's Eye SPA (replaces Table 5.56 of the 2024 NIS [6].

Bio-season	Seasonal Predicted Collision Mortality (95% LCI - UCI)	% increase in baseline (95% LCI - UCI)
Breeding	0.1 (0.0-0.7)	0.055% (0.000%-0.310%)
Non-breeding	0.1 (0.0-0.3)	0.039% (0.001%-0.150%)
Annual Total	0.2 (0.0-1.1)	0.094% (0.001%-0.459%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.11.5.3 Summary of AEoI Conclusions for kittiwake at the Ireland's Eye SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Ireland's Eye SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to population size attribute, for Project Option 1 or Project Option 2.

5.4.12 Howth Head Coast SPA

Howth Head is a rocky headland situated 27.1km from the array area, on the northern side of Dublin Bay. The SPA covers cliffs ranging from 60m to 90m high that extend east from the nose of Howth to the tip of the Bailey Lighthouse peninsula. The SPA is of high ornithological importance as it supports a nationally important population of kittiwake, alongside an assemblage population comprised of a further seven seabird species including herring gull. The kittiwake population at Howth Head Coast SPA has been considered in the ornithology assessment presented here for impacts arising from the offshore elements of the proposed development.

5.4.12.1 Qualifying Interests and Conservation Objectives

The key change for this section is the COs for Howth Head Coast SPA have been updated by NPWS since the 2024 NIS and as such have been updated in Table A5.67 below.

The following QIs of the Howth Head Coast SPA are considered within this section:

Table A5.67: Qualifying interests and Conservation Objectives of Howth Head Coast SPA (replaces Table 5.57 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188]	The COs for Howth Head Coast SPA is to restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for the screened in feature of the SPA, in order for favourable conservation status to be achieved is when: • The long-term SPA population trend is stable or increasing; • The productivity rate is sufficient to maintain a stable or increasing population; • There is sufficient availability of suitable nesting throughout the SPA to maintain a stable or increasing population;

[6] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Qualifying Interests Screened In	Conservation Objectives
	• There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on breeding population; and • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA.

5.4.12.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.12.2 of the 2024 NIS.

The CO for the kittiwake feature of the Howth Head SPA is to restore favourable conservation condition. Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The CO relevant attribute for kittiwake within Howth head Coast SPA is breeding population size.

The array area is situated 27.1km from the Howth Head Coast SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015). Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

Collision risk and disturbance and displacement of kittiwake from Howth Head Coast SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration-free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

5.4.12.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce

collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.12.2.2 Breeding population size: Disturbance and Displacement (Construction and decommissioning)

The CO for the kittiwake feature of the Howth Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.67 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Howth Head as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.68. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total 0.1-0.2 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Howth Head Coast SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.68: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Howth Head Coast SPA [7]

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	3.5 (1.5-6.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	32.9 (16.1-54.3)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.009% (0.005%-0.016%)	0.028% (0.014%-0.047%)
Spring Migration	3.0 (1.5-5.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Annual Total	39.5 (19.1-66.2)	0.1 (0.0-0.1)	0.2 (0.1-0.3)	0.011% (0.005%-0.019%)	0.034% (0.016%-0.057%)
Full breeding					
Autumn Migration	1.8 (0.9-3.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	50.1 (23.6-77.9)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.014% (0.007%-0.022%)	0.043% (0.020%-0.067%)
Spring Migration	2.5 (1.0-5.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	54.4 (25.5-86.4)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.016% (0.007%-0.025%)	0.047% (0.022%-0.074%)

[7] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Howth Head Coast SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.12.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Howth head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.67 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Howth Head as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 11.7% are predicted to be breeding birds from Howth Head Coast SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 33 (32.9) breeding adults at risk of displacement are attributed to Howth Head Coast SPA during the breeding bio-season (Table A5.69). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is between less than one (0.1) and less than one (0.3) breeding adults.

Based on the latest colony count of 3,600 individuals and an annual background mortality of 526 individuals, the addition of less than one and less than one predicted breeding adult mortality would represent a 0.19% to 0.056% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.4% of these kittiwake within the array area plus 2km buffer are deemed to be breeding adults from Howth Head Coast SPA during the migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer four (3.5) during the autumn migration bio-season and three (3.0) during the spring migration (Table A5.69).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.2 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% to 0.006% during the autumn migration bio-season and 0.002% to 0.005% during the spring migration based on the latest colony count of 3,600 individuals and an annual background mortality of 526 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with 40 (39.5) sequent mortality throughout the operational phase of the proposed development is between less than one (0.1) and less than one (0.4) breeding adult per annum across all bio-seasons.

The predicted mortality of less than one and less than one results an increase in baseline mortality of 0.023% to 0.068% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.69: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Howth Head Coast SPA [8]

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	3.5 (1.5-6.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)
Breeding	32.9 (16.1-54.3)	0.1 (0.0-0.2)	0.3 (0.1-0.5)	0.019% (0.009%-0.031%)	0.056% (0.028%-0.093%)
Spring Migration	3.0 (1.5-5.9)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.005% (0.003%-0.010%)
Annual Total	39.5 (19.1-66.2)	0.1 (0.1-0.2)	0.4 (0.2-0.6)	0.023% (0.011%-0.038%)	0.068% (0.033%-0.113%)
Full breeding					
Autumn Migration	1.8 (0.9-3.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.006%)
Breeding	50.1 (23.6-77.9)	0.2 (0.1-0.2)	0.5 (0.2-0.7)	0.029% (0.013%-0.044%)	0.086% (0.040%-0.133%)
Spring Migration	2.5 (1.0-5.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.009%)
Annual Total	54.4 (25.5-86.4)	0.2 (0.1-0.3)	0.5 (0.2-0.8)	0.031% (0.015%-0.049%)	0.093% (0.044%-0.148%)

[8] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Howth Head Coast SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.12.2.4 Breeding population size: Collision Risk (Operation)

The CO for the kittiwake feature of the Howth Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.67 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Howth Head as a result of collision risk.

The predicted collision mortality during the breeding bio-season 11 (10.5) individuals (Appendix A19:: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these 11 individuals are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the PFI impacted by collision is five (4.9) per annum during the breeding bio-season.

Provided 11.7% of these collisions are breeding birds from Howth Head Coast SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.3) breeding adult.

Based on the latest colony count of 3,600 individuals and an annual background mortality of 526 (525.5) adults, this would represent a 0.052% increase in baseline mortality during the breeding bio-season (Table A5.70).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the spring migration, provided 0.4% of the kittiwake within the PFI are deemed to be breeding adults from the Howth Head Coast SPA during the autumn migration bio- season and 0.5% during the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) individual during the autumn migration bio-season and between less than one (<0.1) individual during the spring migration bio-season.

Based on the latest population count the potential impact on the population would represent a 0.005% and 0.006% increase in baseline mortality in the autumn migration bio-season and spring migration, respectively.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Howth Head Coast SPA is between less than one (0.3) breeding adult per annum.

The annual predicted mortality of less than one breeding adults from the Howth Head Coast SPA across all bio-seasons indicates an increase in baseline mortality of 0.063% when considering the latest colony count (Table A5.70).

Table A5.70: Seasonal Collision Mortalities during the Operational Phase for kittiwake at Howth Head Coast SPA (replaces Table 5.58 of the 2024 NIS)[9].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.1)	0.005% (0.000%-0.019%)

[9] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Breeding	0.3 (0.0-1.5)	0.052% (0.000%-0.283%)
Spring Migration	0.0 (0.0-0.1)	0.006% (0.000%-0.024%)
Annual Total	0.3 (0.0-1.7)	0.063% (0.000%-0.326%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.009%)
Breeding	0.5 (0.0-2.7)	0.102% (0.000%-0.506%)
Spring Migration	0.0 (0.0-0.1)	0.004% (0.000%-0.017%)
Annual Total	0.6 (0.0-2.8)	0.109% (0.000%-0.531%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Howth Head Coast SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.12.2.5 Summary of AEoI Conclusions for kittiwake at the Howth Head Coast SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Howth Head Coast SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to population size attribute, for Project Option 1 or Project Option 2.

5.4.13 Lambay Island SPA

Lambay Island SPA is located 14.4km from the array area, 15.3km from the ECC, 10.2km from the onshore development area and about 4km off the north coast of Co. Dublin. The SPA covers a range of habitats including a bedrock shoreline on the western side and steep cliffs ranging from 15m to 50m high extending along the northern, eastern, and much of the southern coasts of the island. The SPA is designated for three breeding populations of international importance (cormorant; shag; guillemot, of which cormorant and shag have been screened out in relation to the offshore elements of the proposed development) and a further six nationally important breeding populations (fulmar; lesser-black backed gull; herring gull; kittiwake; razorbill; puffin). Additionally, the island supports nationally important non-breeding populations of greylag goose and herring gull.

All QIs, with the exception of, fulmar, greylag goose and puffin, have been screened in for the assessment of impacts arising from the onshore elements of the proposed development. For impacts arising from the offshore elements of the proposed development all QIs have been assessed with the exception of cormorant and shag which are not considered vulnerable to OWF impacts.

5.4.13.1 Qualifying Interests and Conservation Objectives

The key change for this section is the COs for Lambay Island SPA have been updated by NPWS since the 2024 NIS and as such have been updated in Table A5.71 below.

The following QIs of the Lambay Island SPA are considered within this section:

Table A5.71: Qualifying interests and COs of Lambay Island SPA (replaces Table 5.59 in the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Lesser Black-backed Gull [A183] Herring Gull [A184] Guillemot [A199] Razorbill [A200] Kittiwake [A188] Fulmar [A009] Cormorant [A017] Shag [A018] Puffin [A204] Greylag goose [A043]	The CO for Lambay Island SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for those screened in features of the SPA, in order for favourable conservation status to be achieved is when: • The long-term SPA population trend is stable or increasing; • The productivity rate is sufficient to maintain a stable or increasing population; • There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on breeding population; • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA; and • There is sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population.

5.4.13.2 Guillemot

The key change for this section is guillemot is now being assessed for potential effects via impacts on prey following the updates to the COs by NPWS in 2024. As such an additional section has been added here. In addition, the displacement rates presented have been updated in response to RFI Section 8 (c) (i). Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.13.2 of the 2024 NIS.

The CO for the guillemot feature of the Lambay Island SPA is to maintain favourable conservation condition. Guillemot have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The relevant CO attributes for guillemot within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

Guillemot has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 14.4km from Lambay Island SPA which is within MMF+1SD for guillemot (73.2+80.5km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Guillemot disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Lambay Island SPA are likely to be present within array area; therefore, guillemot have been screened in for the non-breeding bio-season.

Two approaches to breeding season definitions were assessed for guillemot because site-specific DAS data suggested that the Furness approach to bio-seasons is not the most ecologically relevant. Though Furness (2015) suggest a breeding season of March to July, project-specific DAS data and available literature (e.g., Dunn et al. 2020) indicate that birds at the early and late stages of this period are not under the same energy constraints as in the core breeding season, and therefore a shorter season not incorporating the early and late stages of the season is considered more appropriate. Additionally, birds present in July are highly likely to be

a result of post-breeding dispersal (as opposed to being breeding birds) based on available evidence and site-specific DAS data. Therefore, a more ecologically relevant breeding season of April to June has been used. Consequently, two approaches are laid out in the section below; a 'Site Specific Approach' using the breeding seasons evidenced using site-specific data, and a 'Generic Approach' using the Furness (2015) bio-season definitions. A full justification of this approach is provided in Appendix A14: Offshore and Intertidal Ornithology Technical Baseline.

5.4.13.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. Removal of the northern sections of the array area eliminated overlap with high guillemot density areas ('Hotspots'; see Appendix A14: Offshore and Intertidal Ornithology Technical Baseline) during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.13.2.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of Lambay Island as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.72. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total seven (6.7) individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality (an increase of 0.184%) and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the guillemot QI of the Lambay Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section. The predicted impact would be indistinguishable from natural fluctuations in the population and would not represent an increase in mortality that was capable of adversely affecting the integrity of a population.

Table A5.72: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Guillemot at Lambay Island (replaces Table 5.60 of the 2024 NIS [10].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Breeding	453.9 (329.0-587.6)	1.1 (0.8-1.5)	4.1 (3.0-5.3)	6.8 (4.9-8.8)	0.031% (0.023%-0.040%)	0.112% (0.081%-0.145%)	0.187% (0.136%-0.242%)
Non-breeding	2,226.1 (1,308.5-3,305.5)	5.6 (3.3-8.3)	6.7 (3.9-9.9)	20.0 (11.8-29.7)	0.153% (0.090%-0.227%)	0.184% (0.108%-0.273%)	0.551% (0.324%-0.818%)
Annual Total	2,680.0 (1,637.5-3,893.1)	6.7 (4.1-9.7)	10.8 (6.9-15.2)	26.8 (16.7-38.6)	0.184% (0.113%-0.268%)	0.296% (0.189%-0.418%)	0.738% (0.460%-1.061%)
Furness Approach to Bio-seasons							
Breeding	7,500.2 (3,835.6-11,915.3)	18.8 (9.6-29.8)	67.5 (34.5-107.2)	112.5 (57.5-178.7)	0.516% (0.264%-0.819%)	1.856% (0.949%-2.949%)	3.094% (1.582%-4.915%)
Non-breeding	1,982.3 (1,183.2-2,801.7)	5.0 (3.0-7.0)	5.9 (3.5-8.4)	17.8 (10.6-25.2)	0.136% (0.081%-0.193%)	0.164% (0.098%-0.231%)	0.491% (0.293%-0.693%)
Annual Total	9,482.5 (5,018.8-14,717.0)	23.7 (12.5-36.8)	73.4 (38.1-115.6)	130.3 (68.2-203.9)	0.652% (0.345%-1.012%)	2.020% (1.047%-3.180%)	3.585% (1.875%-5.609%)

[10] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the guillemot feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of Lambay Island as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for guillemot from operation and maintenance activities.

During the breeding bio-season, 988 guillemot are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds is 49% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the PFI plus 2km buffer at risk of displacement is 484 during the full breeding bio-season.

Of these 484 breeding adults, 93.8% are predicted to be breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 454 (453.9) breeding adults at risk of displacement are attributed to Lambay Island SPA during the breeding bio-season (Table A5.73). The consequent mortality is estimated two (2.3) breeding adults, provided a displacement rate of 50% and a mortality rate of 1% has been applied. Table A5.73 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3% to 5% mortality). A breeding displacement matrix for predicted impacts apportioned to the guillemot QI of Lambay Island SPA is presented within Table A5.74.

Based on the latest colony count of 59,610 breeding adults and annual background mortality of 3,626 (3,636.2) individuals, the addition of four predicted breeding adult mortalities would represent a 0.062% increase in baseline mortality during the breeding bio-season.

In the non-breeding bio-season the mean-peak number of guillemot estimated to occur in the PFI plus a 2km buffer is 29,765 individuals.

Assuming that 4.5% of these guillemot are deemed to be breeding adults from Lambay Island SPA during the non-breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is 2,226 (Table A5.73). Provided, 50% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at 11 (11.1) individuals during the non-breeding bio-season. Table A5.73 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality). An non-breeding displacement matrix for predicted impacts apportioned to the guillemot QI of Lambay Island SPA is presented within Table A5.75.

As a result, the estimated increase in the baseline mortality during the non-breeding bio-season relative to the latest colony count would be 0.306%.

Throughout all bio-seasons, the number of guillemot estimated to occur in the PFI plus a 2km buffer is 22,061 individuals, with 2,680 of these being breeding adults from the Lambay Island SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is 13 (13.4) breeding adults per annum across all bio-seasons. Table A5.73 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality).

The predicted mortality of 13 breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.369% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population. However, as the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in Table A5.76.

Across all assessment scenarios, the Lambay Island SPA population show no relative reduction in population growth rate greater than 0.489% when compared with unimpacted populations. This level of change would not have any meaningful effect on the population growth rate over the long term.

Table A5.73: Range-Based Displacement Mortalities During the Operational Phase for Guillemot at Lambay Island SPA (replaces Table 5.62 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Breeding	453.9 (329.0-587.6)	2.3 (1.6-2.9)	8.2 (5.9-10.6)	13.6 (9.9-17.6)	0.062% (0.045%-0.081%)	0.225% (0.163%-0.291%)	0.374% (0.271%-0.485%)
Non-breeding	2,226.1 (1,308.5-3,305.5)	11.1 (6.5-16.5)	13.4 (7.9-19.8)	40.1 (23.6-59.5)	0.306% (0.180%-0.455%)	0.367% (0.216%-0.545%)	1.102% (0.648%-1.636%)
Annual Total	2,680.0 (1,637.5-3,893.1)	13.4 (8.2-19.5)	21.5 (13.8-30.4)	53.7 (33.4-77.1)	0.369% (0.225%-0.535%)	0.592% (0.379%-0.836%)	1.476% (0.919%-2.121%)
Furness Approach to Bio-seasons							
Breeding	7,500.2 (3,835.6-11,915.3)	37.5 (19.2-59.6)	135.0 (69.0-214.5)	225.0 (115.1-357.5)	1.031% (0.527%-1.638%)	3.713% (1.899%-5.898%)	6.188% (3.165%-9.831%)
Non-breeding	1,982.3 (1,183.2-2,801.7)	9.9 (5.9-14.0)	11.9 (7.1-16.8)	35.7 (21.3-50.4)	0.273% (0.163%-0.385%)	0.327% (0.195%-0.462%)	0.981% (0.586%-1.387%)
Annual Total	9,482.5 (5,018.8-14,717.0)	47.4 (25.1-73.6)	146.9 (76.1-231.3)	260.7 (136.4-407.9)	1.304% (0.690%-2.024%)	4.040% (2.094%-6.361%)	7.169% (3.750%-11.217%)

Table A5.74 Mean Breeding Abundance of Guillemot Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.64 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	1	1	2	5	9	14	18	23	27	32	36	41	45
20	1	2	3	5	9	18	27	36	45	54	64	73	82	91
30	1	3	4	7	14	27	41	54	68	82	95	109	123	136
40	2	4	5	9	18	36	54	73	91	109	127	145	163	182
50	2	5	7	11	23	45	68	91	113	136	159	182	204	227
60	3	5	8	14	27	54	82	109	136	163	191	218	245	272
70	3	6	10	16	32	64	95	127	159	191	222	254	286	318
80	4	7	11	18	36	73	109	145	182	218	254	290	327	363
90	4	8	12	20	41	82	123	163	204	245	286	327	368	409
100	5	9	14	23	45	91	136	182	227	272	318	363	409	454

Table A5.75: Mean Non-breeding Abundance of Guillemot Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	2	4	7	11	22	45	67	89	111	134	156	178	200	223
20	4	9	13	22	45	89	134	178	223	267	312	356	401	445
30	7	13	20	33	67	134	200	267	334	401	467	534	601	668
40	9	18	27	45	89	178	267	356	445	534	623	712	801	890
50	11	22	33	56	111	223	334	445	557	668	779	890	1,002	1,113
60	13	27	40	67	134	267	401	534	668	801	935	1,068	1,202	1,336
70	16	31	47	78	156	312	467	623	779	935	1,091	1,247	1,402	1,558
80	18	36	53	89	178	356	534	712	890	1,068	1,247	1,425	1,603	1,781
90	20	40	60	100	200	401	601	801	1,002	1,202	1,402	1,603	1,803	2,003
100	22	45	67	111	223	445	668	890	1,113	1,336	1,558	1,781	2,003	2,226

Table A5.76: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Guillemot at Lambay Island SPA (replaces Table 5.65 of the 2024 NIS).

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Site Specific Approach to Bio-seasons				
Developer (50%,1%)	1.000	0.991	0.025	0.898
Guidance (60%,1% and 3%)	1.000	0.986	0.040	1.435
Guidance (60%,3% and 5%)	0.999	0.964	0.101	3.557
Furness Approach to Bio-seasons				
Developer (50%,1%)	0.999	0.968	0.090	3.170
Guidance (60%,1% and 3%)	0.997	0.905	0.276	9.462
Guidance (60%,3% and 5%)	0.995	0.838	0.489	16.185

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.2.4 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for the guillemot feature of the Lambay SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of guillemot. The Developer has therefore undertaken an assessment of potential impacts on the guillemot forage spatial distribution, extent, abundance and availability within the Lambay Island as a result of disturbance and displacement.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.2) for impacts on guillemot at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, any potential effects of the Proposed Development on prey availability or foraging conditions would be very small and highly localised, and are found to be not significant. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.2.5 Summary of AEoI Conclusions for guillemot at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.3 Razorbill

The key change for this section is razorbill is now being assessed for potential effects via impacts on prey following the updates to the COs by NPWS in 2024. As such an additional section has been added here. In addition, the displacement rates presented have been updated in response to RFI Section 8 (c)i. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.13.3 of the 2024 NIS.

The CO for the razorbill feature of the Lambay Island SPA is to maintain favourable conservation condition. Razorbill have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The CO relevant attributes for razorbill within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

Razorbill has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 14.4km from Lambay Island SPA which is within MMF+1SD for razorbill (88.7+75.9km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Razorbill disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Lambay Island SPA are likely to be present within array area; therefore, razorbill have been screened in for the non-breeding bio-seasons.

5.4.13.3.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk for auks.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.13.3.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the razorbill feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of Lambay Island as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table X. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.4 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality (an increase of 0.063%),and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the razorbill QI of the Lambay Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.77: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Razorbill at Lambay Island SPA (replaces Table 5.66 of the 2024 NIS [11].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Autumn Migration	56.8 (23.1-93.8)	0.1 (0.1-0.2)	0.2 (0.1-0.3)	0.5 (0.2-0.8)	0.021% (0.009%-0.035%)	0.025% (0.010%-0.042%)	0.076% (0.031%-0.126%)
Breeding	75.3 (40.9-110.9)	0.2 (0.1-0.3)	0.7 (0.4-1.0)	1.1 (0.6-1.7)	0.028% (0.015%-0.041%)	0.101% (0.055%-0.149%)	0.169% (0.092%-0.249%)
Migration-free winter	24.5 (9.4-40.2)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.009% (0.004%-0.015%)	0.011% (0.004%-0.018%)	0.033% (0.013%-0.054%)
Spring Migration	10.6 (7.8-13.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.1 (0.1-0.1)	0.004% (0.003%-0.005%)	0.005% (0.003%-0.006%)	0.014% (0.010%-0.018%)
Annual Total	167.3 (81.2-258.5)	0.4 (0.2-0.6)	1.0 (0.5-1.4)	2.0 (1.0-3.0)	0.063% (0.030%-0.097%)	0.143% (0.073%-0.216%)	0.293% (0.146%-0.448%)
Furness Approach to Bio-seasons							
Autumn Migration	56.8 (23.1-93.8)	0.1 (0.1-0.2)	0.2 (0.1-0.3)	0.5 (0.2-0.8)	0.021% (0.009%-0.035%)	0.025% (0.010%-0.042%)	0.076% (0.031%-0.126%)
Breeding	477.6 (179.7-765.3)	1.2 (0.4-1.9)	4.3 (1.6-6.9)	7.2 (2.7-11.5)	0.179% (0.067%-0.286%)	0.643% (0.242%-1.030%)	1.072% (0.403%-1.717%)
Migration-free winter	24.5 (9.4-40.2)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.4)	0.009% (0.004%-0.015%)	0.011% (0.004%-0.018%)	0.033% (0.013%-0.054%)
Spring Migration	10.6 (7.8-13.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.1 (0.1-0.1)	0.004% (0.003%-0.005%)	0.005% (0.003%-0.006%)	0.014% (0.010%-0.018%)

[11] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Annual Total	569.6 (220.0-913.0)	1.4 (0.6-2.3)	4.6 (1.7-7.3)	8.0 (3.1-12.8)	0.213% (0.082%-0.341%)	0.684% (0.260%-1.097%)	1.196% (0.458%-1.916%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.3.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the razorbill feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of Lambay Island as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for razorbill from operation and maintenance activities.

During the breeding bio-season, 175 razorbill are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 50% (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array at risk of displacement is 88 during the full breeding bio-season.

Of these 88 breeding adults, 86.1% are predicted to be breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 75 (75.3) breeding adults at risk of displacement are attributed to Lambay Island SPA during the breeding bio-season (Table A5.78). The consequent mortality estimated is less than one (0.4) breeding adults, provided a displacement rate of 50% and a mortality rate of 1% has been applied. Table A5.78 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3% to 5% mortality). A breeding displacement matrix for predicted impacts apportioned to the razorbill QI of Lambay Island SPA is presented within Table A5.78.

Based on the latest colony count of 6,366 breeding adults and annual background mortality of 688 (688.4) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.056% increase in baseline mortality during the breeding bio-season.

The mean-peak number of razorbill estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 4,896 individuals, 915 individuals during the spring migration and 1,225 individuals in the migration- free winter bio-season.

Assuming that 1.2% of these razorbill within the array area are deemed to be breeding adults from Lambay Island SPA during the migration bio-seasons and 2.0% during the migration-free winter bio-season (Table 7.46), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer is 57 (56.8) during the autumn migration bio-season, 11(10.6) during the spring migration and 46 (46.4) during the migration free winter bio-season (Table A5.78).

Provided, 50% displacement and 1% mortality have been applied, the total predicted consequent mortality from being displaced is estimated at less than one individual during the post-breeding migration bio-season, the return migration, and the migration-free winter bio-season (0.3; 0.1 and 0.1 individuals, respectively). Table 7.46 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality). A total non-breeding displacement matrix for predicted impacts apportioned to the razorbill QI of Lambay Island SPA is presented within Table A5.80.

The consequent estimated mortality of less than one individual equates to an increase in baseline mortality of 0.042% in the autumn migration bio-season, 0.018% in the spring migration and 0.008% in the migration-free winter bio-season based on the latest colony count.

Throughout all bio-seasons, the number of razorbill estimated to occur in the PFI plus a 2km buffer is 7,211 individuals, with 167 (167.3) of these being breeding adults from the Lambay Island SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is one (0.8) breeding adult per annum across all bio-seasons. Table A5.78 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 5% mortality).

The predicted mortality of less than one breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.125% when considering the latest colony count.

However, as the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in Table A5.81.

Across all assessment scenarios, the Lambay Island SPA population show no relative reduction in population growth rate greater than 0.288% when compared with unimpacted populations. This level of change would not have any meaningful effect on the population growth rate over the long term.

Table A5.78: Range-Based Displacement Mortalities During the Operational Phase for Razorbill at Lambay Island SPA (replaces Table 5.67 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Autumn Migration	56.8 (23.1-93.8)	0.3 (0.1-0.5)	0.3 (0.1-0.6)	1.0 (0.4-1.7)	0.042% (0.017%-0.070%)	0.051% (0.021%-0.084%)	0.153% (0.062%-0.253%)
Breeding	75.3 (40.9-110.9)	0.4 (0.2-0.6)	1.4 (0.7-2.0)	2.3 (1.2-3.3)	0.056% (0.031%-0.083%)	0.203% (0.110%-0.299%)	0.338% (0.184%-0.498%)
Migration-free winter	24.5 (9.4-40.2)	0.1 (0.0-0.2)	0.1 (0.1-0.2)	0.4 (0.2-0.7)	0.018% (0.007%-0.030%)	0.022% (0.008%-0.036%)	0.066% (0.025%-0.108%)
Spring Migration	10.6 (7.8-13.7)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.2)	0.008% (0.006%-0.010%)	0.010% (0.007%-0.012%)	0.029% (0.021%-0.037%)
Annual Total	167.3 (81.2-258.5)	0.8 (0.4-1.3)	1.9 (1.0-2.9)	3.9 (2.0-6.0)	0.125% (0.061%-0.193%)	0.285% (0.146%-0.431%)	0.586% (0.292%-0.895%)
Furness Approach to Bio-seasons							
Autumn Migration	56.8 (23.1-93.8)	0.3 (0.1-0.5)	0.3 (0.1-0.6)	1.0 (0.4-1.7)	0.042% (0.017%-0.070%)	0.051% (0.021%-0.084%)	0.153% (0.062%-0.253%)
Breeding	477.6 (179.7-765.3)	2.4 (0.9-3.8)	8.6 (3.2-13.8)	14.3 (5.4-23.0)	0.357% (0.134%-0.572%)	1.286% (0.484%-2.061%)	2.144% (0.807%-3.435%)
Migration-free winter	24.5 (9.4-40.2)	0.1 (0.0-0.2)	0.1 (0.1-0.2)	0.4 (0.2-0.7)	0.018% (0.007%-0.030%)	0.022% (0.008%-0.036%)	0.066% (0.025%-0.108%)
Spring Migration	10.6 (7.8-13.7)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.2)	0.008% (0.006%-0.010%)	0.010% (0.007%-0.012%)	0.029% (0.021%-0.037%)
Annual Total	569.6 (220.0-913.0)	2.8 (1.1-4.6)	9.1 (3.5-14.7)	16.0 (6.1-25.6)	0.426% (0.165%-0.683%)	1.369% (0.520%-2.193%)	2.391% (0.915%-3.833%)

Table A5.79: Mean Breeding Abundance of Razorbill Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) - Site-specific Approach (replaces Table 5.68 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	1	2	2	3	4	5	5	6	7	8
20	0	0	0	1	2	3	5	6	8	9	11	12	14	15
30	0	0	1	1	2	5	7	9	11	14	16	18	20	23
40	0	1	1	2	3	6	9	12	15	18	21	24	27	30
50	0	1	1	2	4	8	11	15	19	23	26	30	34	38
60	0	1	1	2	5	9	14	18	23	27	32	36	41	45
70	1	1	2	3	5	11	16	21	26	32	37	42	47	53
80	1	1	2	3	6	12	18	24	30	36	42	48	54	60
90	1	1	2	3	7	14	20	27	34	41	47	54	61	68
100	1	2	2	4	8	15	23	30	38	45	53	60	68	75

Table A5.80: Mean Non-breeding Abundance of Razorbill Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) - Site-specific Approach.

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	1	2	3	4	5	6	6	7	8	9
20	0	0	1	1	2	4	6	7	9	11	13	15	17	18
30	0	1	1	1	3	6	8	11	14	17	19	22	25	28
40	0	1	1	2	4	7	11	15	18	22	26	29	33	37
50	0	1	1	2	5	9	14	18	23	28	32	37	41	46
60	1	1	2	3	6	11	17	22	28	33	39	44	50	55
70	1	1	2	3	6	13	19	26	32	39	45	51	58	64
80	1	1	2	4	7	15	22	29	37	44	51	59	66	74
90	1	2	2	4	8	17	25	33	41	50	58	66	74	83
100	1	2	3	5	9	18	28	37	46	55	64	74	83	92

Table A5.81: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Razorbill at Lambay Island SPA.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Generic Approach				
Developer (50%,1%)	1.000	0.982	0.049	1.775
Guidance (60%,1% and 3%)	0.998	0.943	0.166	5.704
Guidance (60%,3% and 5%)	0.997	0.902	0.288	9.841

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.3.4 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for the razorbill feature of the Lambay SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of razorbill. The Developer has therefore undertaken an assessment of potential impacts on the razorbill forage spatial distribution, extent, abundance and availability within the Lambay Island as a result of disturbance and displacement.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.3) for impacts on razorbill at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, any potential effects of the Proposed Development on prey availability or foraging conditions would be very small and highly localised, and are found to be not significant, and therefore there is no potential for AEoI as a result of this impact. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.3.5 Summary of AEoI Conclusions for razorbill at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.4 Puffin

Puffin have been screened in for assessment during the construction, operational and decommissioning phases. For this addendum, the Puffin assessment has been updated to incorporate the additional NWIS DAS dataset and to reflect the introduction of the PFI. Furthermore, puffin were raised in RFI 8 (c) (iv) in relation to the NWIS cSPA CO and the use of the NatureScot (2023a) displacement and mortality rates. In response to this RFI, puffin have been assessed for SPAs that abut the NWIS cSPA namely, Lambay Island SPA using the industry standard recommended rates (NatureScot, 2023a). As puffin was initially screened out, the following text is additional to Section 5.4.2 of the 2024 NIS.

The key change for this section is puffin is now being assessed for potential effects via impacts on prey following the updates to the COs by NPWS in 2024. As such an additional section has been added here. In addition, the displacement rates presented have been updated in response to RFI Section 8 (c)i. Key updates also include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.13.3 of the 2024 NIS.

The CO for the puffin feature of the Lambay Island SPA is to maintain favourable conservation condition. Razorbill have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The CO relevant attributes for puffin within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

Puffin has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 14.4km from Lambay Island SPA which is within MMF+1SD for puffin (137.1+128.3) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Puffin disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Lambay Island SPA are likely to be present within array area; therefore, puffin have been screened in for the non-breeding bio-seasons.

5.4.13.4.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km², which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk for auks.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.13.4.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the puffin feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the puffin breeding population size of Lambay Island as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.82. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 25% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are

extremely small relative to baseline mortality (an increase of 0.123%), and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the puffin QI of the Lambay Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.82: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Puffin at Lambay Island SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Breeding	6.6 (2.7-11.9)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.1 (0.0-0.2)	0.123% (0.050%-0.219%)	0.442% (0.179%-0.788%)	0.737% (0.299%-1.314%)
Non-breeding	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Annual Total	6.7 (2.7-11.9)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.1 (0.0-0.2)	0.123% (0.050%-0.219%)	0.442% (0.179%-0.788%)	0.737% (0.299%-1.314%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.4.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the puffin feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the puffin breeding population size of Lambay Island as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for puffin from operation and maintenance activities.

During the breeding bio-season, 17 (17.3) puffin are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 50% (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array at risk of displacement is 9 (9.0) during the full breeding bio-season.

Of these 9 (9.0) breeding adults, 77.1% are predicted to be breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 7 (6.6) breeding adults at risk of displacement are attributed to Lambay Island SPA during the breeding bio-season (Table A5.83). The consequent mortality estimated is less than one (0.0) breeding adults, provided a displacement rate of 50% and a mortality rate of 1% has been applied. Table A5.83 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 3% to 5% mortality). A breeding displacement matrix for predicted impacts apportioned to the puffin QI of Lambay Island SPA is presented within Table A5.84.

Based on the latest colony count of 144 breeding adults and annual background mortality of 14 (13.5) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.246% increase in baseline mortality during the breeding bio-season.

During the non-breeding bio-season, 14 puffin are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 50% (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array at risk of displacement is 7 (7.1) during the full non-breeding bio-season.

Provided, 50% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at less than one (0.0) during the non-breeding bio-season. Table A5.83 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality). A total non-breeding displacement matrix for predicted impacts apportioned to the puffin QI of Lambay Island SPA is presented within Table 5.86.

The consequent estimated mortality of less than one individual equates to an increase in baseline mortality of 0.000% non-breeding bio-season based on the latest colony count.

Throughout all bio-seasons, the number of puffin estimated to occur in the PFI plus a 2km buffer is 16 (15.7) individuals, with 7 (6.7) of these being breeding adults from the Lambay Island SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is less than one (0.0) breeding adult per annum across all bio-seasons. Table A5.83 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 5% mortality).

The predicted mortality of less than one breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.246% when considering the latest colony count.

However, as the increase in baseline mortality exceeds 1% for some scenarios, PVA was carried out the results of which are in Table A5.74

Across all assessment scenarios, the Lambay Island SPA population show no relative reduction in population growth rate greater than 0.166% when compared with unimpacted populations. This level of change would not have any meaningful effect on the population growth rate over the long term.

Table A5.83: Range-Based Displacement Mortalities During the Operational Phase for Puffin at Lambay Island SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Breeding	6.6 (2.7-11.9)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.2 (0.1-0.4)	0.246% (0.100%-0.438%)	0.884% (0.359%-1.576%)	1.474% (0.598%-2.627%)
Non-Breeding	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.003%)
Annual Total	6.7 (2.7-11.9)	0.0 (0.0-0.1)	0.11974 (0.0-0.2)	0.2 (0.1-0.4)	0.246% (0.100%-0.438%)	0.884% (0.359%-1.576%)	1.474% (0.598%-2.627%)

Table A5.84: Mean Breeding Abundance of Puffin Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) - Site-specific Approach.

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	1	1	1
20	0	0	0	0	0	0	0	1	1	1	1	1	1	1
30	0	0	0	0	0	0	1	1	1	1	1	2	2	2
40	0	0	0	0	0	1	1	1	1	2	2	2	2	3
50	0	0	0	0	0	1	1	1	2	2	2	3	3	3
60	0	0	0	0	0	1	1	2	2	2	3	3	4	4
70	0	0	0	0	0	1	1	2	2	3	3	4	4	5
80	0	0	0	0	1	1	2	2	3	3	4	4	5	5
90	0	0	0	0	1	1	2	2	3	4	4	5	5	6
100	0	0	0	0	1	1	2	3	3	4	5	5	6	7

Table A5.85: Mean Non-breeding Abundance of Puffin Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) - Site-specific Approach.

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Table A5.86: PVA Results for All Assessment Scenarios During the Operation and Maintenance Phase for Razorbill at Lambay Island SPA.

Scenario	CGR	CPS	Difference in GR (%)	Difference in PS (%)
Developer (50%,1%)	1.000	1.000	0.015	0.000
Guidance (60%,1% and 3%)	0.999	1.000	0.075	0.000
Guidance (60%,3% and 5%)	0.998	0.944	0.166	5.556

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.4.4 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for the puffin feature of the Lambay SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of puffin. The Developer has therefore undertaken an assessment of potential impacts on the puffin forage spatial distribution, extent, abundance and availability within the Lambay Island as a result of disturbance and displacement.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.4) for impacts on puffin at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, any potential effects of the proposed development on prey availability or foraging conditions would be very small and highly localised, and are found to be not significant, and therefore there is no potential for AEoI as a result of this impact. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section x.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.4.5 Summary of AEoI Conclusions for puffin at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the puffin QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.5 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.13.4 of the 2024 NIS.

The CO for the kittiwake feature of the Lambay Island SPA is to restore favourable conservation condition. Kittiwake have been screened in for assessment of all relevant CO attributes during the construction,

operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision mortalities and disturbance and displacement. The relevant CO attributes for kittiwake within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

The array area is situated 14.4km from Lambay Island SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015). Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

Collision risk and disturbance and displacement of kittiwake from Ireland's Eye SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

5.4.13.5.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.13.5.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA

population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Ireland's Eye as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.87. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total 0.1 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Lambay Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.87: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Lambay Island SPA

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	6.6 (2.8-11.3)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.008%)
Breeding	173.4 (84.8-286.0)	0.3 (0.1-0.4)	0.8 (0.4-1.3)	0.040% (0.020%-0.066%)	0.120% (0.059%-0.198%)
Spring Migration	5.7 (2.8-11.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)
Annual Total	185.7 (90.4-308.3)	0.3 (0.1-0.5)	0.8 (0.4-1.4)	0.043% (0.021%-0.071%)	0.129% (0.063%-0.214%)
Full breeding					
Autumn Migration	3.5 (1.6-6.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Breeding	263.7 (124.0-410.4)	0.4 (0.2-0.6)	1.2 (0.6-1.8)	0.061% (0.029%-0.095%)	0.183% (0.086%-0.284%)
Spring Migration	4.6 (2.0-9.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.007%)
Annual Total	271.8 (127.6-426.3)	0.4 (0.2-0.6)	1.2 (0.6-1.9)	0.063% (0.029%-0.099%)	0.188% (0.088%-0.296%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.5.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Lambay Island as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 61.6% are predicted to be breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 173 (173.4) breeding adults at risk of displacement are attributed to Lambay Island SPA during the breeding bio-season (Table A5.88). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is between one (0.5) and two (1.6) breeding adults.

Based on the latest colony count of 4,446 breeding adults and annual background mortality of 649 (649.1) individuals, the addition of one and two predicted breeding adult mortality would represent a 0.080% and 0.240% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.7% and 0.9% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Lambay Island SPA during the autumn and spring migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer seven (6.6) during the autumn migration bio-season and six (5.7) during the spring migration (Table A5.88).

Provided, 30% displacement and 1-3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the post-breeding migration and the return migration bio-season, (0.0 to 0.1 and 0.0 to 0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.003% and 0.009% during the autumn migration bio-season and 0.003% and 0.008% during the return migration based on the latest colony count of 4,446 individuals and an annual background mortality of 649 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with 186 (185.7) of these being breeding adults from the Lambay Island SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is between one (0.6) and two (1.7) breeding adult per annum across all bio-seasons. A annual total displacement matrix for predicted impacts apportioned to the kittiwake QI of Lambay Island SPA is presented within Table A5.89.

The predicted mortality of one to two results in an increase in baseline mortality of 0.086% and 0.257% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.88: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Lambay Island SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	6.6 (2.8-11.3)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.003% (0.001%-0.005%)	0.009% (0.004%-0.016%)
Breeding	173.4 (84.8-286.0)	0.5 (0.3-0.9)	1.6 (0.8-2.6)	0.080% (0.039%-0.132%)	0.240% (0.118%-0.397%)
Spring Migration	5.7 (2.8-11.0)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.003% (0.001%-0.005%)	0.008% (0.004%-0.015%)
Annual Total	185.7 (90.4-308.3)	0.6 (0.3-0.9)	1.7 (0.8-2.8)	0.086% (0.042%-0.142%)	0.257% (0.125%-0.427%)
Full breeding					
Autumn Migration	3.5 (1.6-6.2)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.009%)
Breeding	263.7 (124.0-410.4)	0.8 (0.4-1.2)	2.4 (1.1-3.7)	0.122% (0.057%-0.190%)	0.366% (0.172%-0.569%)
Spring Migration	4.6 (2.0-9.7)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.005%)	0.006% (0.003%-0.014%)
Annual Total	271.8 (127.6-426.3)	0.8 (0.4-1.3)	2.4 (1.1-3.8)	0.126% (0.059%-0.197%)	0.377% (0.177%-0.591%)

Table A5.89: Mean Annual Abundance of Kittiwake Apportioned to Lambay Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
10	0	0	1	1	2	4	6	7	9	11	13	15	17	19
20	0	1	1	2	4	7	11	15	19	22	26	30	33	37
30	1	1	2	3	6	11	17	22	28	33	39	45	50	56
40	1	1	2	4	7	15	22	30	37	45	52	59	67	74
50	1	2	3	5	9	19	28	37	46	56	65	74	84	93
60	1	2	3	6	11	22	33	45	56	67	78	89	100	111
70	1	3	4	6	13	26	39	52	65	78	91	104	117	130
80	1	3	4	7	15	30	45	59	74	89	104	119	134	149
90	2	3	5	8	17	33	50	67	84	100	117	134	150	167
100	2	4	6	9	19	37	56	74	93	111	130	149	167	186

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.5.4 Breeding population size: Collision Risk (Operation)

The CO for the kittiwake feature of the Lambay Island SPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS cSPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these five individuals, are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the PFI impacted by collision is two (2.3) per annum during the migration-free breeding bio-season.

Provided 61.6% of these collisions are breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be one (1.4) breeding adults (Table A5.90).

Based on the latest colony count of 4,446 breeding adults and annual adult background mortality of 649 (649.1) individuals, the addition of two breeding adult mortality would represent a 0.222% increase in baseline mortality during the breeding bio-season.

The predicted collision mortality as a result of the operational phase are six (6.4) and seven (6.5) individuals during the post-breeding migration bio-season and the return migration, respectively. Provided 0.7% and 0.9% of the kittiwake within the PFI are deemed to be breeding adults from Lambay Island SPA during the post-breeding migration bio- season and the return migration, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (0.0) during the post-breeding migration and less than one (0.1) during the return migration bio- season.

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality during the migration bio-seasons, would indicate an increase in baseline mortality of 0.007% during the autumn bio-season and 0.009% during the spring migration.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Lambay Island SPA is two (1.5) breeding adults per annum (Table A5.90).

The annual predicted mortality of two breeding adults from Lambay Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.238% when considering the latest colony count.

This level of would be indistinguishable from natural fluctuations in the population and would not represent an increase in mortality that was capable of adversely affecting the integrity of the SPA population (Table A5.90). There is, therefore, no potential for an AEoI to the COs of the kittiwake QI of Lambay Island SPA in relation to collision risk effects during the operational phase from the proposed development alone and therefore, subject to natural change, the kittiwake QI will be maintained in the long term with respect to potential for adverse effects from collision.

Table A5.90: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Lambay Island SPA (replaces Table 5.69 of the 2024 NIS) .

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.2)	0.007% (0.000%-0.028%)
Breeding	1.4 (0.0-7.8)	0.222% (0.000%-1.207%)
Spring Migration	0.1 (0.0-0.2)	0.009% (0.000%-0.036%)
Annual Total	1.5 (0.0-8.3)	0.238% (0.000%-1.271%)
Full breeding		
Autumn Migration	0.0 (0.0-0.1)	0.004% (0.000%-0.014%)
Breeding	2.8 (0.0-14.0)	0.433% (0.000%-2.156%)
Spring Migration	0.0 (0.0-0.2)	0.006% (0.000%-0.025%)
Annual Total	2.9 (0.0-14.2)	0.444% (0.000%-2.195%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.5.5 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for the kittiwake feature of the Lambay Island SPA is to restore the favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for forage spatial distribution, extent, abundance and availability, the target for which requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This attribute does not require uniform use of all areas within the SPA, but rather that the overall availability and accessibility of suitable habitat remains adequate to support the population's ecological needs. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of kittiwake. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake forage spatial distribution, extent, abundance and availability within the Lambay Island as a result of disturbance and displacement.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be screened (Section 5.4.2.5) for impacts on kittiwake at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, kittiwake are generalist and opportunistic feeders and are adaptable to change in prey species abundance and availability, and potential effects on key prey species are all found to be not significant. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the forage spatial distribution,

extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.5.6 Summary of AEoI Conclusions for kittiwake at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.6 Herring gull

The assessment results have been updated to reflect the inclusion of the additional NWIS DAS data and the introduction of the PFI. The following text is a direct replacement of the text within herring gull within Section 5.4.2 of the 2024 NIS.

The CO for herring gull feature of the Lambay Island SPA is to restore favourable conservation condition. Herring gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for herring gull within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

Herring gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 14.4km from Lambay Island SPA, which is within the MMF+1SD for herring gull (58.8+26.8km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Herring gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk of herring gull from Lambay Island SPA has been assessed for the full breeding bio-season (March – August), the non-breeding bio-season (September – February), as defined by Furness (2015).

5.4.13.6.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.13.6.2 Breeding population size: Collision Risk (Operation)

The CO for herring gull feature of the Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is

stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the herring gull population size of the Lambay Island as a result of collision risk.

The predicted collision mortality during the breeding bio-season is 16 (15.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 28% of these 16 individuals, are breeding adults and adult herring gull exhibit a sabbatical rate of 35% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the PFI impacted by collision is four (4.4) per annum during the breeding bio-season.

Provided 17.8% of these collisions are breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be one (0.8) breeding adults (Table A5.91).

Based on a latest colony count of 1,812 breeding adults and annual adult background mortality of 301 (300.8) individuals, the addition of less than two breeding adult mortalities would represent a 0.259% increase in baseline mortality during the breeding bio-season (Table A5.91).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is 27 (26.5) individuals. Provided 1.0% of the herring gulls within the array area are deemed to be breeding adults from Lambay Island SPA during non-breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is less than one (0.3) during the non-breeding bio- season (Table A5.91).

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality would indicate an increase in baseline mortality of 0.085% during the non-breeding season (Table A5.91).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Lambay Island SPA is one (1.0) breeding adults per annum (Table A5.91).

The annual predicted mortality of less than two breeding adults from Lambay Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.344% based on the latest colony count.

Table A5.91: Seasonal Collision Mortalities During the Operational Phase for Herring gull at Lambay Island SPA (replaces Table 5.70 of the 2024 NIS).

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Breeding	0.8 (0.0-4.4)	0.259% (0.000%-1.462%)
Non-breeding	0.3 (0.0-1.0)	0.085% (0.003%-0.328%)
Annual Total	1.0 (0.0-5.4)	0.344% (0.003%-1.790%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.6.3 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for herring gull feature of Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for Lambay Island SPA herring gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of herring gull. The Developer has therefore undertaken an assessment of potential impacts on the herring spatial distribution within the NWIS

as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the herring gull forage spatial distribution, extent, abundance and availability within the NWIS.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.6) for impacts on herring gull at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, herring gull are generalist and opportunistic feeders and are adaptable to change in prey species abundance and availability, and potential effects on key prey species are all found to be not significant, and therefore there is no potential for AEoI as a result of this impact. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.6.4 Summary of AEoI Conclusions for herring gull at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the herring gull QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.7 Lesser black-backed gull

The assessment results have been updated to reflect the inclusion of the additional NWIS DAS data and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.13.6 of the 2024 NIS.

The CO for lesser black-backed gull feature of the Lambay Island SPA is to maintain favourable conservation condition. Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for lesser black-backed gull within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

Lesser black-backed gull has been screened in for the operation phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 14.4km from Lambay Island SPA, which is within the MMF+1SD for lesser black-backed gull (127+109km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Lesser black-backed gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – March) as per Furness (2015).

Collision risk of lesser black-backed gull from Lambay Island SPA has been assessed for the migration-free breeding bio-season (May–July), the post-breeding migration bio-season (August–October), the return

migration bio-season (March–April), and the migration- free winter season (November – February) as defined by Furness (2015).

5.4.13.7.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI 8 Section (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.13.7.2 Breeding population size: Collision Risk (Operation)

The CO for lesser black-backed gull feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population size of the Lambay Island as a result of collision risk.

The predicted collision mortality during the migration- free breeding bio-season is one (1.0) individual (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 35% of the lesser black-backed gulls are breeding adults the total number of breeding adults in the PFI impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season. Provided 50% of these collisions are breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.2) breeding adults (Table A5.92).

Based on the latest colony count of 690 breeding adults and annual adult background mortality of 79 (109.5) individuals, the addition of less than one breeding adult mortality would represent a 0.225% increase in baseline mortality during the migration-free breeding bio-season.

The predicted collision mortality as a result of the operational phase during the autumn migration bio-season, the spring migration and the migration-free winter bio-season is less than one individual (0.0).

Provided 0.4% of the lesser black-backed gulls within the array area are deemed to be breeding adults from Lambay Island SPA during the migration bio-seasons and 1.3% during the migration-free winter (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is zero (0.0) during the migration bio-seasons and the migration-free winter bio-season (Table A5.92).

When considering the non-breeding bio-season as a whole, the addition of zero (0.0) consequent mortalities of adult lesser black-backed gulls would indicate and increase in baseline mortality of 0.000% when assessed against the latest colony count (Table A5.92).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Lambay Island SPA is less than one (0.2) breeding adult per annum (Table A5.92).

The annual predicted mortality of less than one breeding adult from Lambay Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.163% when considering the latest colony count, respectively. This level of impact would be indistinguishable from natural fluctuations in the population, when assessed against the latest colony count (Table A5.92).

Table A5.92: Seasonal Collision Mortalities during the Operational Phase for Lesser black-backed gull at Lambay Island SPA (replaces Table 5.72 of the 2024 NIS)[12].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Breeding	0.2 (0.0-1.5)	0.225% (0.000%-1.949%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.2 (0.0-1.5)	0.225% (0.000%-1.949%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.7.3 Forage spatial distribution, extent, abundance and availability: indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for lesser black-backed gull feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the Lambay Island SPA lesser black-backed gull feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of lesser black-backed gull. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull spatial distribution within the Lambay Island as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull forage spatial distribution, extent, abundance and availability within the Lambay Island.

Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (5.4.2.7) for impacts on lesser black-backed gull at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, lesser black-backed gull are generalist and opportunistic feeders and are adaptable to change in prey species abundance and availability, and potential effects on key prey species are all found to be not significant. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

[12] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.13.7.4 Summary of AEoI Conclusions for lesser clack-backed gull at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.8 Fulmar

The assessment results have been updated to reflect the inclusion of the additional NWIS DAS data and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.13.7 of the 2024 NIS.

The CO for fulmar feature of the Lambay Island SPA is to restore favourable conservation condition. Fulmar have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for fulmar within Lambay Island SPA are as follows:

- Breeding population size; and
- Forage spatial distribution, extent, abundance and availability.

The array area is situated 14.4km from Lambay Island SPA, which is within the MMF+1SD for fulmar (542.3+657.9km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Fulmar will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – December) as per Furness (2015).

Fulmar has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk of fulmar from Lambay Island SPA has been assessed for the full breeding bio-season (January – August), the post-breeding migration bio-season (September–October), the return migration bio-season (December–March), and the migration- free winter season (November) as defined by Furness (2015).

5.4.13.8.1 Mitigation

Fulmar are not considered sensitive to collision impacts from windfarms. However, by increasing the air draft to 40m LAT predicted impacts on this species are reduced to almost zero. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.13.8.2 Breeding Population Size: Collision Risk (Operation)

The CO for fulmar feature of the Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assesses potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the fulmar population size of the Lambay Island as a result of collision risk.

The predicted collision mortality during the breeding bio-season is zero (0.0) individual. Provided 48% of these collisions are breeding birds from Lambay Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be zero (0.0) breeding adult (Table A5.93).

Based on the latest colony count of 272 breeding adults and annual adult background mortality of 17 (17.4) individuals, the addition of less than one breeding adult mortality would represent a 0.000% increase in baseline mortality during the breeding bio-season.

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is less than one (0.0) individual.

Provided less than 1% (0.18%) of the fulmar within the array area are deemed to be breeding adults from Lambay Island SPA during non-breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is less than one (<0.1) during the non-breeding bio-season (Table A5.93).

Based on the latest colony count of breeding adults the addition of less than one (<0.1) predicted breeding adult mortality would indicate an increase in baseline mortality of <0.001% during the non-breeding season.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Lambay Island SPA is less than one (<0.1) breeding adult per annum (Table A5.93).

The annual predicted mortality of less than one breeding adult from Lambay Island SPA across all bio-seasons indicates an increase in baseline mortality of <0.001% when considering the latest colony count.

Table A5.93: Seasonal Collision Mortalities during the Operational phase for fulmar at Lambay Island SPA (replaces Table 5.73 of the 2024 NIS [13]

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.002%)
Breeding	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.0)	0.000% (0.000%-0.002%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.13.8.3 Forage spatial distribution, extent, abundance and availability indirect effects via impacts on prey (Construction, Operation and Decommissioning)

The CO for fulmar feature of the Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (see Table A5.71 and Section 5.4.1.1.2). The forage spatial distribution, extent, abundance and availability attribute of the COs for the Lambay Island SPA fulmar feature requires there to be a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target. This CO attribute relates specifically to the forage resource itself, not to the behaviour or spatial distribution of fulmar.

The Developer has therefore undertaken an assessment of potential impacts on the fulmar spatial distribution within the Lambay Island as a result of disturbance and displacement. The Developer has therefore undertaken an assessment of potential impacts on the fulmar forage spatial distribution, extent, abundance and availability within the Lambay Island.

The Lambay Island SPA is located within the NWIS cSPA. Therefore, prey impacts assessed within the NWIS cSPA assessment should be seen (Section 5.4.2.16) for impacts on fulmar at the Lambay Island SPA.

As detailed in the NWIS cSPA assessment, fulmar have a diverse diet, are adaptable to change in prey species abundance and availability, and potential effects on key prey species are all found to be not significant. A more detailed consideration of potential effects on prey resources is provided for the NWIS cSPA in Section 5.4.2.

[13] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that forage spatial distribution, extent, abundance and availability (i.e. indirect impacts on prey species) during the construction, operation and decommissioning phases will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the forage spatial distribution, extent, abundance and availability attribute target of sufficient number of locations, area of suitable habitat and available forage biomass to support the population target, for Project Option 1 or Project Option 2.

5.4.13.8.4 Summary of AEoI Conclusions for fulmar at the Lambay Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Lambay Island SPA, in view of the site's COs to restore the favourable conservation condition of the fulmar QI, with specific regard to the population size and forage spatial distribution, extent, abundance and availability attributes, for Project Option 1 or Project Option 2.

5.4.13.8.5 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.13.8 in the 2024 NIS.

5.4.13.9 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Lambay Island SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.14 Boyne Estuary SPA

There are no changes to this section. Refer to Section 5.4.14 in the 2024 NIS.

5.4.14.1 Qualifying Interests and Conservation Objectives

There are no changes to this section. Refer to Section 5.4.14.1 in the 2024 NIS.

5.4.14.2 Impacts Arising from the Onshore Elements of the Proposed Development

There are no changes to this section. Refer to Section 5.4.14.2 in the 2024 NIS.

5.4.14.2.1 Mitigation

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.14.2.1 in the 2024 NIS.

5.4.14.2.2 Disturbance and Displacement (Construction and Decommissioning)

The CEMP referenced under this subheading is updated in Appendix A9: Onshore CEMP.

However, there are no other changes to this section. Refer to Section 5.4.14.2.2 in the 2024 NIS.

Conclusion of AEoI

The Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

It can be concluded that the implementation of the noise barriers, which also act as visual mitigation, in the CEMP (Appendix A9) for disturbance and displacement at the site during construction and decommissioning, and the available coastline and area of arable fields, enables the conclusion beyond reasonable scientific doubt that the construction and decommissioning of the onshore elements of the proposed development (alone) will not have AEoI on the QIs of the Boyne Estuary SPA in view of the site's COs.

5.4.14.3 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Boyne Estuary SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.15 Poulaphouca Reservoir SPA

The key change for this section is the conservation objectives for Poulaphouca Reservoir SPA have been updated by NPWS since the planning application.

5.4.15.1.1 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Poulaphouca Reservoir SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.16 Wicklow Head SPA

Wicklow Head SPA is a rocky headland situated 70.4km from the proposed development. The SPA is comprised of 60m high cliffs and includes a marine component up to 500m seaward from the base of the cliffs. This SPA supports a nationally important population of kittiwake, which have been considered in the ornithology assessment presented here for impacts arising from the offshore elements of the proposed development.

5.4.16.1 Qualifying Interests and Conservation Objectives

The key change for this section is the conservation objectives for Wicklow Head SPA have been updated by NPWS since the planning application and as such have been updated in Table A5.95 below.

The following QIs of the Wicklow Head SPA are considered within this section:

Table A5.94: Qualifying interests and Conservation Objectives of Wicklow Head SPA (replaces Table A 5.75 in the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188]	The COs for Wicklow Head SPA is to restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for the screened in feature of the SPA, in order for favourable conservation status to be achieved is when: • The long term population is stable or increasing; • The productivity rate is sufficient to maintain a stable or increasing population; • There is a sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population; • There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on the breeding population; and • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA.

5.4.16.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c)ii issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The following text is a direct replacement of the text within Section 5.4.16.2 of the 2024 NIS.

The CO for the kittiwake feature of the Wicklow Head SPA is to restore favourable conservation condition. Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the

potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The offshore development area is situated 70.4km from the Wicklow Head SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Ireland's Eye SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Wicklow Head SPA is breeding population size.

5.4.16.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 1.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.16.2.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Wicklow Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.94 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Wicklow Head as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.95. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Wicklow Head SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.95: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Wicklow Head SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	1.5 (0.6-2.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	2.3 (1.1-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Spring Migration	1.3 (0.6-2.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.002% (0.001%-0.005%)
Annual Total	5.0 (2.3-8.6)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.002%-0.006%)	0.010% (0.005%-0.017%)
Full breeding					
Autumn Migration	0.8 (0.4-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.003%)
Breeding	3.4 (1.6-5.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.007% (0.003%-0.010%)
Spring Migration	1.0 (0.4-2.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	5.2 (2.4-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.002%-0.006%)	0.010% (0.005%-0.017%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Wicklow Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.16.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Wicklow Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.94 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population size of Wicklow Head as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 594 breeding adults, 0.8% are predicted to be breeding birds from Wicklow Head SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, two (2.3) breeding adults at risk of displacement are attributed to Wicklow Head SPA during the breeding bio-season (Table A5.96). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is between less than one (0.0) breeding adults.

Based on the latest colony count of 1,568 breeding adults and annual background mortality of 289 (288.9) individuals, the addition of two predicted breeding adult mortality would represent a 0.003% and 0.009% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.2% and of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Wicklow Head SPA during the autumn and spring migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is two (1.5) during the autumn migration bio-season and one (1.3) during the spring migration (Table A5.96).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one (<0.1) individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% and 0.006% during the autumn migration bio-season and 0.002% and 0.005% during the return migration based on the latest colony count of 1,290 individuals and an annual background mortality of 188 (188.3) adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with five (5.0) of these being a breeding adults from the Wicklow Head SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons.

The predicted mortality of less than one in baseline mortality of 0.006% and 0.019%when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.96: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Wicklow Head SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	1.5 (0.6-2.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.006% (0.002%-0.010%)
Breeding	2.3 (1.1-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.005%)	0.009% (0.004%-0.015%)
Spring Migration	1.3 (0.6-2.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.010%)
Annual Total	5.0 (2.3-8.6)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.006% (0.003%-0.011%)	0.019% (0.009%-0.034%)
Full breeding					
Autumn Migration	0.8 (0.4-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	3.4 (1.6-5.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.004% (0.002%-0.007%)	0.013% (0.006%-0.021%)
Spring Migration	1.0 (0.4-2.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)
Annual Total	5.2 (2.4-8.8)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.007% (0.003%-0.012%)	0.020% (0.009%-0.035%)

Table A5.97: Mean Annual Abundance of Kittiwake Apportioned to Wicklow Head SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	1	1	1	1	1	1
30	0	0	0	0	0	0	0	1	1	1	1	1	1	2
40	0	0	0	0	0	0	1	1	1	1	1	2	2	2
50	0	0	0	0	0	1	1	1	1	2	2	2	2	3

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
60	0	0	0	0	0	1	1	1	2	2	2	2	3	3
70	0	0	0	0	0	1	1	1	2	2	2	3	3	4
80	0	0	0	0	0	1	1	2	2	2	3	3	4	4
90	0	0	0	0	0	1	1	2	2	3	3	4	4	5
100	0	0	0	0	1	1	2	2	3	3	4	4	5	5

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Wicklow Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.16.2.4 Breeding population size: Collision Risk (Operation)

The CO for the kittiwake feature of the Wicklow Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.94 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the Wicklow Head SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these five individuals, are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the PFI impacted by collision is two (2.3) per annum during the migration-free breeding bio-season.

Provided 0.8% of these collisions are breeding birds from Wicklow Head SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adults (Table A5.98).

Based on the latest colony count of 1,568 breeding adults and annual adult background mortality of 229 (228.9) individuals, the addition of less than one breeding adult mortality would represent a 0.008% increase in baseline mortality during the breeding bio-season.

The predicted collision mortality as a result of the operational phase in the post-breeding migration bio-season is six (6.41) individuals, and seven (6.54) individuals during the return migration, provided 0.2% of the kittiwake within the array area are deemed to be breeding adults from the Wicklow Head SPA during the autumn migration bio-season and the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) individual during the post-breeding migration bio-season and less than one (<0.1) individual during the return migration bio-season.

Based on the latest colony count the addition of less than one predicted breeding adult mortality during the autumn breeding season and less than one individual the spring migration would indicate an increase in baseline mortality of 0.004% and 0.006%, respectively.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Wicklow Head SPA is less than one (<0.1) breeding adult per annum.

The annual predicted mortality of less than one breeding adult from the Wicklow Head SPA across all bio-seasons indicates an increase in baseline mortality of 0.018% when considering the latest colony count. With a potential predicted mortality of well under a single breeding adult (<0.1) per annum attributable to the Wicklow Head SPA annually, this level of impact can be considered non-material and therefore, will not affect the achievement of the COs for the SPA.

Table A5.98: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Wicklow Head SPA (replaces Table 5.76 of the 2024 NIS)[14].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.0)	0.004% (0.000%-0.018%)
Breeding	0.0 (0.0-0.1)	0.008% (0.000%-0.044%)
Spring Migration	0.0 (0.0-0.1)	0.006% (0.000%-0.023%)
Annual Total	0.0 (0.0-0.2)	0.018% (0.000%-0.085%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.008%)
Breeding	0.0 (0.0-0.2)	0.016% (0.000%-0.079%)
Spring Migration	0.0 (0.0-0.0)	0.004% (0.000%-0.016%)
Annual Total	0.1 (0.0-0.2)	0.023% (0.000%-0.103%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Wicklow Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.16.2.5 Summary of AEoI Conclusions for Kittiwake at the Wicklow Head SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Wicklow Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute, for Project Option 1 or Project Option 2.

5.4.17 Saltee Islands SPA

The Saltee Islands SPA encompasses two islands, Great Saltee and Little Saltee as well as 500m seaward around each island. This SPA is located 169.3km from the array area. Exposed rocky cliffs of 30m and 15m can be found on Great Saltee and Little Saltee, respectively, along the south and east coasts of the islands. Shingle and boulder shores, backed with clay cliffs, line the norther and western sides of both islands. This SPA supports an internationally important assemblage of over 20,000 breeding seabirds, with ten designated species (gannet, cormorant, shag, lesser-black backed gull, herring gull, kittiwake, guillemot, razorbill and puffin). With the exception of fulmar, cormorant and shag which are not considered vulnerable to OWF impacts, and herring gull which does not have connectivity with the Saltee Islands SPA, all designated species have been considered for the offshore elements of the proposed development in the ornithology assessment presented here.

[14] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.17.1 Qualifying Interests and Conservation Objectives

The following QIs of the Saltee Islands SPA are considered within this section:

Table A5.99: Qualifying interests and Conservation Objectives of Saltee Islands SPA (replaces Table 5.77 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Guillemot [A199]; Razorbill [A200]; Kittiwake [A188]; Gannet [A016]; and Lesser black-backed gull [A183].	To maintain the favourable conservation condition of Guillemot in the Saltee Islands SPA, which is defined by the following list of attributes and targets: • Breeding population abundance: individual adult- No significant decline. • Productivity rate- No significant decline • Distribution: breeding colonies- No significant decline • Prey biomass available- No significant decline • Barriers to connectivity- No significant increase • Disturbance at the breeding site- No significant increase; and • Disturbance at marine areas immediately adjacent to the colony- No significant increase.

5.4.17.2 Guillemot

The key change for this section is guillemot is that the displacement rates presented have been updated in response to RFI Section 8 (c) (i). Other updates include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.17.2 of the 2024 NIS.

The CO for the guillemot feature of the Saltee Islands SPA is to maintain favourable conservation condition. Guillemot has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 169.3km from the Saltee Islands SPA which is outside MMF+1SD for guillemot (73.2+80.5km) (Woodward et al., 2019) and therefore has been screened out for the breeding bio-season. However, guillemot will disperse throughout the bio-geographical region outside of the breeding season and a proportion of individuals from Saltee Islands SPA are likely to be present within the array area; therefore, guillemot have been screened in for the non-breeding bio-seasons.

Guillemot have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The relevant CO attribute for guillemot within Skerries Islands SPA is breeding population abundance.

5.4.17.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Removal of the northern sections of the array area eliminated overlap with high guillemot density areas ('Hotspots') during the non-breeding season. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk.

Overall, these refinements have led to a lower abundance of birds within the PFI and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.17.2.2 Breeding population abundance: Disturbance and Displacement (Construction and Decommissioning)

The CO for the guillemot feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of the Saltee Islands as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.100. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 1.6 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the guillemot QI of the Saltee Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.100: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Guillemot at Saltee Islands SPA (replaces Table 5.78 of the 2024 NIS) [15].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)	Developer (25%,1%)	Guidance (30%, 1% and 3%)	Guidance (30%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Non-breeding	649.5 (381.8-964.4)	1.6 (1.0-2.4)	1.9 (1.1-2.9)	5.8 (3.4-8.7)	0.075% (0.044%-0.112%)	0.090% (0.053%-0.134%)	0.271% (0.159%-0.402%)
Furness Approach to Bio-seasons							
Non-breeding	578.4 (345.2-817.5)	1.4 (0.9-2.0)	1.7 (1.0-2.5)	5.2 (3.1-7.4)	0.067% (0.040%-0.095%)	0.080% (0.048%-0.114%)	0.241% (0.144%-0.341%)

[15] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.2.3 Breeding population abundance: Disturbance and Displacement (Operation)

The CO for the guillemot feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for population size, the target for which is no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the guillemot breeding population size of the Saltee Islands as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for guillemot from operation and maintenance activities.

The mean-peak number of guillemot estimated to occur in the PFI plus the 2km buffer during the non-breeding bio-season is 21,074 individuals.

Assuming that 3.1% of these are deemed to be breeding adults from Saltee Islands SPA during the non-breeding bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer is 650 (649.5) during the non-breeding bio-season (Table A5.101).

Provided, 50% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at three (3.2) individuals during the non-breeding bio-season. Table A5.101 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality). An non-breeding displacement matrix for predicted impacts apportioned to the guillemot QI of Saltee Islands SPA is presented within Table A5.102.

Based on the latest colony count of 35,420 breeding adults and annual background mortality of 2,161 individuals, the addition of three predicted breeding adult mortalities would represent a 0.150% increase in baseline mortality during the non-breeding bio-season. This level of impact would be indistinguishable from natural fluctuations in the population, when assessed against the latest colony count.

Table A5.101: Range-Based Displacement Mortalities Buring the Operational Phase for Guillemot at Saltee Islands SPA (replaces Table 5.79 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Non-breeding	649.5 (381.8-964.4)	3.2 (1.9-4.8)	3.9 (2.3-5.8)	11.7 (6.9-17.4)	0.150% (0.088%-0.223%)	0.180% (0.106%-0.268%)	0.541% (0.318%-0.803%)
Furness Approach to Bio-seasons							
Non-breeding	578.4 (345.2-817.5)	2.9 (1.7-4.1)	3.5 (2.1-4.9)	10.4 (6.2-14.7)	0.134% (0.080%-0.189%)	0.161% (0.096%-0.227%)	0.482% (0.288%-0.681%)

Table A5.102: Mean Non-breeding Abundance of Guillemot Apportioned to Saltee Islands SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.80 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
10	1	1	2	3	7	13	20	26	33	39	46	52	59	65
20	1	3	4	7	13	26	39	52	65	78	91	104	117	130
30	2	4	6	10	20	39	59	78	98	117	137	156	176	195
40	3	5	8	13	26	52	78	104	130	156	182	208	234	260
50	3	7	10	16	33	65	98	130	163	195	228	260	293	325
60	4	8	12	20	39	78	117	156	195	234	273	312	351	390
70	5	9	14	23	46	91	137	182	228	273	319	364	410	455
80	5	10	16	26	52	104	156	208	260	312	364	416	468	520
90	6	12	18	29	59	117	176	234	293	351	410	468	527	585

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
100	7	13	20	33	65	130	195	260	325	390	455	520	585	650

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.2.4 Summary of AEoI Conclusions for guillemot at the Saltee Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the guillemot QI, with specific regard to the population abundance attribute, for Project Option 1 or Project Option 2.

5.4.17.3 Razorbill

The key change for this section is razorbill is that the displacement rates presented have been updated in response to RFI Section 8 (c) (i). Other updates include the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.17.3 of the 2024 NIS.

The CO for the razorbill feature of the Saltee Islands SPA is to maintain favourable conservation condition. Razorbill has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from displacement from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis.

The array area is located 169.3km from the Saltee Islands SPA which is outside MMF+1SD for razorbill (88.7+75.9km) (Woodward et al., 2019) and therefore has been screened out for the breeding bio-season. However, razorbill will disperse throughout the bio-geographical region outside of the breeding season and a proportion of individuals from Saltee Islands SPA are likely to be present within array area; therefore, razorbill have been screened in for the non-breeding bio-seasons.

Razorbill have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of disturbance and displacement. The relevant CO attribute for Razorbill within Skerries Island SPA is breeding population abundance.

5.4.17.3.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer has undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Since the submission of the Planning Application further design refinements have been made in response to the RFI (8(e)vi) to provide additional mitigation (see Appendix A7: Design Refinements). The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. The revised PFI boundary now avoids several identified hotspots, further reducing displacement risk for auks.

Overall, these refinements have led to a lower abundance of birds within the PFI (in comparison with the boundary as assessed in the 2024 NIS) and have further reduced potential effects on spatial distribution, habitat loss, barrier effects and changes to prey species by decreasing the area occupied by the proposed development.

5.4.17.3.2 Breeding population abundance: Disturbance and Displacement (Construction and Decommissioning)

The CO for the razorbill feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of the Saltee Islands as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.103. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 50% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.1 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the razorbill QI of the Saltee Islands SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.3.3 Breeding population abundance: Disturbance and Displacement (Operation)

The CO for the razorbill feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population abundance. The Developer has therefore undertaken an assessment of potential impacts on the razorbill breeding population size of the Saltee Islands as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for razorbill from operation and maintenance activities.

The mean-peak number of razorbills estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 4,896 individuals, 915 individuals during the spring migration and 1,225 individuals in the migration- free winter bio-season.

Assuming that 0.5% of these razorbill within the array area are deemed to be breeding adults from Saltee Islands SPA during the migration bio-seasons and 0.8% during the migration-free winter bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is 23 (22.5) during the autumn migration bio-season, four (4.2) during the spring migration and ten (9.8) during the migration free winter bio-season (Table A5.103).

Provided, 50% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at less than one individual during the autumn migration bio-season, the spring migration, and the migration-free winter bio-season (0.1; <0.1 and <0.1 individuals, respectively). Table A5.103 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (60% displacement, 1% to 3% mortality). An annual displacement matrix for predicted impacts apportioned to the razorbill QI of Saltee Islands SPA Table A5.104.

This consequent estimated mortality equates to an increase in baseline mortality of 0.014% in the autumn migration bio-season, 0.003% in the spring migration and 0.006% in the migration-free winter bio-season based on the latest population counts.

This equates to a total consequent mortality from displacement across the entire non-breeding bio-season of less than one (0.2) breeding adult per annum. This represents an increase of 0.022% in baseline mortality of the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population, when assessed against the latest colony count.

Table A5.103: Range-Based Displacement Mortalities During the Operational Phase for Razorbill at Saltee Islands SPA (replaces Table 5.82 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality			Percentage increase in baseline mortality		
		Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Developer (50%,1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Site Specific Approach to Bio-seasons							
Autumn Migration	22.5 (9.2-37.2)	0.1 (0.0-0.2)	0.1 (0.1-0.2)	0.4 (0.2-0.7)	0.014% (0.006%-0.022%)	0.016% (0.007%-0.027%)	0.049% (0.020%-0.081%)
Migration-free winter	9.8 (3.8-16.1)	0.0 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.3)	0.006% (0.002%-0.010%)	0.007% (0.003%-0.012%)	0.021% (0.008%-0.035%)
Spring Migration	4.2 (3.1-5.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.1 (0.1-0.1)	0.003% (0.002%-0.003%)	0.003% (0.002%-0.004%)	0.009% (0.007%-0.012%)
Non-breeding Total	36.5 (16.0-58.7)	0.2 (0.1-0.3)	0.2 (0.1-0.4)	0.7 (0.3-1.1)	0.022% (0.010%-0.035%)	0.026% (0.012%-0.042%)	0.079% (0.035%-0.127%)
Furness Approach to Bio-seasons							
Autumn Migration	22.5 (9.2-37.2)	0.1 (0.0-0.2)	0.1 (0.1-0.2)	0.4 (0.2-0.7)	0.014% (0.006%-0.022%)	0.016% (0.007%-0.027%)	0.049% (0.020%-0.081%)
Migration-free winter	9.8 (3.8-16.1)	0.0 (0.0-0.1)	0.1 (0.0-0.1)	0.2 (0.1-0.3)	0.006% (0.002%-0.010%)	0.007% (0.003%-0.012%)	0.021% (0.008%-0.035%)
Spring Migration	4.2 (3.1-5.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.1 (0.1-0.1)	0.003% (0.002%-0.003%)	0.003% (0.002%-0.004%)	0.009% (0.007%-0.012%)
Non-breeding Total	36.5 (16.0-58.7)	0.2 (0.1-0.3)	0.2 (0.1-0.4)	0.7 (0.3-1.1)	0.022% (0.010%-0.035%)	0.026% (0.012%-0.042%)	0.079% (0.035%-0.127%)

Table A5.104: Mean Non-breeding Abundance of Razorbill Apportioned to Saltee Islands SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.83 of the 2024 NIS).

Displaced (%)	Mortality Rate (%)													
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
10	0	0	0	0	0	1	1	1	2	2	3	3	3	4
20	0	0	0	0	1	1	2	3	4	4	5	6	7	7
30	0	0	0	1	1	2	3	4	5	7	8	9	10	11
40	0	0	0	1	1	3	4	6	7	9	10	12	13	15
50	0	0	1	1	2	4	5	7	9	11	13	15	16	18
60	0	0	1	1	2	4	7	9	11	13	15	18	20	22
70	0	1	1	1	3	5	8	10	13	15	18	20	23	26
80	0	1	1	1	3	6	9	12	15	18	20	23	26	29
90	0	1	1	2	3	7	10	13	16	20	23	26	30	33
100	0	1	1	2	4	7	11	15	18	22	26	29	33	37

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.3.4 Summary of AEoI Conclusions for Razorbill at the Saltee Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the razorbill QI, with specific regard to the population abundance attribute, for Project Option 1 or Project Option 2.

5.4.17.4 Gannet

The key updates for gannet include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.17.4 of the 2024 NIS.

The CO for the gannet feature of the Lambay Island SPA is to maintain favourable conservation condition. Gannet has been screened in to assess for the potential for an AEoI from displacement from the proposed development alone during the construction, operation and decommissioning phases in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is located 169.3km from Saltee Islands SPA which is within MMF+1SD for gannet (315.2+194.2km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Gannet disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Saltee Islands SPA are likely to be present within array area; therefore, gannet have been screened in for the non-breeding bio-season.

Collision risk of gannet from Saltee Islands has been assessed for the full breeding bio-season (March – September), the post-breeding migration bio-season (October – November) and the return migration bio-season (December – February), gannet do not have a migration- free winter season, as defined by Furness (2015).

Gannet have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for gannet within Skerries Islands SPA is breeding population abundance.

5.4.17.4.1 Mitigation

Gannets are prone to both collision and displacement impacts. Displacement assessments are undertaken based on the abundance of birds within the array area plus 2km buffer. 'Hotspots' of birds, which may indicate key foraging/loafing areas, were identified in the full survey area and considered within the array refinement exercise with the aim to reduce displacement impacts on bird species. Although not a key consideration when undertaking array refinements, any reduction in array size benefits gannets by reducing the project footprint.

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. The revised boundary now avoids several identified hotspots, further reducing displacement risk.

In addition, gannet are prone to collision risk. The project has mitigated considerably for collision by increasing the air draft to 40m LAT. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.17.4.2 Breeding population abundance: Disturbance and Displacement (Construction and Decommissioning)

The CO for the gannet feature of the Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population abundance. The Developer has therefore undertaken an assessment of potential impacts on the gannet population size of the Saltee Islands as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.105. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 70% displacement and 1% mortality (Developer Approach), the resulting adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the gannet QI of the Saltee Islands SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.105: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Gannet at Saltee Islands SPA (replaces Table 5.84 of the 2024 NIS [16].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (70%, 1%)	Guidance (70%, 3%)	Guidance (70%, 1%)	Guidance (70%, 3%)
Autumn Migration	2.4 (1.1-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.005%)
Breeding	2.9 (1.4-4.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Spring Migration	0.1 (0.0-0.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	5.4 (2.6-8.8)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.002% (0.001%-0.004%)	0.007% (0.004%-0.012%)

[16] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.4.3 Breeding population abundance: Disturbance and Displacement (Operation)

The CO for the gannet feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population abundance. The Developer has therefore undertaken an assessment of potential impacts on the gannet breeding population abundance of the Saltee Islands as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for gannet from operation and maintenance activities.

During the breeding bio-season, 270 gannet are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 51% (Apportioning Annex 17) the total number of breeding adults in the array at risk of displacement is 138 (137.8) during the full breeding bio-season.

Of these 138 breeding adults, 2.1% are predicted to be breeding birds from Saltee Islands (Appendix A18: Offshore and Intertidal Ornithology Apportioning), therefore, three (2.9) breeding adults at risk of displacement are attributed to Saltee Islands SPA during the breeding bio-season (Table A5.106). The consequent mortality is estimated is less than one (0.0) breeding adults, provided a displacement rate of 70% and a mortality rate of 1% has been applied. However, based on the NatureScot guidance (NatureScot, 2023a), a displacement range of 70% and mortality rate of 3%is also presented in Table A5.106.

Based on the latest colony count of 9,444 breeding adults and annual background mortality of 765 (765.0) individuals, the addition of less than one predicted breeding adult mortalities would represent a 0.003% increase in baseline mortality during the breeding bio-season.

During the post-breeding migration bio-season, the mean-peak number of gannet estimated to occur in the PFI plus the 2km buffer is 135 individuals, and 9 individuals during the autumn and spring migration.

Assuming that 1.8% of these gannet within the array area are deemed to be breeding adults from Saltee Islands SPA during the post-breeding migration bio-season and 1.5% during the return migration, the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer is two (2.4) during the autumn migration bio-season and less than one (0.1) the spring migration (Table A5.106).

Provided, 70% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated less than one (<0.1) during both the autumn migration bio-season and the spring migration. Table A5.106 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (70% displacement, 1% to 3% mortality).

This consequent estimated mortality equates to an increase in baseline mortality of 0.002% in the autumn migration bio-season and <0.001% in the spring migration based on the latest colony count.

Throughout all bio-seasons, the number of gannet estimated to occur in the PFI plus a 2km buffer is 414 individuals, with five (5.4) of these being breeding adults from the Saltee Islands SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the gannet QI of Saltee Islands SPA is presented within Table A5.107.

The predicted mortality of less than one breeding adult from Saltee Islands SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.005% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population and would not represent an increase in mortality that was capable of adversely affecting the integrity of the SPA population.

Table A5.106: Range-Based Displacement Mortalities During the Operational Phase for Gannet at Saltee Islands SPA (replaces Table 5.85 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		70%, 1%	70%, 3%	70%, 1%	70%, 3%
Autumn Migration	2.4 (1.1-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.007% (0.003%-0.010%)
Breeding	2.9 (1.4-4.8)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.003% (0.001%-0.004%)	0.008% (0.004%-0.013%)
Spring Migration	0.1 (0.0-0.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Annual Total	5.4 (2.6-8.8)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.005% (0.002%-0.008%)	0.015% (0.007%-0.024%)

Table A5.107: Mean Annual Abundance of Gannet Apportioned to Saltee Islands SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.86 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	1
20	0	0	0	0	0	0	0	0	1	1	1	1	1	1
30	0	0	0	0	0	0	0	1	1	1	1	1	1	2
40	0	0	0	0	0	0	1	1	1	1	2	2	2	2
50	0	0	0	0	0	1	1	1	1	2	2	2	2	3
60	0	0	0	0	0	1	1	1	2	2	2	3	3	3
70	0	0	0	0	0	1	1	2	2	2	3	3	3	4
80	0	0	0	0	0	1	1	2	2	3	3	3	4	4
90	0	0	0	0	0	1	1	2	2	3	3	4	4	5
100	0	0	0	0	1	1	2	2	3	3	4	4	5	5

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.4.4 Breeding population abundance: Collision Risk (Operation)

The CO for the gannet feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.71 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population abundance, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the gannet breeding population abundance of the Saltee Islands SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is one (1.0) individual (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 51% of the gannet within the array area are breeding adults (Apportioning Annex 17) the total number of breeding adults in the array impacted by collision is one (0.5) individual per annum during the breeding bio-season.

Provided 2.1% of these collisions are breeding birds from Saltee Islands SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.108).

Based on the latest colony count of 9,444 breeding adults and annual adult background mortality of 765 (765.0) individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the breeding bio-season.

The predicted collision mortality as a result of the operational phase in the post-breeding migration bio-season is less than one (0.1) individual, and less than one (<0.1) individual during the return migration, provided 1.8 % and 1.5% of the gannet within the PFI are deemed to be breeding adults from the Saltee Islands SPA during the autumn migration bio- season and the spring migration, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is almost zero (<0.1) individual during the autumn migration bio- season and less than one (<0.1) during the spring migration bio-season (Table A5.108).

Based on the latest colony count of 9,444 breeding adults and annual adult background mortality of 765 (765.0) individuals, the addition of less than one breeding adult mortality would represent a <0.001% increase in baseline mortality during the autumn migration bio-season and an increase of <0.001% during the spring migration (Table A5.108).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Saltee Islands SPA is less than one (<0.1) breeding adults per annum (Table A5.108). The annual predicted mortality of less than one breeding adults from the Saltee Islands SPA across all bio-seasons indicates an increase in baseline mortality of 0.002% when considering latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population (Table A5.108).

Table A5.108: Seasonal Collision Mortalities During the Operational Phase for Gannet at Saltee Islands SPA (replaces Table 5.87 of the 2024 NIS)[17].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
With Macro Avoidance		
Autumn Migration	0.0 (0.0-0.0)	0.000%(0.000%-0.002%)
Breeding	0.0 (0.0-0.0)	0.001%(0.000%-0.006%)
Spring Migration	0.0 (0.0-0.0)	0.000%(0.000%-0.000%)
Annual Total	0.0 (0.0-0.1)	0.002%(0.000%-0.009%)
Without Macro Avoidance		
Autumn Migration	0.0 (0.0-0.0)	0.001%(0.000%-0.006%)
Breeding	0.0 (0.0-0.2)	0.005%(0.000%-0.022%)
Spring Migration	0.0 (0.0-0.0)	0.000%(0.000%-0.001%)
Annual Total	0.0 (0.0-0.2)	0.006%(0.000%-0.028%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that collision risk during the operational phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.4.5 Breeding population abundance: Combined Collision risk and Disturbance and displacement

Gannet have been screened in for both collision risk and displacement assessments during the operational phase; there is therefore a potential for these two potential impacts to the gannet population at Saltee Islands SPA combined.

Based on the separate assessments of gannet from Saltee Islands SPA above, the combined predicted annual impact from collision risk and displacement is less than one (0.1) breeding adult mortality. This represents an increase in baseline mortality of 0.013% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that collision risk and disturbance and displacement during the operational phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.4.6 Summary of AEoI Conclusions for gannet at the Saltee Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, with specific regard to the population size abundance, for Project Option 1 or Project Option 2.

[17] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.17.5 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.17.5 of the 2024 NIS.

The CO for the kittiwake feature of the Saltee Islands SPA is to maintain favourable conservation condition. Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 169.3km from the Saltee Islands SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Saltee Islands SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Skerries Islands SPA is breeding population abundance.

5.4.17.5.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Since the submission of the Planning Application further design refinements have been made in response to the RFI (8(e)vi) to provide additional mitigation (see Appendix A7: Design Refinements). The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.17.5.2 Breeding population abundance : Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population size. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Saltee Islands as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.109. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, based on 30% displacement and 1% mortality, the resulting adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Saltee Islands SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.109: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Saltee Islands SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	2.1 (0.9-3.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.008%)
Breeding	0.6 (0.3-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring Migration	1.8 (0.9-3.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)
Annual Total	4.4 (2.0-7.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.004% (0.002%-0.006%)	0.011% (0.005%-0.019%)
Full breeding					
Autumn Migration	1.1 (0.5-1.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	0.9 (0.4-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring Migration	1.4 (0.6-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.007%)
Annual Total	3.4 (1.5-6.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.005%)	0.008% (0.004%-0.015%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.5.3 Breeding population abundance: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population abundance. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Saltee Islands as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 0.2% are predicted to be breeding birds from Saltee Islands SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, one (0.6) breeding adults at risk of displacement are attributed to Saltee Islands SPA during the breeding bio-season (Table A5.110). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is less than one (<0.1) breeding adults.

Based on the latest colony count 1,290 breeding adults and annual background mortality of 188 (188.3) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.001% and 0.003% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.2% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Saltee Islands SPA during the autumn migration bio-seasons and 0.3% during the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer two (2.1) during the autumn migration bio-season and two (1.8) during the spring migration (Table A5.110).

Provided, 30% displacement and 1% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the post-breeding migration bio-season and the return migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.003% and 0.010% during the autumn migration bio-season and 0.003% and 0.009% during the spring migration based on the latest colony count of 1,290 individuals and an annual background mortality of 188 (188.3) adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with four (4.4) of these being breeding adults from the Saltee Islands SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the kittiwake QI of Saltee Islands SPA is presented within Table A5.111.

The predicted mortality of less than one in baseline mortality of 0.007% and 0.021% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.110: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Saltee Islands SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		30%, 1%	30%, 3%	30%, 1%	30%, 3%
Migration-free breeding					
Autumn Migration	2.1 (0.9-3.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.006%)	0.010% (0.004%-0.017%)
Breeding	0.6 (0.3-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.003% (0.001%-0.004%)
Spring Migration	1.8 (0.9-3.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.005%)	0.009% (0.004%-0.016%)
Annual Total	4.4 (2.0-7.9)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.007% (0.003%-0.013%)	0.021% (0.010%-0.038%)
Full breeding					
Autumn Migration	1.1 (0.5-1.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.009%)
Breeding	0.9 (0.4-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.006%)
Spring Migration	1.4 (0.6-3.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.005%)	0.007% (0.003%-0.015%)
Annual Total	3.4 (1.5-6.3)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.005% (0.002%-0.010%)	0.016% (0.007%-0.030%)

Table A5.111: Mean Annual Abundance of Kittiwake Apportioned to Saltee Islands SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	1	1	1	1	1
30	0	0	0	0	0	0	0	1	1	1	1	1	1	1
40	0	0	0	0	0	0	1	1	1	1	1	1	2	2
50	0	0	0	0	0	0	1	1	1	1	2	2	2	2

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
60	0	0	0	0	0	1	1	1	1	2	2	2	2	3
70	0	0	0	0	0	1	1	1	2	2	2	2	3	3
80	0	0	0	0	0	1	1	1	2	2	2	3	3	4
90	0	0	0	0	0	1	1	2	2	2	3	3	4	4
100	0	0	0	0	0	1	1	2	2	3	3	4	4	4

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2

5.4.17.5.4 Breeding population abundance: Collision Risk (Operation)

The CO for the kittiwake feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population abundance, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Saltee Islands SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these 5 individuals are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array impacted by collision is less than three (2.5) per annum during the breeding bio-season.

Provided 0.2% of these collisions are breeding birds from the Saltee Islands SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.112).

Based on the latest colony count of 1,290 breeding adults and annual adult background mortality of 188 (188.3) individuals, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the breeding bio-season (Table A5.112).

The predicted collision mortality as a result of the operational phase in the post-breeding migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the return migration, provided 0.2% and 0.3% of the kittiwake within the array area are deemed to be breeding adults from the Saltee Islands SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) individual during the autumn migration bio- season and less than one (<0.1) during the spring migration bio-season (Table A5.112).

Based on the latest population of breeding adults the addition of less than one predicted breeding adult mortality would indicate an increase in baseline mortality of 0.008% during the post-migration breeding season and 0.010% during the return migration respectively.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Saltee Islands SPA is less than one (<0.1) breeding adult per annum (Table A5.112).

The annual predicted mortality of less than one breeding adults from the Saltee Islands SPA across all bio-seasons indicates an increase in baseline mortality of 0.020% when considering the latest colony count, respectively. This level of impact would be indistinguishable from natural fluctuations in the population and would not represent an increase in mortality that was capable of adversely affecting the integrity of the SPA population (Table A5.112).

Table A5.112: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Saltee Islands SPA (replaces Table 5.88 of the 2024 NIS) [18].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.1)	0.008% (0.000%-0.030%)
Breeding	0.0 (0.0-0.0)	0.002% (0.000%-0.014%)
Spring Migration	0.0 (0.0-0.1)	0.010% (0.000%-0.039%)
Annual Total	0.0 (0.0-0.2)	0.020% (0.000%-0.083%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.005% (0.000%-0.015%)
Breeding	0.0 (0.0-0.0)	0.005% (0.000%-0.024%)
Spring Migration	0.0 (0.0-0.1)	0.007% (0.000%-0.027%)
Annual Total	0.0 (0.0-0.1)	0.016% (0.000%-0.066%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operational phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population abundance attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.5.5 Summary of AEoI Conclusions for kittiwake at the Saltee Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to the population abundance attribute, for Project Option 1 or Project Option 2.

5.4.17.6 Lesser black-backed gull

The key updates for lesser black-backed gull include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.17.6 of the 2024 NIS.

The CO for the lesser black-backed gull feature of the Saltee Islands SPA is to maintain favourable conservation condition. Lesser black-backed gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The offshore development area is situated 169.3km from Saltee Islands SPA, which is within the MMF+1SD for lesser black-backed gull (127+109km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Lesser black-backed gull will disperse throughout the bio-geographic region, during the non-breeding season.

[18] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

However, a proportion of birds from this SPA are estimated to be present within the offshore development area and therefore have been screened in for non-breeding bio-season (September – March) as per Furness (2015).

Collision risk of lesser black-backed gull from Saltee Islands has been assessed for the migration-free breeding season (May–July), the post-breeding migration bio-season (August–October), the return migration bio-season (March–April), and the migration- free winter season (November – February) as defined by Furness (2015).

Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attributes for lesser black-backed gull within Saltee Islands SPA is breeding population abundance.

5.4.17.6.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.17.6.2 Breeding population abundance: Collision Risk (Operation)

The CO for the lesser black-backed gull feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.99 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population abundance, the target for which long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull breeding population abundance of the Saltee Islands SPA as a result of collision risk.

The predicted collision mortality during the migration- free breeding bio-season is one (1.0) individual. Assuming 35% of the lesser black-backed gull within the array area are breeding adults the total number of breeding adults in the array impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season.

Provided 0.2% of these collisions are breeding birds from the Saltee Islands SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.0) breeding adults (Table A5.113).

Based on the latest colony count of 262 breeding adults and annual adult background mortality of 30 (30.1) individuals, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the migration-free breeding bio-season.

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is zero (<0.1) individuals, provided 0.2% of the lesser black-backed gulls within the array area are deemed to be breeding adults from the Saltee Islands SPA during the autumn migration bio-season and 0.3% during the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is zero (<0.1) during migrations bio-seasons (Table A5.113).

Based on the latest colony count the addition of less than one predicted breeding adult mortality would indicate an increase in baseline mortality of <0.001% during the migration seasons (Table A5.113).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Saltee Islands SPA is less than one (<0.1) breeding adult per annum.

The annual predicted mortality of less than one breeding adult from the Saltee Islands SPA across all bio-seasons indicates an increase in baseline mortality of 0.002% when considering the latest colony count.

Table A5.113: Seasonal Collision Mortalities During the Operational Phase for Lesser Black-backed Gull at Saltee Islands SPA (replaces Table 5.89 of the 2024 NIS [19].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Breeding	0.0 (0.0-0.0)	0.002% (0.000%-0.021%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.0)	0.002% (0.000%-0.021%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operational phase will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the breeding population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.17.6.3 Summary of AEoI Conclusions for kittiwake at the Saltee Islands SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Saltee Islands SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the population size attribute, for Project Option 1 or Project Option 2.

5.4.18 Morecambe Bay & Duddon Estuary SPA

5.4.18.1 Qualifying Interests and Conservation Objectives

The following QIs of the Morecambe Bay & Duddon Estuary SPA are considered within this section:

Table A5.114: qualifying interests and Conservation Objectives of the Morecambe Bay & Duddon Estuary SPA (replaces Table 5.90 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Lesser black-backed gul [A183]	"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the QIs • The structure and function of the habitats of the QIs • The supporting processes on which the habitats of the QIs rely • The population of each of the QIs, and, • The distribution of the QIs within the site."

[19] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.18.2 Lesser black-backed gull

The key updates for lesser black-backed gull include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.18.1 of the 2024 NIS.

5.4.18.2.1 Population size: Collision risk (Operation)

Lesser black-backed gull was screened in for the Morecambe Bay and Duddon Estuary SPA in relation to collision risk due to this SPA being within mean maximum foraging range plus one SD. In the breeding season, of the one (1.0) collision predicted from the proposed development, less than one (0.0) mortalities are apportioned to this SPA. Meanwhile in the non-breeding seasons, zero (0.0) mortalities are apportioned. Therefore, any impact as a result of the proposed development is considered to be non-material and is not considered further here.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operational phase will not result in an AEoI of the Morecambe Bay and Duddon Estuary SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the breeding population size, for Project Option 1 or Project Option 2.

5.4.18.2.2 Summary of AEoI Conclusions for lesser black-backed gull at the Morecambe Bay and Duddon Estuary SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Morecambe Bay and Duddon Estuary SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, for Project Option 1 or Project Option 2.

5.4.19 Rathlin Island SPA

5.4.19.1 Qualifying Interests and Conservation Objectives

The following QIs of the Rathlin Island SPA are considered within this section:

Table A5.115: Qualifying interests and Conservation Objectives of the Rathlin Island SPA (replaces Table 5.91 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188] ; Lesser black-backed gull [A138]	"To maintain or enhance the population of the qualifying species: • Fledging success sufficient to maintain or enhance population; • To maintain or enhance the range of habitats utilised by the qualifying species; • To ensure that the integrity of the site is maintained; • To ensure there is no significant disturbance of the species and • To ensure that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species"

5.4.19.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational

phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.19.1 of the 2024 NIS.

The CO for the kittiwake feature of the Rathlin Island SPA is to maintain or enhance the population of the qualifying species. Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 168.5km from the Rathlin Island SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Rathlin Island SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Rathlin Island SPA is population size.

5.4.19.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km^2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The CO attribute for kittiwake within Rathlin Island SPA is breeding population size.

5.4.19.2.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Rathlin Island SPA is to maintain or enhance the population of the qualifying species. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO target of ensuring population of the qualifying features are a viable component of Rathlin Island. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Rathlin Island as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.116. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.1 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Rathlin Island SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.116: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Rathlin Islands SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		15%, 1%	15%, 3%	15%, 1%	15%, 3%
Migration-free breeding					
Autumn Migration	13.7 (5.7-23.2)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Breeding	8.4 (4.1-13.9)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring Migration	11.8 (5.7-22.7)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	33.9 (15.5-59.9)	0.1 (0.0-0.1)	0.2 (0.1-0.3)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.010%)
Full breeding					
Autumn Migration	7.1 (3.3-12.7)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Breeding	12.8 (6.0-20.0)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring Migration	9.6 (4.0-20.1)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Annual Total	29.5 (13.4-52.8)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.008%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.19.2.3 Population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Rathlin Island SPA is to maintain or enhance the population of the qualifying species. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO target of ensuring population of the qualifying features are a viable component of Rathlin Island. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the Rathlin Island as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 47% are predicted to be breeding birds from Rathlin Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, eight (8.4) breeding adults at risk of displacement are attributed to Rathlin Island SPA during the breeding bio-season (Table A5.117). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is less than one (0.0) and less than one (0.1) breeding adults.

Based on the latest colony count of 19,258 breeding adults and annual background mortality of 2,812 individuals, the addition of less than one predicted breeding adult mortality would represent a 0.001% and 0.003% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the post-breeding migration bio-season is 930 individuals and 612 individuals during the return migration.

Assuming that 1.47% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Rathlin Island SPA during the autumn migration bio-seasons and 1.92% during the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer 14 (13.7) during the autumn migration bio-season and 12 (11.8) during the spring migration (Table A5.117).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.001% and 0.004% during both the autumn migration and the spring migration bio-season based on the latest colony count of 19,258 breeding adults and annual background mortality of 2,812 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with 34 (33.9) of these being breeding adults from the Rathlin Island SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (0.1) and less than one (0.3) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the kittiwake QI of Rathlin Island SPA is presented within Table A5.118.

The predicted mortality of less than one equates to an increase in baseline mortality of 0.004% and 0.011% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.117: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Rathlin Islands SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		30%, 1%	30%, 3%	30%, 1%	30%, 3%
Migration-free breeding					
Autumn Migration	13.7 (5.7-23.2)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Breeding	8.4 (4.1-13.9)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.001% (0.000%-0.001%)	0.003% (0.001%-0.004%)
Spring Migration	11.8 (5.7-22.7)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Annual Total	33.9 (15.5-59.9)	0.1 (0.0-0.2)	0.3 (0.1-0.5)	0.004% (0.002%-0.006%)	0.011% (0.005%-0.019%)
Full breeding					
Autumn Migration	7.1 (3.3-12.7)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Breeding	12.8 (6.0-20.0)	0.0 (0.0-0.1)	0.1 (0.1-0.2)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.006%)
Spring Migration	9.6 (4.0-20.1)	0.0 (0.0-0.1)	0.1 (0.0-0.2)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.006%)
Annual Total	29.5 (13.4-52.8)	0.1 (0.0-0.2)	0.3 (0.1-0.5)	0.003% (0.001%-0.006%)	0.009% (0.004%-0.017%)

Table A5.118: Mean Annual Abundance of Kittiwake Apportioned to Rathlin Island SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	1	1	1	2	2	2	3	3	3
20	0	0	0	0	1	1	2	3	3	4	5	5	6	7
30	0	0	0	1	1	2	3	4	5	6	7	8	9	10
40	0	0	0	1	1	3	4	5	7	8	9	11	12	14
50	0	0	1	1	2	3	5	7	8	10	12	14	15	17

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
60	0	0	1	1	2	4	6	8	10	12	14	16	18	20
70	0	0	1	1	2	5	7	9	12	14	17	19	21	24
80	0	1	1	1	3	5	8	11	14	16	19	22	24	27
90	0	1	1	2	3	6	9	12	15	18	21	24	27	31
100	0	1	1	2	3	7	10	14	17	20	24	27	31	34

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.19.2.4 Population size: Collision risk (Operation)

The CO for the kittiwake feature of the Rathlin Island SPA is to maintain or enhance the population of the qualifying species. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO target of ensuring population of the qualifying features are a viable component of Rathlin Island. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the Rathlin Island SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these five individuals are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array impacted by collision is two (2.3) per annum during the breeding bio-season.

Provided 3% of these collisions are breeding birds from the Rathlin Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.1) breeding adult (Table A5.119).

Based on the latest colony count of 19,258 breeding adults and annual adult background mortality of 2,812 individuals, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the breeding bio-season (Table A5.119).

The predicted collision mortality as a result of the operational phase in the post-breeding migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the return migration, provided 1.5% and 1.9% of the kittiwake within the array area are deemed to be breeding adults from the Saltee Islands SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (0.1) individual during the autumn migration bio- season and less than one (0.1) during the spring migration bio-season Table A5.119).

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality during the autumn breeding season and the spring migration would indicate an increase in baseline mortality of 0.003% and 0.004%, respectively (Table A5.119).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Rathlin Island SPA is less than one (0.3) breeding adult per annum (Table A5.119).

The annual predicted mortality of less than one breeding adults from the Rathlin Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.010% when considering the latest colony count.

Table A5.119: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Rathlin Island SPA (replaces Table 5.92 of the 2024 NIS [20].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.1 (0.0-0.4)	0.003% (0.000%-0.013%)
Breeding	0.1 (0.0-0.4)	0.002% (0.000%-0.014%)
Spring Migration	0.1 (0.0-0.5)	0.004% (0.000%-0.017%)

[20] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Annual Total	0.3 (0.0-1.2)	0.010% (0.000%-0.044%)
Full breeding		
Autumn Migration	0.1 (0.0-0.2)	0.002% (0.000%-0.006%)
Breeding	0.1 (0.0-0.7)	0.005% (0.000%-0.024%)
Spring Migration	0.1 (0.0-0.3)	0.003% (0.000%-0.012%)
Annual Total	0.3 (0.0-1.2)	0.010% (0.000%-0.043%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.19.2.5 Summary of AEoI Conclusions for kittiwake at the Rathlin Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI, for Project Option 1 or Project Option 2.

5.4.19.3 Lesser black-backed gull

5.4.19.3.1 Breeding population size: Collision Risk (Operation)

The CO for lesser black-backed gull feature of the Rathlin Island SPA is to maintain each feature in favourable condition. Favourable conservation condition is defined by a number of components and targets (see Table A5.115 and Section 5.4.19.1). In terms of assesses potential impacts from collision risk this section assesses impacts against the component for breeding population size, the target for which that long term SPA population trend is maintained. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population size of the Rathlin Island SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is one (1.0) individual (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 35% of the lesser black-backed gulls are breeding adults the total number of breeding adults in the PFI impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season. Provided 0.25% of these collisions are breeding birds from Rathlin Island SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.0) breeding adults (Table A5.120).

Based on the latest colony count of 964 breeding adults and annual adult background mortality of 111 (110.9) individuals, the addition of less than one breeding adult mortality would represent a 0.020% increase in baseline mortality during the breeding bio-season.

The predicted collision mortality as a result of the operational phase during the autumn migration bio-season, the spring migration and the migration-free winter bio-season is less than one individual (0.0).

Provided 0.0% of the lesser black-backed gulls within the array area are deemed to be breeding adults from Rathlin Island SPA during the migration bio-seasons and 0.0% during the migration-free winter (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is zero (0.0) during the migration bio-seasons and the migration-free winter bio-season (Table A5.120).

When considering the non-breeding bio-season as a whole, the addition of zero (0.0) consequent mortalities of adult lesser black-backed gulls would indicate and increase in baseline mortality of 0.000% when assessed against the latest colony count (Table A5.120).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Rathlin Island SPA is less than one (0.0) breeding adult per annum (Table A5.120).

The annual predicted mortality of less than one breeding adult from Rathlin Island SPA across all bio-seasons indicates an increase in baseline mortality of 0.020% when considering the latest colony count, respectively. This level of impact would be indistinguishable from natural fluctuations in the population, when assessed against the latest colony count (Table A5.120).

Table A5.120: Seasonal Collision Mortalities during the Operational Phase for Lesser black-backed gull at Rathlin Island SPA (replaces Table 5.72 of the 2024 NIS)[21].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Breeding	0.0 (0.0-0.0)	0.002% (0.000%-0.020%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.0)	0.002% (0.000%-0.020%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the lesser black-backed gull QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.19.3.2 Summary of AEoI Conclusions for kittiwake at the Rathlin Island SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Rathlin Island SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the lesser black-backed gull QI, for Project Option 1 or Project Option 2.

5.4.20 Ailsa Craig SPA

Ailsa Craig SPA is an island, situated in the outer part of the Firth of Clyde, 171.0km from the array area. The SPA encompasses cliffs up to 100 metres that encircle the island and provide nesting sites for a variety of seabirds, including the largest Northern gannet colonies in the world. The SPA boundary is coincident with Ailsa Craig SSSI and extends seaward by approximately 2km into the marine area surrounding the island.

5.4.20.1 Qualifying Interests and Conservation Objectives

The key change for this section is the conservation objectives for Ailsa Craig SPA have been updated by NatureScot since the planning application and as such have been updated in Table A 5122 below.

The following QIs of the Ailsa Craig SPA are considered within this section:

[21] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Table A5.121: qualifying interests and Conservation Objectives of the Ailsa Craig SPA (replaces Table 5.93 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Gannet [A016]; and Lesser black-backed gull [A138]; and Kittiwake [A188]	To ensure that the qualifying features of the Ailsa Craig SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status: • To ensure that the integrity of the Ailsa Craig SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: • The populations of the qualifying features are viable components of the Ailsa Craig SPA. Distribution and extent of habitats supporting the species; • The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and • The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at Ailsa Craig SPA.

5.4.20.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c)ii issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The following text is a direct replacement of the text within Section 5.4.20.2 of the 2024 NIS.

Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. The array area is situated 171.0km from the Ailsa Craig SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Ireland's Eye SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

5.4.20.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The CO attribute for kittiwake within Ailsa Craig SPA is population size.

5.4.20.2.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO target of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Ailsa Craig as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.122. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Ailsa Craig SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.122: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Ailsa Craig SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	1.0 (0.4-1.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.006%)
Breeding	0.6 (0.3-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring Migration	0.8 (0.4-1.6)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.006%)
Annual Total	2.4 (1.1-4.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.005%)	0.009% (0.004%-0.016%)
Full breeding					
Autumn Migration	0.5 (0.2-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	0.9 (0.4-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.005%)
Spring Migration	0.7 (0.3-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Annual Total	2.1 (0.9-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.005%)	0.008% (0.003%-0.014%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.2.3 Population size: Disturbance and Displacement (Operation and Maintenance)

The CO for the kittiwake feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Ailsa Craig as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the migration-free breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the migration-free breeding bio-season.

Of these 281 breeding adults, 0.2% are predicted to be breeding birds from Ailsa Craig SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, one (0.6) breeding adults at risk of displacement are attributed to Ailsa Craig SPA during the breeding bio-season (Table A5.123). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated less than one (<0.1) breeding adults.

Based on the latest colony count of 824 breeding adults and annual background mortality of 120 (120.3) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.001% and 0.004% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.1% and 0.1% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Ailsa Craig SPA during the migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer one (1.0) during the post- breeding migration bio-season and one (0.8) during the return migration (Table A5.123).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the post-breeding migration bio-season and the return migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% and 0.007% during the autumn migration bio-season and 0.002% and 0.006% during the spring migration based on the latest colony count of 824 individuals and an annual background mortality of 120 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with two (2.4) of these being breeding adults from the Ailsa Craig SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the kittiwake QI of Ailsa Craig SPA is presented within Table A5.123.

The predicted mortality of less than one in baseline mortality of 0.006% and 0.018% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.123: Range-Based Displacement Mortalities During the Operation and Maintenance Phase for Kittiwake at Ailsa Craig SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn Migration	1.0 (0.4-1.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.004%)	0.007% (0.003%-0.012%)
Breeding	0.6 (0.3-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Spring Migration	0.8 (0.4-1.6)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.004%)	0.006% (0.003%-0.012%)
Annual Total	2.4 (1.1-4.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.006% (0.003%-0.011%)	0.018% (0.008%-0.032%)
Full breeding					
Autumn Migration	0.5 (0.2-0.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.007%)
Breeding	0.9 (0.4-1.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)
Spring Migration	0.7 (0.3-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.004%)	0.005% (0.002%-0.011%)
Annual Total	2.1 (0.9-3.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.005% (0.002%-0.009%)	0.015% (0.007%-0.028%)

Table A5.124: Mean Annual Abundance of Kittiwake Apportioned to Ailsa Craig SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	1	1	1
40	0	0	0	0	0	0	0	0	0	1	1	1	1	1
50	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
60	0	0	0	0	0	0	0	1	1	1	1	1	1	1
70	0	0	0	0	0	0	0	1	1	1	1	1	1	1
80	0	0	0	0	0	0	1	1	1	1	1	1	2	2
90	0	0	0	0	0	0	1	1	1	1	1	2	2	2
100	0	0	0	0	0	0	1	1	1	1	1	2	2	2

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.2.4 Population size: Collision risk (Operation)

The CO for the kittiwake feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Ailsa Craig as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals (Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment). Assuming 47% of these five individuals are breeding adults (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total number of breeding adults in the array impacted by collision is two (2.3) per annum during the breeding bio-season.

Provided 0.2% of these collisions are breeding birds from the Ailsa Craig SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table 5.125).

Based on the latest colony count of 824 breeding adults and annual adult background mortality of 120 (120.3) individuals, the addition of less than one breeding adult mortality would represent a 0.004% increase in baseline mortality during the migration-free breeding bio-season (Table 5.125).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the spring migration, provided 0.1% and 0.1% of the kittiwake within the array area are deemed to be breeding adults from the Saltee Islands SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.01) individual during the autumn migration bio- season and less than one (<0.1) during the spring migration bio-season (Table 5.125).

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality during the autumn breeding season and the spring migration would indicate an increase in baseline mortality of 0.006% and 0.007%, respectively (Table 5.125).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Ailsa Craig SPA is less than one (<0.1) breeding adult per annum (Table 5.125).

The annual predicted mortality of less than one breeding adults from the Ailsa Craig SPA across all bio-seasons indicates an increase in baseline mortality of 0.017% when considering the latest colony count.

Table 5.125: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Ailsa Craig SPA (replaces Table 5.94 of the 2024 NIS [22].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.0)	0.006% (0.000%-0.022%)
Breeding	0.0 (0.0-0.0)	0.004% (0.000%-0.021%)

[22] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Spring Migration	0.0 (0.0-0.0)	0.007% (0.000%-0.029%)
Annual Total	0.0 (0.0-0.1)	0.017% (0.000%-0.072%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.011%)
Breeding	0.0 (0.0-0.0)	0.008% (0.000%-0.038%)
Spring Migration	0.0 (0.0-0.0)	0.005% (0.000%-0.020%)
Annual Total	0.0 (0.0-0.1)	0.016% (0.000%-0.069%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential for collision risk during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.2.5 Summary of AEoI Conclusions for kittiwake at the Ailsa Craig SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Aisla Craig SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, for Project Option 1 or Project Option 2.

5.4.20.3 Gannet

The key updates for gannet include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.20.3 of the 2024 NIS.

Gannet has been screened in to assess for the potential for an AEoI from displacement from the proposed development alone during the construction and decommissioning and the operational phase in addition to the potential for an AEoI from collision during the operational phase.

The proposed development is located 171.0km from the Ailsa Craig SPA which is within MMF+1SD for gannet (315.2+194.2km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Gannet disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Ailsa Criag SPA are likely to be present within array area; therefore, gannet have been screened in for the non-breeding bio-season.

Collision risk of gannet from Ailsa Craig has been assessed for the full breeding season (March – September), the post-breeding migration bio-season (October – November) and the return migration bio-season (December – February), gannet do not have a migration- free winter season, as defined by Furness (2015).

Gannet have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The CO attribute for gannet within Ailsa Craig SPA is population size.

5.4.20.3.1 Mitigation

Gannets are prone to both collision and displacement impacts. Displacement assessments are undertaken based on the abundance of birds within the array area plus 2km buffer. 'Hotspots' of birds, which may indicate key foraging/loafing areas, were identified in the full survey area and considered within the array refinement exercise with the aim to reduce displacement impacts on bird species. Although not a key consideration when undertaking array refinements, any reduction in array size benefits gannets by reducing the project footprint.

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation for guillemot. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development. The revised boundary now avoids several identified hotspots, further reducing displacement risk.

In addition, gannet are prone to collision risk. The project has mitigated considerably for collision by increasing the air draft to 40m LAT. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.20.3.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the gannet feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the gannet population of the Ailsa Craig as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.126. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.2-0.5 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the gannet QI of the Ailsa Craig SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.126: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Gannet at Ailsa Craig SPA (replaces Table 5.95 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Autumn Migration	16.8 (8.0-26.5)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.001% (0.001%-0.002%)	0.004% (0.002%-0.006%)
Breeding	29.1 (14.0-48.0)	0.1 (0.0-0.2)	0.1 (0.0-0.2)	0.004% (0.002%-0.007%)	0.006% (0.003%-0.010%)
Spring Migration	0.9 (0.2-2.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	46.7 (22.3-76.4)	0.2 (0.1-0.3)	0.5 (0.2-0.8)	0.007% (0.003%-0.011%)	0.010% (0.005%-0.016%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.3.3 Population size: Disturbance and Displacement (Operation)

The CO for the gannet feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the gannet population of the Ailsa Craig as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for gannet from operation and maintenance activities.

During the breeding bio-season, 270 gannets are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 51% the total number of breeding adults in the array at risk of displacement is 138 (137.8) during the full breeding bio-season.

Of these 138 breeding adults, 21.1% are predicted to be breeding birds from Ailsa Craig SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 29 (29.1) breeding adults at risk of displacement are attributed to Ailsa Craig SPA during the breeding bio-season. The consequent mortality is estimated is between less than one (0.2) breeding adults, provided a displacement rate of 70% and a mortality rate of 1% has been applied. However, based on the NatureScot guidance (NatureScot, 2023a), a displacement range of 70% and mortality rate of 3% is also presented in Table A5.127.

Based on the latest colony count of 61,930 breeding adults and annual background mortality of 5,821 individuals, the addition of less than one predicted breeding adult mortality would represent a 0.004% increase in baseline mortality during the breeding bio-season (Table A5.127).

During the post-breeding migration bio-season, the mean-peak number of gannets estimated to occur in the PFI plus the 2km buffer is 135 individuals, and nine individuals during the spring migration.

Assuming that 12.4% of these gannets within the array area are deemed to be breeding adults from the Ailsa Craig SPA during the autumn migration bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is 17 (16.8) individuals. Whereas, during the spring migration, 10.3% of gannet with the array area are assumed to be breeding adults from the Ailsa Craig SPA, one (0.9) breeding adult is estimated to be displaced from the PFI plus 2km buffer (Table A5.127).

Provided, 70% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at less than one individual during both the autumn migration bio-season and the spring migration. 0.1 and <0.1 mortalities, respectively. However, based on guidance from NatureScot (NatureScot, 2023a), Table A5.127 presents a displacement range and mortality range of 70% and 1% to 3%, respectively.

This consequent estimated mortality equates to an increase in baseline mortality of 0.002% in the autumn migration bio-season and <0.001% in the spring migration based on the latest population count.

Throughout all bio-seasons, the number of gannet estimated to occur in the PFI plus a 2km buffer is 414 individuals, with 47 (46.7) of these being breeding adults from the Ailsa Craig SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is less than one (0.3) breeding adults per annum across all bio-seasons. Table A5.127 presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (70% displacement, 1% to 3% mortality). An annual displacement matrix for predicted impacts apportioned to the gannet QI of Ailsa Craig SPA is presented within Table A5.128.

The predicted mortality of less than one breeding adult from Ailsa Craig SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.007% when considering the latest colony count (Table A5.127).

Table A5.127: Range-Based Displacement Mortalities During the Operational Phase for Gannet at Ailsa Craig SPA (replaces Table 5.96 of the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		70%, 1%	70%, 3%	70%, 1%	70%, 3%
Autumn Migration	16.8 (8.0-26.5)	0.1 (0.1-0.2)	0.4 (0.2-0.6)	0.002% (0.001%-0.004%)	0.007% (0.003%-0.011%)
Breeding	29.1 (14.0-48.0)	0.2 (0.1-0.3)	0.6 (0.3-1.0)	0.004% (0.002%-0.007%)	0.012% (0.006%-0.020%)
Spring Migration	0.9 (0.2-2.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Annual Total	46.7 (22.3-76.4)	0.3 (0.2-0.5)	1.0 (0.5-1.6)	0.007% (0.003%-0.011%)	0.020% (0.009%-0.032%)

Table A5.128: Mean Annual Abundance of Gannet Apportioned to Ailsa Craig SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.97 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	1	1	2	2	3	3	4	4	5
20	0	0	0	0	1	2	3	4	5	6	7	7	8	9
30	0	0	0	1	1	3	4	6	7	8	10	11	13	14
40	0	0	1	1	2	4	6	7	9	11	13	15	17	19
50	0	0	1	1	2	5	7	9	12	14	16	19	21	23
60	0	1	1	1	3	6	8	11	14	17	20	22	25	28
70	0	1	1	2	3	7	10	13	16	20	23	26	29	33
80	0	1	1	2	4	7	11	15	19	22	26	30	34	37
90	0	1	1	2	4	8	13	17	21	25	29	34	38	42
100	0	1	1	2	5	9	14	19	23	28	33	37	42	47

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.3.4 Population size: Collision Risk (Operation)

The CO for the gannet feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the gannet population of the Ailsa Craig as a result of collision risk.

The predicted collision mortality during the breeding bio-season is one (1.0) individual. Assuming 51% of the gannet within the proposed development are breeding adults the total number of breeding adults in the array impacted by collision is one (0.5) per annum during the breeding bio-season (Table 5.129).

Provided 21.1% of these collisions are breeding birds from Ailsa Craig SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.1) breeding adults.

Based on the latest colony count of 61,930 breeding adults and annual adult background mortality of 5,821 individuals, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the breeding bio-season (Table 5.129).

The predicted collision mortality is less than one (0.1) individual in the autumn migration bio-season, and less than one individual during the spring migration (<0.1). Provided 12.4 % and 10.3% of the gannet within the PFI are deemed to be breeding adults from the Ailsa Craig SPA during the autumn migration bio- season and the spring migration, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (0.0) during the autumn migration bio- season and less than one (<0.1) during the spring migration bio-season (Table 5.129).

Based on the latest colony count of 61,930 breeding adults and annual adult background mortality of 5,821 individuals, the addition of less than one breeding adult mortality would represent a <0.001% increase in baseline mortality during the autumn migration bio-season and <0.001% during the spring migration (Table 5.129).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Ailsa Craig is less than one (0.1) breeding adults per annum (Table 5.129).

The annual predicted mortality of less than one breeding adults from the Ailsa Craig SPA across all bio-seasons indicates an increase in baseline mortality of 0.002% when considering the latest colony count (Table 5.129).

Table 5.129: Seasonal Collision Mortalities During the Operational Phase for Gannet at Ailsa Craig SPA (replaces Table 5.98 of the 2024 NIS) [23].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
With Macro Avoidance		
Autumn Migration	0.0 (0.0-0.1)	0.000% (0.000%-0.002%)
Breeding	0.1 (0.0-0.5)	0.002% (0.000%-0.010%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)

[23] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Annual Total	0.1 (0.0-0.6)	0.002% (0.000%-0.012%)
Without Macro Avoidance		
Autumn Migration	0.1 (0.0-0.3)	0.001% (0.000%-0.007%)
Breeding	0.4 (0.0-1.7)	0.007% (0.000%-0.033%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)
Annual Total	0.4 (0.0-2.0)	0.008% (0.000%-0.041%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.3.5 Population size: Combined Collision Risk and Disturbance and Displacement

Gannet have been screened in for both collision risk and displacement assessments during the operational phase there is therefore a potential for these two potential impacts to adversely affect the gannet population at Ailsa Craig SPA combined.

Based on the separate assessments of gannet from Ailsa Craig SPA in Section 5.4.19.1.5 and Section 5.4.19.1.6 above, the combines predicted annual impact from collision risk and displacement is less than one (0.4) breeding adult mortality. This represents an increase in baseline mortality of 0.008% when considering the latest colony count.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that combined collision risk and disturbance and displacement during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.3.6 Summary of AEoI Conclusions for gannet at the Ailsa Craig SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Aisla Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the gannet QI, for Project Option 1 or Project Option 2.

5.4.20.4 Lesser black-backed gull

The assessment results have been updated to reflect the inclusion of the additional NWIS DAS data and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.20.4 of the 2024 NIS.

Lesser black-backed gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone.

The proposed development is situated 171.0km from the Ailsa Craig SPA which is within the MMF+1SD for lesser black-backed gull (127+109km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Lesser black-backed gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the proposed development and therefore have been screened in for non-breeding bio-season (September – March) as per Furness (2015).

Collision risk of lesser black-backed gull from the Ailsa Craig SPA has been assessed for the migration-free breeding season (May–July), the post-breeding migration bio-season (August–October), the return migration bio-season (March–April), and the migration- free winter season (November – February) as defined by Furness (2015).

Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The CO attributes for lesser black-backed gull within Ailsa Craig SPA is breeding population abundance.

5.4.20.4.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.20.4.2 Population size: Collision Risk (Operation)

The CO for the lesser black-backed gull feature of the Ailsa Craig SPA is to ensure favourable conservation condition and make an appropriate contribution to achieving Favourable Conservation Status as well as to ensure that the integrity of the SPA is restored. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO of ensuring population of the qualifying features are a viable component of Ailsa Craig SPA. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population of the Ailsa Craig as a result of collision risk.

The predicted collision mortality during the migration- free breeding bio-season is one (1.0) individual. Assuming 35% of lesser black-backed gulls within the array are breeding adults the total number of breeding adults in the array impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season.

Provided 0.4% of these collisions are breeding birds from the Ailsa Craig SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table 5.130).

Based on a latest colony count of 345 breeding adults and annual adult background mortality of 40 (39.7) individuals, the addition of less than one breeding adult mortality would represent a 0.004% increase in baseline mortality during the migration-free breeding bio-season (Table 5.130).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is zero (0.0) individuals, provided 0.2% of the lesser black-backed gulls within the array area are deemed to be breeding adults from the Ailsa Craig SPA during the autumn migration bio-season and the spring migration and 0.7% during the migration-free winter (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is zero (0.0) during migration and the migration- free winter bio-seasons.

Based on the latest colony count of breeding adults the addition of zero (0.0) predicted breeding adult mortality during the migration bio-seasons would indicate an increase in baseline mortality of 0.000% (Table 5.130).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Ailsa Craig SPA is less than one (<0.1) breeding adult per annum.

The annual predicted mortality of less than one breeding adult from the Ailsa Craig SPA across all bio-seasons indicates an increase in baseline mortality of 0.004% when considering the latest colony count, respectively (Table 5.130). This level of impact would be indistinguishable from natural fluctuations in the population.

Table 5.130: Seasonal Collision Mortalities During the Operational Phase for Lesser Black-backed Gull at Ailsa Craig SPA (replaces Table 5.99 of the 2024 NIS)[24].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Breeding	0.0 (0.0-0.0)	0.004% (0.000%-0.031%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.0)	0.004% (0.000%-0.031%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Ailsa Craig SPA, in view of the site's COs to restore the favourable conservation condition of the lesser black-back gull QI with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.20.4.3 Summary of AEoI Conclusions for lesser black-backed gull at the Ailsa Craig SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Aisla Craig SPA, in view of the site's COs to maintain the favourable conservation condition of the lesser black-backed gull QI, for Project Option 1 or Project Option 2.

5.4.21 Helvick Head to Ballyquin SPA

5.4.21.1 Qualifying Interests and Conservation Objectives

The key change for this section is the conservation objectives for Helvick Head to Ballyquin SPA have been updated by NPWS since the planning application and as such have been updated in Table A 5-118 below.

The following QIs of the Helvick Head to Ballyquin SPA are considered within this section:

Table A5.131: Qualifying Interests and Conservation Objectives of Helvick Head to Ballyquin SPA (replaces Table 5.100 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188]	The COs for Helvick Head to Ballyquin SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for the screened in feature of the SPA, in order for favourable conservation status to be achieved is when: • The long term population is stable or increasing;

[24] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Qualifying Interests Screened In	Conservation Objectives
	• The productivity rate is sufficient to maintain a stable or increasing population; • There is a sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population; • There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on the breeding population; and • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA.

5.4.21.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The following text is a direct replacement of the text within Section 5.4.21.2 of the 2024 NIS.

Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase.

The array area is situated 209.4km from the Helvick Head to Ballyquin SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Helvick Head to Ballyquin SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration-free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Helvick Head to Ballyquin SPA is breeding population size.

5.4.21.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce

collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development**.**

5.4.21.2.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Helvick Head to Ballyquin SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.131 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Helvick Head to Ballyquin as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.132. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total less than one (0.0) individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Helvick Head to Ballyquin SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.132: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Helvick Head to Ballyquin SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Applicant (70%, 1%)	Guidance (70%, 3)	Applicant (70%, 1%)	Guidance (70%, 3)
Site Specific Approach to Bio-seasons					
Autumn Migration	0.1 (0.1-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)
Spring Migration	0.1 (0.1-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Annual Total	0.3 (0.1-0.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.004%)	0.006% (0.003%-0.011%)
Furness Approach to Bio-seasons					
Autumn Migration	0.1 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	0.0 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.002%)
Spring Migration	0.1 (0.0-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.002% (0.001%-0.005%)
Annual Total	0.2 (0.1-0.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.009%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Helvick Head to Ballyquin SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.21.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Helvick Head to Ballyquin SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.131 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Helvick Head to Ballyquin as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, >0.1% are predicted to be breeding birds from Helvick Head to Ballyquin SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, less than one (<0.1) breeding adults at risk of displacement are attributed to Helvick Head to Ballyquin SPA during the breeding bio-season (Table A5.133). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is less than one (<0.1) breeding adults.

Based on the latest colony count of 3,600 breeding adults and annual background mortality of 526 (525.6) individuals, the addition of less than one predicted breeding adult mortality would represent a 0.000% and 0.001% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the post-breeding migration bio-season is 930 individuals and 612 individuals during the return migration.

Assuming that 0.4% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Helvick Head to Ballyquin SPA during the autumn migration bio-season and 0.5% during the spring migration bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer less than one (0.1) during the autumn migration bio-season and less than one (0.1) during the spring migration (Table A5.133).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% and 0.006% during the autumn migration bio-season and 0.002% and 0.005% during the spring migration based on the latest colony count of 130 individuals and an annual background mortality of 19 (19.0) adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with less than one (0.3) of these being breeding adults from the Helvick Head to Ballyquin SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the kittiwake QI of Helvick Head to Ballyquin SPA is presented within Table A5.133.

The predicted mortality of less than one in baseline mortality of 0.004% and 0.013% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.133: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Helvick Head to Ballyquin SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Applicant (70%, 1%)	Guidance (70%, 3)	Applicant (70%, 1%)	Guidance (70%, 3)
Site Specific Approach to Bio-seasons					
Autumn Migration	0.1 (0.1-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)
Breeding	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring Migration	0.1 (0.1-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.003%-0.010%)
Annual Total	0.3 (0.1-0.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.004% (0.002%-0.008%)	0.013% (0.006%-0.023%)
Furness Approach to Bio-seasons					
Autumn Migration	0.1 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.006%)
Breeding	0.0 (0.0-0.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring Migration	0.1 (0.0-0.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.009%)
Annual Total	0.2 (0.1-0.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.003% (0.001%-0.006%)	0.010% (0.004%-0.018%)

Table A5.134: Mean Annual Abundance of Kittiwake Apportioned to Helvick Head to Ballyquin SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Helvick Head to Ballyquin SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.21.2.4 Breeding population size: Collision risk (Operation)

The CO for the kittiwake feature of the Helvick Head to Ballyquin SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.131 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Helvick Head to Ballyquin as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals. Assuming 47% of these five individuals, are breeding adults the total number of breeding adults in the array impacted by collision is three (2.3) per annum during the breeding bio-season.

Provided 0.01% of these collisions are breeding birds from the Helvick Head to Ballyquin SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.135).

Based on the latest colony count of 130 breeding adults and annual adult background mortality of 19 (19.0) individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the breeding bio-season (Table A5.135).

The predicted collision mortality as a result of the operational phase in the post-breeding migration bio-season is six(6.4) individuals, and seven (6.5) individuals during the return migration. Provided 0.01% and 0.02% of the kittiwake within the array area are deemed to be breeding adults from the Helvick Head to Ballyquin SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning), he consequent mortality of adult birds is less than one (<0.1) individual during the autumn migration bio-season and less than one (<0.1) during the spring migration bio-season (Table A5.135).

Based on the latest colony count of 130 breeding adults the addition of less than one predicted breeding adult mortality during the post-migration breeding season and the spring migration would indicate an increase in baseline mortality of 0.005% and 0.006%, respectively (Table A5.135).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Helvick Head to Ballyquin SPA is less than one (<0.1) breeding adult per annum (Table A5.135).

The annual predicted mortality of less than one breeding adults from the Helvick Head to Ballyquin SPA across all bio-seasons indicates an increase in baseline mortality of 0.012% when considering the latest colony count, respectively.

Table A5.135: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Helvick Head to Ballyquin SPA (replaces Table 5.101 of the 2024 NIS :)[25].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Site Specific Approach to Bio-seasons		
Autumn Migration	0.0 (0.0-0.0)	0.005% (0.000%-0.019%)
Breeding	0.0 (0.0-0.0)	0.001% (0.000%-0.007%)

[25] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Spring Migration	0.0 (0.0-0.0)	0.006% (0.000%-0.024%)
Annual Total	0.0 (0.0-0.0)	0.012% (0.000%-0.050%)
Furness Approach to Bio-seasons		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.009%)
Breeding	0.0 (0.0-0.0)	0.002% (0.000%-0.012%)
Spring Migration	0.0 (0.0-0.0)	0.004% (0.000%-0.017%)
Annual Total	0.0 (0.0-0.0)	0.009% (0.000%-0.038%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Helvick Head to Ballyquin SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the population size attribute target of no significant decline, for Project Option 1 or Project Option 2.

5.4.21.2.5 Summary of AEoI Conclusions for kittiwake at the Helvick Head to Ballyquin SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Helvick Head to Ballyquin SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to population size attribute, for Project Option 1 or Project Option 2.

5.4.22 Ribble & Alt Estuaries SPA

The Ribble and Alt Estuaries SPA lies on the coast of Lancashire and Sefton in northwest England. The SPA encompasses both the Ribble Estuary SSSI and Sefton Coast SSSI. It comprises two estuaries, the larger being the Ribble, along with an area of sandy foreshore along the Sefton Coast, forming part of the chain of SPAs along the west coast that fringe the Irish Sea. The site supports internationally important populations of waterbirds in winter, namely swans, geese, ducks, and waders. It is also a key site for wader populations moving along the west coast of Britain during migration periods. Breeding birds, including large concentrations of gulls and terns are supported by the large areas of saltmarsh and coastal grazing marsh, these seabirds feed both offshore and inland, outside the SPA.

5.4.22.1 Qualifying Interests and Conservation Objectives

The following QIs of the Ribble & Alt Estuaries SPA are considered within this section:

Table A5.136: Qualifying interests and Conservation Objectives of the Ribble & Alt Estuaries SPA (replaces Table 5.102 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Lesser black-backed gull [A138]	"Ensure that the integrity of the site is maintained or restored as appropriate and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring. • The extent and distribution of the habitats of the QIs • The structure and function of the habitats of the QIs • The supporting processes on which the habitats of the QIs rely • The population of each of the QIs, and, • The distribution of the QIs within the site."

5.4.22.2 Lesser black-backed gull

The key updates for lesser black-backed gull include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.22.2 of the 2024 NIS.

Lesser black-backed gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone.

The array area is situated 177.8km from the Ribble & Alt Estuaries SPA which is within the MMF+1SD for lesser black-backed gull (127+109km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Lesser black-backed gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the proposed development and therefore have been screened in for non-breeding bio-season (September – March) as per Furness (2015).

Collision risk of lesser black-backed gull from the Ribble & Alt Estuaries SPA has been assessed for the migration-free breeding season (May–July), the post-breeding migration bio-season (August–October), the return migration bio-season (March–April), and the migration- free winter season (November – February), as defined by Furness (2015).

Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attribute for lesser black-backed gull within Ribble & Alt Estuaries SPA is breeding population abundance.

5.4.22.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.22.2.2 Population size: Collision Risk (Operation)

The CO for the lesser black-backed gull feature of the Ribble & Alt Estuaries SPA is to ensure that the integrity of the site is maintained or restored as appropriate. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO target of maintaining or restoring the population of each qualifying feature. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population of the Ribble & Alt Estuaries SPA as a result of collision risk.

The predicted collision mortality during the migration- free breeding bio-season is one (1.0) individual. Assuming 35% of the lesser black-backed gull are breeding adults that the total number of breeding adults in the array impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season.

Provided 11.8% of these collisions are breeding birds from the Ribble & Alt Estuaries SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.137).

Based on the latest colony count of 3,808 breeding adults and annual adult background mortality of 438 (437.9) individuals, the addition of less than one breeding adult mortality would represent a 0.010% increase in baseline mortality during the migration-free breeding bio-season (Table A5.137).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is zero (0.0) individual. Provided 5.2% of the lesser black-backed gull within the array area are deemed to be breeding adults from the Ribble and Alt Estuaries SPA during the autumn migration bio-season and the spring migration bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning) and 16.8% during the migration- free winter bio-season, the consequent mortality of adult birds is zero (0.0) during the post-breeding migration, return migration and migration-free winter bio-seasons (Table A5.137).

Based on the latest colony count of 33,808 breeding adults and annual adult background mortality of 438 (437.9) individuals, the addition of less than one breeding adult mortality would represent a 0.000% increase in baseline mortality during the migration-free breeding bio-season (Table A5.137).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Ribble & Alt Estuaries SPA is less than one (<0.1) breeding adult per annum (Table A5.137).

The annual predicted mortality of less than one breeding adult from the Ribble & Alt Estuaries SPA across all bio-seasons indicates an increase in baseline mortality of 0.010% when considering the latest colony count (Table A5.137).

Table A5.137: Seasonal Collision Mortalities During the Operational Phase for Lesser Black-backed Gull at Ribble & Alt Estuaries SPA (replaces Table 5.103 of the 2024 NIS)[26].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Breeding	0.0 (0.0-0.4)	0.010% (0.000%-0.083%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.0 (0.0-0.4)	0.010% (0.000%-0.083%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Ribble & Alt Estuaries SPA, in view of the site's COs to maintain or restore the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the population size, for Project Option 1 or Project Option 2.

5.4.22.2.3 Summary of AEoI Conclusions for kittiwake at the Helvick Head to Ballyquin SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Ribble & Alt Estuaries SPA, in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to population size, for Project Option 1 or Project Option 2.

5.4.23 Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA

Skomer, Skokholm and the Seas off Pembrokeshire SPA is located off the south-west tip of Pembrokeshire in south-west Wales. The SPA extends beyond the 12 nm boundary, partially lying in both Welsh territorial waters and UK offshore waters. The islands of Skomer and Skokholm support the largest concentration of breeding seabirds in England and Wales. Including the largest breeding colony of Manx shearwater in the world (316,000 pairs), one of the largest colonies of lesser black-backed gull in Britain (> 10,000 apparently

[26] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

occupied sites). The site is also important for other seabird populations, namely razorbill, black-legged kittiwake, Atlantic puffin and common guillemot, supporting a breeding seabird assemblage of over 394,000 birds.

5.4.23.1 Qualifying Interests and Conservation Objectives

The following QIs of the Skomer, Skokholm and the Seas off Pembrokeshire SPA are considered within this section:

Table A5.138: qualifying interests and Conservation Objectives of the Skomer, Skokholm and the Seas off Pembrokeshire SPA (replaces Table 5.104 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Lesser black-backed gull [A183]; and Kittiwake [A188].	"Breeding population of included species: • The size of the population should be stable or increasing, allowing for natural variability, and sustainable in the long term. • The breeding population size of included species should be stable or increasing, aiming for at least 20,300, with a breeding productivity rate and an adult survival rate that allows this number to be maintained/increased. • Colonies of this species must not be lost as a result of anthropogenic influence. • The distribution of the population should be being maintained, or where appropriate increasing. • The distribution of this species within the site should not be constrained by anthropogenic factors. Reductions in the range of this species can only be acceptable if there is significant risk of detriment, to the FCS of priority features of this SPA. • There should be sufficient habitat, of sufficient quality, to support the population in the long term. • The breeding and foraging habitat of this species should be stable or increasing in terms of its area, and its quality should remain unaffected by anthropogenic factors. • Factors affecting the population or its habitat should be under appropriate control. • There should be no mammalian land predators present in the SPA, and control measures should be in place to ensure that accidental introduction does not take place. • Access beyond designated footpaths, should be under appropriate control. • Factors affecting the species within the site should be under control

5.4.23.2 Lesser black-backed gull

The key updates for lesser black-backed gull include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.23.2 of the 2024 NIS.

Lesser black-backed gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The proposed boundary is situated 205.0km from the Skomer SPA which is within the MMF+1SD for lesser black-backed gull (127+109km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Lesser black-backed gull will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – March) as per Furness (2015).

Collision risk of lesser black-backed gull from the Skomer SPA has been assessed for the migration-free breeding season (May–July), the post-breeding migration bio-season (August–October), the return migration bio-season (March–April), and the migration- free winter season (November – February), as defined by Furness (2015).

Lesser black-backed gull have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed through the assessment of collision mortalities. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment. The relevant CO attribute for lesser black-backed gull within Skomer SPA is breeding population abundance.

5.4.23.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. This decreases collisions by up to 65% for gulls from the proposed development, compared to a 22m air draft.

In addition, array refinements and a total reduction in the project footprint have reduced the effects from any potential changes in species spatial distribution, barrier effects or changes to prey species. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.23.2.2 Breeding population size: Collision Risk (Operation)

In terms of assessing potential impacts from collision risk this section assesses impacts against the CO for the lesser black-backed gull feature of the Skomer SPA which is to ensure size of the population should be stable or increasing allowing for natural variability, and sustainable in the long term. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population of the Skomer SPA as a result of collision risk.

The predicted collision mortality during the migration- free breeding bio-season is one (1.0) individual. Assuming 35% of the lesser black-backed gulls are breeding adults the total number of breeding adults in the array impacted by collision is less than one (0.4) per annum during the migration-free breeding bio-season.

Provided 7.3% of these collisions are breeding birds from the Skomer SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.139).

According to the latest colony count the population of lesser black-backed gull at the Skomer SPA is 11,474 individuals. Based the latest colony count, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the migration-free breeding bio-season (Table A5.139).

The predicted collision mortality as a result of the operational phase in the non-breeding bio-season is zero (0.0) individuals, provided 8.9% of the lesser black-backed gulls within the array area are deemed to be breeding adults from the Skomer SPA during the autumn migration bio-season and the spring migration and 27.2% during the migration-free breeding bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the consequent mortality of adult birds is zero (0.0) during the migration seasons (Table A5.139).

Based on the latest colony count the addition of less than one predicted breeding adult mortality during the migration and migration-free breeding bio-season would indicate an increase in baseline mortality of 0.000%.

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to Skomer SPA is less than one (<0.1) breeding adult per annum (Table A5.139).

The annual predicted mortality of less than one breeding adult from the Skomer SPA across all bio-seasons indicates an increase in baseline mortality of 0.002% when considering the latest colony count (Table A5.139).

Table A5.139: Seasonal Collision Mortalities During the Operational Phase for Lesser Black-backed Gull at Skomer, Skokholm, the Seas off Pembrokeshire SPA (replaces Table 5.105 of the 2024 NIS)[27].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Autumn Migration	0.0 (0.0-0.0)	0.000%(0.000%-0.000%)
Breeding	0.0 (0.0-0.2)	0.002%(0.000%-0.017%)
Spring Migration	0.0 (0.0-0.0)	0.000%(0.000%-0.000%)
Migration-free winter	0.0 (0.0-0.0)	0.000%(0.000%-0.000%)
Annual Total	0.0 (0.0-0.2)	0.002%(0.000%-0.017%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

5.4.23.2.3 Summary of AEoI Conclusions for lesser black-backed gull at the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Ribble & Alt Estuaries SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the lesser black-backed gull QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

5.4.23.3 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c)ii issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.23.3 of the 2024 NIS.

Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Kittiwake is an assemblage feature of this SPA and so the conclusion of this assessment considers how any impact may affect the assemblage of features at this site. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk

[27] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The proposed boundary is situated 205.0km from the Skomer SPA which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Skomer SPA is breeding population size.

5.4.23.3.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.23.3.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

In terms of assessing potential impacts from displacement and disturbance this section assesses impacts against the CO for the kittiwake feature of the Skomer SPA which is to ensure size of the population should be stable or increasing allowing for natural variability, and sustainable in the long term.

The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Skomer SPA as a result of displacement and disturbance during the construction and decommissioning phase.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.140. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting

that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Skomer, Skokholm and the Seas off Pembrokeshire SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size attribute, is presented in the following section.

Table A5.140: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Skomer, Skokholm and the Seas off Pembrokeshire SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3)	Guidance (30%, 1%)	Guidance (30%, 3)
Site Specific Approach to Bio-seasons					
Autumn Migration	3.1 (1.3-5.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.003% (0.001%-0.004%)
Breeding	0.8 (0.4-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)
Spring Migration	2.6 (1.3-5.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	6.6 (3.0-11.8)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)
Furness Approach to Bio-seasons					
Autumn Migration	1.6 (0.8-2.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Breeding	1.3 (0.6-2.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring Migration	2.2 (0.9-4.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.004%)
Annual Total	5.0 (2.3-9.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

5.4.23.3.3 Population size: Disturbance and Displacement (Operation)

In terms of assessing potential impacts from displacement and disturbance this section assesses impacts against the CO for the kittiwake feature of the Skomer SPA which is to ensure size of the population should be stable or increasing allowing for natural variability, and sustainable in the long term. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Skomer SPA as a result of displacement and disturbance.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 0.3% are predicted to be breeding birds from Skomer, Skokholm and the Seas off Pembrokeshire SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, one (0.8) breeding adults at risk of displacement are attributed to Skomer SPA during the breeding bio-season (Table A5.141). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is less than one (<0.1) breeding adults.

Based on the latest colony count of 3,614 breeding adults and annual background mortality of 528 individuals, the addition of less than one predicted breeding adult mortality would represent a <0.001% and 0.001% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.3% and 0.4% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Skomer, Skokholm and the Seas off Pembrokeshire SPA during the migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer three (3.1) during the autumn migration bio-season and three (2.6) during the spring migration (Table A5.141).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the post-breeding migration bio-season and the return migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% and 0.005% during both the autumn migration bio-season and the spring migration based on the latest colony count of 3,614 individuals and an annual background mortality of 528 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with seven (6.6) of these being breeding adults from the Skomer, Skokholm and the Seas off Pembrokeshire SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons. An annual displacement matrix for predicted impacts apportioned to the kittiwake QI of Skomer, Skokholm and the Seas off Pembrokeshire SPA is presented within Table A5.142.

The predicted mortality of less than one in baseline mortality of 0.004% and 0.011% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.141: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Skomer, Skokholm and the Seas off Pembrokeshire SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3)	Guidance (30%, 1%)	Guidance (30%, 3)
Site Specific Approach to Bio-seasons					
Autumn Migration	3.1 (1.3-5.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.009%)
Breeding	0.8 (0.4-1.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring Migration	2.6 (1.3-5.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.002% (0.001%-0.003%)	0.005% (0.002%-0.009%)
Annual Total	6.6 (3.0-11.8)	0.0 (0.0-0.0)	0.1 (0.0-0.1)	0.004% (0.002%-0.007%)	0.011% (0.005%-0.020%)
Furness Approach to Bio-seasons					
Autumn Migration	1.6 (0.8-2.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	1.3 (0.6-2.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Spring Migration	2.2 (0.9-4.5)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)
Annual Total	5.0 (2.3-9.4)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.003% (0.001%-0.005%)	0.009% (0.004%-0.016%)

Table A5.142: Mean Annual Abundance of Kittiwake Apportioned to Skomer, Skokholm and the Seas off Pembrokeshire SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	1	1	1
20	0	0	0	0	0	0	0	1	1	1	1	1	1	1
30	0	0	0	0	0	0	1	1	1	1	1	2	2	2
40	0	0	0	0	0	1	1	1	1	2	2	2	2	3
50	0	0	0	0	0	1	1	1	2	2	2	3	3	3
60	0	0	0	0	0	1	1	2	2	2	3	3	4	4
70	0	0	0	0	0	1	1	2	2	3	3	4	4	5
80	0	0	0	0	1	1	2	2	3	3	4	4	5	5
90	0	0	0	0	1	1	2	2	3	4	4	5	5	6
100	0	0	0	0	1	1	2	3	3	4	5	5	6	7

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

5.4.23.3.4 Population size: Collision risk (Operation)

Br In terms of assessing potential impacts from collision risk this section assesses impacts against the CO for the kittiwake feature of the Skomer SPA which is to ensure size of the population should be stable or increasing allowing for natural variability, and sustainable in the long term. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the Skomer SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals. Assuming 47% of these five individuals, are breeding adults the total number of breeding adults in the array impacted by collision is two (2.3) per annum during the breeding bio-season.

Provided 0.3% of these collisions are breeding birds from the Skomer, Skokholm and the Seas off Pembrokeshire SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table A5.143).

.Based on the latest population of 3,612 breeding adults and annual adult background mortality of 528 (527.6) individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the breeding bio-season (Table A5.143).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the spring migration. Provided 0.3% and 0.4% of the kittiwake within the array area are deemed to be breeding adults from Skomer, Skokholm and the Seas off Pembrokeshire SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) individual during the autumn migration bio-season and less than one (<0.1) during the spring migration bio-season.

Based on the latest colony count the consequent mortality of adult birds would represent a 0.004% and 0.005% increase in baseline mortality during the autumn migration bio-season and spring migration, respectively (Table A5.143).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Skomer SPA is less than one (<0.1) breeding adult per annum.

The annual predicted mortality of less than one breeding adult from the Skomer, Skokholm and the Seas off Pembrokeshire SPA across all bio-seasons indicates an increase in baseline mortality of 0.011% when considering the latest colony count.

Table A5.143: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at Skomer, Skokholm and the Seas off Pembrokeshire SPA (replaces Table 5.106 of the 2024 NIS) [28].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
With Macro-avoidance		
Autumn Migration	0.0 (0.0-0.1)	0.004% (0.000%-0.016%)
Breeding	0.0 (0.0-0.0)	0.001% (0.000%-0.007%)
Spring Migration	0.0 (0.0-0.1)	0.005% (0.000%-0.021%)
Annual Total	0.1 (0.0-0.2)	0.011% (0.000%-0.044%)
Generic Approach		
Autumn Migration	0.0 (0.0-0.0)	0.002% (0.000%-0.008%)
Breeding	0.0 (0.0-0.1)	0.003% (0.000%-0.013%)
Spring Migration	0.0 (0.0-0.1)	0.004% (0.000%-0.014%)
Annual Total	0.0 (0.0-0.2)	0.009% (0.000%-0.035%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk in the operation phase will not result in an AEoI of the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA, in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

Summary of AEoI Conclusions for kittiwake at the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA in view of the site's COs to maintain or enhance the favourable conservation condition of the kittiwake QI, with specific regard to the size of the population which should be stable or increasing, allowing for natural variability, and sustainable in the long term, for Project Option 1 or Project Option 2.

5.4.24 Grassholm SPA

Grassholm is a low-lying basalt island, located 207.2km from the array area and approximately 18km off the south-west Wales coast. The SPA supports the third largest breeding population of the north Atlantic gannet (*Morus bassanus*) in the world. Gannet are the only designated species at this SPA and are therefore the only species considered within the ornithological assessment presented below.

5.4.24.1 Qualifying Interests and Conservation Objectives

The following QIs of the Grassholm SPA are considered within this section:

[28] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Table A5.144: Qualifying interests and Conservation Objectives of the Grassholm SPA (replaces Table 5.107 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Gannet [A016]	"The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: • The population will not fall below 30,000 pairs in three consecutive years, • It will not drop by more than 25% of the previous year's figures in any one year. • There will be no decline in this population significantly greater than any decline in the North Atlantic population as a whole"

5.4.24.2 Gannet

The key updates for gannet include a reassessment based on the additional NWIS DAS and the introduction of the PFI. The following text is a direct replacement of the text within Section 5.4.24.2 of the 2024 NIS.

Gannet has been screened in to assess for the potential for an AEoI from displacement from the proposed development alone during the construction and decommissioning and operational phase in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is located 207.2km from the Grassholm SPA which is within MMF+1SD for gannet (315.2+194.2km) (Woodward et al., 2019) and therefore has been screened in for the breeding bio-season. Gannet disperse throughout the bio-geographical region outside of the breeding season, however, a proportion of individuals from Grassholm SPA are likely to be present within array area; therefore, gannet have been screened in for the non-breeding bio-season.

Collision risk of gannet from Grassholm has been assessed for the full breeding season (March – September), the post-breeding migration bio-season (October – November) and the return migration bio-season (December – February), gannet do not have a migration- free winter season, as defined by Furness (2015).

Gannet have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for gannet within Grassholm SPA is breeding population size.

5.4.24.2.1 Mitigation

Gannets are prone to both collision and displacement impacts. Displacement assessments are undertaken based on the abundance of birds within the array area plus 2km buffer. 'Hotspots' of birds, which may indicate key foraging/loafing areas, were identified in the full survey area and considered within the array refinement exercise with the aim to reduce displacement impacts on bird species. Although not a key consideration when undertaking array refinements, any reduction in array size benefits gannets by reducing the project footprint.

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation for guillemot. The Projected Footprint of Infrastructure now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.. The revised boundary now avoids several identified hotspots, further reducing displacement risk.

In addition, gannet are prone to collision risk. The project has mitigated considerably for collision by increasing the air draft to 40m LAT. For more details on mitigation measures in place to reduce impacts to birds see Section 4.16.

5.4.24.2.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the gannet feature of the Grassholm SPA is to maintain favourable conservation status. Favourable conservation status is primarily defined by the population size (see Table A5.144 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the breeding population size, the target for which is to maintain the population size of 30,000 pairs. The Developer has therefore undertaken an assessment of potential impacts on the gannet breeding population abundance of the Grassholm as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.145. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.1-0.4 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the gannet QI of the Grassholm SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size attribute, is presented in the following section.

Table A5.145: Range-Based Displacement Mortalities During the Construction and Decommissioning Phases for Gannet at Grassholm SPA (replaces Table 5.108 of the 2024 NIS)[29].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		Applicant (70%, 1%)	Guidance (70%, 3)	Applicant (70%, 1%)	Guidance (70%, 3)
Autumn Migration	18.2 (8.7-28.7)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.002% (0.001%-0.004%)	0.007% (0.003%-0.011%)
Breeding	17.5 (8.4-28.9)	0.1 (0.0-0.1)	0.1 (0.0-0.1)	0.004% (0.002%-0.007%)	0.007% (0.003%-0.011%)
Spring Migration	1.0 (0.3-2.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.000% (0.000%-0.001%)
Annual Total	36.6 (17.4-59.7)	0.1 (0.1-0.2)	0.4 (0.2-0.6)	0.009% (0.004%-0.015%)	0.014% (0.007%-0.023%)

[29] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Grassholm SPA, in view of the site's COs to restore the favourable conservation condition of the gannet QI, with specific regard to the attribute target of restoring the breeding population of gannet to a minimum 5-year peak mean of 33,000 pairs across the SPA, for Project Option 1 and Project Option 2.

5.4.24.2.3 Population size: Disturbance and Displacement (Operation)

The CO for the gannet feature of the Grassholm SPA is to maintain favourable conservation status. Favourable conservation status is primarily defined by the population size (see Table A5.144 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the breeding population size, the target for which is to maintain the population size of 30,000 pairs. The Developer has therefore undertaken an assessment of potential impacts on the gannet breeding population abundance of the Grassholm as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for gannet from operation and maintenance activities.

During the breeding bio-season, 270 gannet are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 51% the total number of breeding adults in the array at risk of displacement is 138 (137.8) during the full breeding bio-season.

Of these 138 breeding adults, 12.7% are predicted to be breeding birds from Grassholm SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, 18 (17.5) breeding adults at risk of displacement are attributed to Grassholm SPA during the breeding bio-season (Table A5.146). The consequent mortality is estimated is less than one (0.1) breeding adults, provided a displacement rate of 70% and a mortality rate of 1% has been applied. However, based on the NatureScot guidance (NatureScot, 2023a), a displacement range of 70% and mortality rate of 3% is also presented in Table A5.146.

The addition of less than one predicted breeding adult mortality would represent a 0.004% increase in baseline mortality during the breeding bio-season based on the latest colony count of 34,090 individuals and an annual background mortality of 3,580 adults.

During the post-breeding migration bio-season, the mean-peak number of gannets estimated to occur in the PFI plus the 2km buffer is 135 individuals, and nine individuals during the return migration.

Assuming that 13.4% of these gannets within the PFI are deemed to be breeding adults from Grassholm SPA during the autumn migration bio-season (Appendix A18: Offshore and Intertidal Ornithology Apportioning) the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is 18 (18.2) individuals. Whereas, during the spring migration, 11.2% of gannet with the array area are assumed to be breeding adults from Grassholm SPA, the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer is one (1.0) individuals (Table A5.146).

Provided, 70% displacement and 1% mortality has been applied, the total predicted consequent mortality from being displaced is estimated at less than one individual during both the autumn migration bio-season and the spring migration. 0.1 and <0.1 mortalities, respectively. However, based on guidance from NatureScot (NatureScot, 2023a), Table 5.109 presents a displacement range and mortality range of 70% and 1% to 3%, respectively.

This consequent estimated mortality equates to an increase in baseline mortality of 0.005% in the autumn migration bio-season and <0.001% in the spring migration based on the latest colony counts.

Throughout all bio-seasons, the number of gannet estimated to occur in the PFI plus a 2km buffer is 414 individuals, with 37 (36.6) of these being breeding adults from the Grassholm SPA. The total predicted displacement consequent mortality throughout the operational phase of the proposed development is less than one (0.3) breeding adults per annum across all bio-seasons. Table xx presents the displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023a) (70% displacement, 1% to 3% mortality). An annual displacement matrix for predicted impacts apportioned to the gannet QI of Grassholm SPA is presented within Table A5.147.

The predicted mortality of less than one breeding adult from Grassholm SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.009% when considering the latest colony count (Table A5.147). This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.146: Range-Based Displacement Mortalities During the Operational Phase for Gannet at Grassholm SPA (replaces Table 5.109 of the 2024 NIS) [30].

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality		Percentage increase in baseline mortality	
		70%, 1%	70%, 3%	70%, 1%	70%, 3%
Autumn Migration	18.2 (8.7-28.7)	0.1 (0.1-0.2)	0.4 (0.2-0.6)	0.005% (0.002%-0.007%)	0.014% (0.007%-0.022%)
Breeding	17.5 (8.4-28.9)	0.1 (0.1-0.2)	0.4 (0.2-0.6)	0.004% (0.002%-0.007%)	0.013% (0.006%-0.022%)
Spring Migration	1.0 (0.3-2.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.002%)
Annual Total	36.6 (17.4-59.7)	0.3 (0.1-0.4)	0.8 (0.4-1.3)	0.009% (0.004%-0.015%)	0.028% (0.013%-0.045%)

Table A5.147: Mean Annual Abundance of Gannet Apportioned to Grassholm SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer) (replaces Table 5.110 of the 2024 NIS).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	1	1	1	2	2	3	3	3	4
20	0	0	0	0	1	1	2	3	4	4	5	6	7	7
30	0	0	0	1	1	2	3	4	5	7	8	9	10	11
40	0	0	0	1	1	3	4	6	7	9	10	12	13	15
50	0	0	1	1	2	4	5	7	9	11	13	15	16	18
60	0	0	1	1	2	4	7	9	11	13	15	18	20	22
70	0	1	1	1	3	5	8	10	13	15	18	20	23	26
80	0	1	1	1	3	6	9	12	15	18	20	23	26	29
90	0	1	1	2	3	7	10	13	16	20	23	26	30	33

[30] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
100	0	1	1	2	4	7	11	15	18	22	26	29	33	37

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Grassholm SPA, in view of the site's COs to restore the favourable conservation condition of the gannet QI, with specific regard to the attribute target of restoring the breeding population of gannet to a minimum 5-year peak mean of 33,000 pairs across the SPA, for Project Option 1 and Project Option 2.

5.4.24.2.4 Population size: Collision Risk (Operation)

The CO for the gannet feature of the Grassholm SPA is to maintain favourable conservation status. Favourable conservation status is primarily defined by the population size (see Table A5.144 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the breeding population size, the target for which is to maintain the population size of 30,000 pairs. The Developer has therefore undertaken an assessment of potential impacts on the gannet breeding population abundance of the Grassholm as a result of collision risk.

The predicted collision mortality during the breeding bio-season is one (1.0) individual. Assuming 51% of the gannet within the proposed development are breeding adults the total number of breeding adults in the array impacted by collision is one (0.5) per annum during the breeding bio-season.

Provided 12.7% of these collisions are breeding birds from Grassholm SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (0.1) breeding adults (Table A5.148).

Based on the latest colony count of 34,090 breeding adults and annual adult background mortality of 3,580 individuals, the addition of less than one breeding adult mortality would represent a 0.002% increase in baseline mortality during the breeding bio-season (Table A5.148).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is less than one (0.1) individual, and individual during the spring migration (<0.1), provided 13.4 % and 11.2% of the gannet within the array area are deemed to be breeding adults from the Grassholm SPA during the autumn migration bio- season and the spring migration, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) during the both migration bio- seasons (Table A5.148).

Based on the latest colony count of 34,090 breeding adults and annual adult background mortality of 3,580 individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the autumn migration bio-season and <0.001% during the spring migration (Table A5.148).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Grassholm SPA is less than one (0.1) breeding adults per annum (Table A5.148).

The annual predicted mortality of less than one breeding adults from the Grassholm SPA across all bio-seasons indicates an increase in baseline mortality of 0.003% when considering the latest colony count (Table A5.148).

Table A5.148: Seasonal Collision Mortalities During the Operational Phase for Gannet at Grassholm SPA (replaces Table 5.111 of the 2024 NIS)[31].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
With Macro Avoidance		
Autumn Migration	0.0 (0.0-0.1)	0.001% (0.000%-0.004%)
Breeding	0.1 (0.0-0.3)	0.002% (0.000%-0.011%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)
Annual Total	0.1 (0.0-0.4)	0.003% (0.000%-0.015%)
Without Macro Avoidance		
Autumn Migration	0.1 (0.0-0.4)	0.002% (0.000%-0.013%)
Breeding	0.2 (0.0-1.0)	0.008% (0.000%-0.036%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)
Annual Total	0.3 (0.0-1.4)	0.010% (0.000%-0.051%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Grassholm SPA, in view of the site's COs to restore the favourable conservation condition of the gannet QI, with specific regard to the attribute target of restoring the breeding population of gannet to a minimum 5-year peak mean of 33,000 pairs across the SPA, for Project Option 1 and Project Option 2.

5.4.24.2.5 Population size: Combined Collision Risk and Disturbance and Displacement

Gannet have been screened in for both collision risk and displacement assessments during the operational phase there is therefore a potential for these two potential impacts to adversely affect the gannet population at Grassholm SPA combined.

Based on the separate assessments of gannet from Grassholm SPA above, the combines predicted annual impact from collision risk and displacement is less than one (0.3) breeding adult mortality. This represents an increase in baseline mortality of 0.011% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk and disturbance and displacement during the operation phase will not result in an AEoI of the Grassholm SPA, in view of the site's COs to restore the favourable conservation condition of the gannet QI, with specific regard to the attribute target of restoring the breeding population of gannet to a minimum 5-year peak mean of 33,000 pairs across the SPA, for Project Option 1 and Project Option 2.

[31] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.24.2.6 Summary of AEoI Conclusions for kittiwake at the Grassholm SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Grassholm SPA in view of the site's COs to restore the favourable conservation condition of the gannet QI, with specific regard to the attribute target of restoring the breeding population of gannet to a minimum 5-year peak mean of 33,000 pairs across the SPA, for Project Option 1 and Project Option 2.

5.4.25 Blackwater Callows SPA

5.4.25.1 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Blackwater Callows SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.26 Horn Head to Fanad Head SPA

5.4.26.1 Qualifying Interests and Conservation Objectives

The Site-Specific COs for the Horn Head to Fanad Head SPA were published in June 2025, after the Application was submitted.

The following QIs of the Horn Head to Fanad Head SPA are considered within this section:

Table A5.149: qualifying interests and Conservation Objectives of the Horn Head to Fanad Head SPA (replaces Table 5.112 of the 2024 NIS).

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188]	The conservation objectives for Horn Head to Fanad Head SPA is to restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA. Based on the above CO, the specific target for the screened in feature of the SPA, in order for favourable conservation status to be achieved is when: • The long term population is stable or increasing; • The productivity rate is sufficient to maintain a stable or increasing population; • There is a sufficient availability of suitable nesting sites throughout the SPA to maintain a stable or increasing population; • There is a sufficient number of locations, area of suitable habitat and available forage biomass to support the population target; • Disturbance occurs at levels that do not significantly impact on birds at the breeding site; • Disturbance occurs at levels that do not significantly impact on the breeding population; and • Barriers do not significantly impact the population's access to the SPA or other ecologically important sites outside the SPA.

5.4.26.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c)ii issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.26.2 of the 2024 NIS.

Kittiwake has been screened in for the operational phase to assess the potential for an AEoI from collision risk from the proposed development alone. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The array area is situated 190.7km from the Horn Head to Fanad Head SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from Horn Head to Fanad Head SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration-free winter season, as defined by Furness (2015). It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within Horn Head to Fanad Head SPA is breeding population size.

5.4.26.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.26.2.2 Breeding population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the Horn Head to Fanad Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.149 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Horn Head to Fanad Head as a result of disturbance and displacement during construction and decommissioning.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.150. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the Horn Head to Fanad Head SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size attribute, is presented in the following section.

Table A5.150: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Horn Head and Fanad Head SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality		% increase in baseline	
		Guidance (15%, 1%)	Guidance (15%, 3%)	Guidance (15%, 1%)	Guidance (15%, 3%)
Migration-free breeding					
Autumn migration	3.6 (1.5-6.2)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Breeding	0.5 (0.2-0.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Spring migration	3.1 (1.5-6.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.003% (0.001%-0.005%)
Annual Total	7.2 (3.3-13.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.004%)	0.006% (0.003%-0.011%)
Full breeding					
Autumn migration	1.9 (0.9-3.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.001%)	0.002% (0.001%-0.003%)
Breeding	0.7 (0.3-1.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)
Spring migration	2.5 (1.1-5.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)	0.002% (0.001%-0.005%)
Annual Total	5.1 (2.3-9.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.008%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the Horn Head to Fanad Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.26.2.3 Breeding population size: Disturbance and Displacement (Operation)

The CO for the kittiwake feature of the Horn Head to Fanad Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.149 and Section 5.4.1.1.2). In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Horn Head to Fanad Head as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47% (Apportioning Appendix 20), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 0.2% are predicted to be breeding birds from Horn Head to Fanad Head SPA (Apportioning Appendix 20). Therefore, one (0.5) breeding adults at risk of displacement are attributed to Horn Head to Fanad Head SPA during the breeding bio-season (Table A5.151). Provided a displacement rate of 30% and a mortality rate of 1% to 3% has been applied the consequent mortality is estimated is between less than one (<0.1) breeding adults.

Based on the latest colony count of 3,640 breeding adults and annual background mortality of 531 individuals, the addition of less than one predicted breeding adult mortality would represent a <0.001% and 0.001% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.4% and 0.5% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from Horn Head to Fanad Head SPA during the migration bio-seasons (Apportioning Appendix 20), the total abundance of breeding adults estimated to be displaced from the PFI plus 2km buffer four (3.6) during the autumn migration bio-season and three (3.1) during the spring migration (Table A5.151).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of 0.002% and 0.006% during the autumn migration bio-season and 0.002% and 0.005% during the spring migration based on the latest colony count of 3,640 individuals and an annual background mortality of 3,640 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with seven (7.2) of these being breeding adults from the Horn Head to Fanad Head SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons.

The predicted mortality of less than one in baseline mortality of 0.004% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.151: Range-Based Displacement Mortalities During the Operational Phase for Kittiwake at Horn Head to Fanad Head SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality		% increase in baseline	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Migration-free breeding					
Autumn migration	3.6 (1.5-6.2)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.006% (0.003%-0.010%)
Breeding	0.5 (0.2-0.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.001% (0.000%-0.001%)
Spring migration	3.1 (1.5-6.0)	0.0 (0.0-0.0)	0.0 (0.0-0.1)	0.002% (0.001%-0.003%)	0.005% (0.003%-0.010%)
Annual Total	7.2 (3.3-13.0)	0.0 (0.0-0.0)	0.06 (0.0-0.1)	0.004% (0.002%-0.007%)	0.012% (0.006%-0.022%)
Full breeding					
Autumn migration	1.9 (0.9-3.4)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.002%)	0.003% (0.002%-0.006%)
Breeding	0.7 (0.3-1.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.001%-0.002%)
Spring migration	2.5 (1.1-5.3)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.001% (0.001%-0.003%)	0.004% (0.002%-0.009%)
Annual Total	5.1 (2.3-9.8)	0.0 (0.0-0.0)	0.05 (0.0-0.1)	0.003% (0.001%-0.006%)	0.009% (0.004%-0.017%)

Table A5.152: Mean Annual Abundance of Kittiwake Apportioned to Horn Head to Fanad Head SPA During the Operational Phase Displacement Matrix (PFI Plus 2km Buffer).

Displaced (%)		Mortality Rate (%)												
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	1	1	1	1
20	0	0	0	0	0	0	0	1	1	1	1	1	1	1
30	0	0	0	0	0	0	1	1	1	1	2	2	2	2
40	0	0	0	0	0	1	1	1	1	2	2	2	3	3
50	0	0	0	0	0	1	1	1	2	2	3	3	3	4
60	0	0	0	0	0	1	1	2	2	3	3	3	4	4
70	0	0	0	0	1	1	2	2	3	3	4	4	5	5
80	0	0	0	0	1	1	2	2	3	3	4	5	5	6

Displaced (%)		Mortality Rate (%)												
	1	**2**	**3**	**5**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
90	0	0	0	0	1	1	2	3	3	4	5	5	6	6
100	0	0	0	0	1	1	2	3	4	4	5	6	6	7

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the Horn Head to Fanad Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.26.2.4 Breeding population size: Collision Risk (Operation)

The CO for the kittiwake feature of the Horn Head to Fanad Head SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Table A5.149 and Section 5.4.1.1.2). In terms of assessing potential impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which that long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake breeding population abundance of the Horn Head to Fanad Head as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals. Assuming 47% of these five individuals, are breeding adults the total number of breeding adults in the array impacted by collision is two (2.3) per annum during the breeding bio-season.

Provided 0.16% of these collisions are breeding birds from the Horn Head to Fanad Head SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0.1) breeding adult (Table 5.153).

Based on the latest colony count of 3,640 breeding adults and annual adult background mortality of 531 individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the breeding bio-season (Table 5.153).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the spring migration, provided 0.4% and 0.5% of the kittiwake within the array area are deemed to be breeding adults from the Horn Head to Fanad Head SPA, respectively (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one (<0.1) individual during the autumn migration bio- season and less than one (<0.1) during the spring migration bio-season (Table 5.153).

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality during the autumn breeding season and the spring migration would indicate an increase in baseline mortality of 0.005% and 0.006%, respectively (Table 5.153).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the Horn Head to Fanad Head SPA is less than one (0.1) breeding adult per annum (Table 5.153).

The annual predicted mortality of less than one breeding adults from the Horn Head to Fanad Head SPA across all bio-seasons indicates an increase in baseline mortality of 0.012% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population (Table 5.153).

Table 5.153: Seasonal Collision Mortalities during the Operational Phase for Kittiwake at Horn Head to Fanad Head SPA (replaces Table 5.113 of the 2024 NIS)[32].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.1)	0.005% (0.000%-0.019%)
Breeding	0.0 (0.0-0.0)	0.001% (0.000%-0.004%)
Spring Migration	0.0 (0.0-0.1)	0.006% (0.000%-0.024%)
Annual Total	0.1 (0.0-0.2)	0.012% (0.000%-0.047%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.003% (0.000%-0.009%)
Breeding	0.0 (0.0-0.0)	0.001% (0.000%-0.007%)
Spring Migration	0.0 (0.0-0.1)	0.004% (0.000%-0.017%)
Annual Total	0.0 (0.0-0.2)	0.008% (0.000%-0.033%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that potential collision risk during the operation phase will not result in an AEoI of the Horn Head to Fanad Head SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.26.2.5 Summary of AEoI Conclusions for kittiwake at the Horn Head to Fanad Head SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the Horn Head to Fanad Head SPA in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to the breeding population size attribute target of long term SPA population trend is stable or increasing, for Project Option 1 or Project Option 2.

5.4.27 Cork Harbour SPA

5.4.27.1 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Cork Harbour SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.28 Courtmacsherry Bay SPA

5.4.28.1 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Courtmacsherry Bay SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

[32] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

5.4.29 North Colonsay and Western Cliffs SPA

North Colonsay and Western Cliffs SPA is located 259.5km from the proposed development array area and encompasses an area of rocky coast, cliffs, and maritime heath on the island of Colonsay in Argyll, Scotland. The SPA boundary extends seaward by 1km into the marine area and overlaps with the North Colonsay SSSI and the West Colonsay Seabird Cliffs SSSI boundaries. This site is of high ornithological importance as the northernmost stable population of chough (*Pyrrhocorax pyrrhocorax*) in Europe is supported within the SPA alongside population of more than 20,000 individual seabirds including kittiwake and guillemot. Of these species only kittiwake has been considered within the ornithological assessment presented below.

5.4.29.1 Qualifying Interests and Conservation Objectives

The following QIs of the North Colonsay and Western Cliffs SPA are considered within this section:

Table A5.154: Qualifying interests and Conservation Objectives of the North Colonsay and Western Cliffs SPA (replaces Table 5.114 of the 2024 NIS)

Qualifying Interests Screened In	Conservation Objectives
Kittiwake [A188]	"To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species"

5.4.29.2 Kittiwake

The key change for this section is that kittiwake is now being assessed for potential impacts from disturbance and displacement, following the RFI Section 8(c) (ii) issued by An Bord Pleanála. As a result, additional sections have been added to address disturbance and displacement across the construction, operation and decommissioning phases, alongside collision risk during the operational phase. The scope of assessment has also been updated to include potential indirect effects via impacts on prey, following the addition by NPWS of a CO relating to the availability of suitable habitat and forage biomass. The following text is a direct replacement of the text within Section 5.4.29.2 of the 2024 NIS.

Kittiwake has been screened in for the construction, operation and decommissioning phases to assess the potential for an AEoI from disturbance and displacement from the proposed development alone, in addition to the potential for an AEoI from collision during the operational phase. Discussion and evidence for the displacement and mortality rates used is provided in Section 0 and Appendix A17 Offshore and Intertidal Ornithology Displacement Analysis. Collision risk modelling methodologies and results are provided in Appendix A19: Offshore and Intertidal Ornithology Collision Risk Modelling Assessment.

The proposed development array area is situated 259.5km from the North Colonsay and Western Cliffs SPA, which is within the MMF+1SD for kittiwake (156.1+144.5km) (Woodward et al., 2019) and has therefore been screened in for the breeding season. Kittiwake will disperse throughout the bio-geographic region, during the non-breeding season. However, a proportion of birds from this SPA are estimated to be present within the proposed development array area and therefore have been screened in for non-breeding bio-season (September – February) as per Furness (2015).

Collision risk and disturbance and displacement of kittiwake from North Colonsay and Western Cliffs SPA has been assessed for the breeding bio-season (March – August), the post-breeding migration bio-season (September – December) and the return migration bio-season (January – February), this species does not have a migration- free winter season, as defined by Furness (2015).

It should be noted that two alternative approaches to defining the kittiwake breeding season have been applied; the full breeding season (March-August) and the migration free-breeding season (May-July). This arises from unusually high numbers recorded in the July and August 2025 DAS, which create an anomaly when interpreted within the standard assessment methodology. The Developer is not suggesting that kittiwake don't continue to breed into August; rather, applying the August 2025 peak as part of the breeding season would be methodologically inappropriate and would result in unreliable and unrealistic outputs. Further detail is provided in Appendix A14 Offshore and Intertidal Ornithology Technical Baseline.

Kittiwake have been screened in for assessment of all relevant CO attributes during the construction, operation, and decommissioning phases within the array area. Population-level effects are addressed separately through the assessment of collision risk and disturbance and displacement. The relevant CO attribute for kittiwake within North Colonsay and Western Cliffs SPA is breeding population size.

5.4.29.2.1 Mitigation

Within the RFI was a request for further information regarding potential mitigation measures to minimise the effects of the Proposed Development on birds (RFI Section 8 (c)vi).

Prior to the 2024 NIS application, the Developer had undertaken considerable work to mitigate the potential impacts of the Proposed Development on birds. For example, the Developer committed to minimise impacts to collision risk species by refining the array area and increasing the draft height (blade tip clearance above sea level) of the turbines to 40m LAT. This is by far the most effective mitigation measure to reduce collision risk. For example, a draft height of 40m LAT results in an 80% reduction in kittiwake flying within the rotor risk zone compared to an air draft of 22m.

The Developer has also undertaken considerable work to mitigate the impacts on the NWIS cSPA, and in-particular on species sensitive to displacement, through a substantial array area reduction. While the spatial extent of the NWIS cSPA remains unchanged (2,333 km²). The original MAC boundary of 195.9 km² represented 8.4% of the NWIS cSPA (or 15.2% when a displacement buffer of 2 km is applied) while the final array area in the Planning Application covered 88.5 km2, which equates to 3.8% of the NWIS cSPA (or 8.5% when a displacement buffer of 2 km is applied).

Further refinements since the submission of the Planning Application have been made in response to the RFI (8(e)vi) to provide additional mitigation. The PFI now occupies 57.7 km², representing only 2.5% of the NWIS cSPA. Compared to the original MAC boundary, this equates to a 70.2% reduction in the proportion of the SPA overlapped by the proposed development.

5.4.29.2.2 Population size: Disturbance and Displacement (Construction and Decommissioning)

The CO for the kittiwake feature of the North Colonsay and Western Cliffs SPA is to ensure that the integrity of the site is maintained or restored as appropriate. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO target of maintaining or restoring the population of each qualifying feature. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the North Colonsay and Western Cliffs SPA as a result of disturbance and displacement during the construction and decommissioning phase.

A summary of predicted displacement effects across all bio-seasons during construction and decommissioning is provided in Table A5.155. Consistent with standard UK assessment practice, displacement during construction is assumed to be half that predicted for the operational phase, reflecting that approximately half of the array would be under construction at any one time and that turbine blades would be static rather than rotating. This assumption is precautionary and reflects the inherently localised and short-term nature of construction activities, as well as the substantially reduced spatial footprint during these phases.

For birds apportioned to the SPA, the resulting displacement-related adult mortalities total of 0.0 individuals per annum across all assessed bio-seasons. These values are extremely small relative to baseline mortality and fall well within natural annual variability for the population.

Given the very small scale, short duration, and precautionary assumptions applied, there is no credible mechanism by which construction or decommissioning activities would lead to any material change in population size of the kittiwake QI of the North Colonsay and Western Cliffs SPA. Accordingly, disturbance and displacement effects from these phases will not give rise to an adverse effect on site integrity. The full assessment of potential AEoI from displacement during the operational phase, where effects are greatest and therefore most relevant to the Population Size CO, is presented in the following section.

Table A5.155: Range-Based Displacement Mortalities During the Construction and Decommissioning Phase for Kittiwake at Horn Head and Fanad Head SPA.

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality		% increase in baseline	
		Guidance (15%, 1%)	Guidance (15%, 3%)	Guidance (15%, 1%)	Guidance (15%, 3%)
Migration-free breeding					
Autumn migration	1.2 (0.5-2.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Breeding	1.1 (0.6-1.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Spring migration	1.0 (0.5-2.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Annual Total	3.4 (1.6-5.9)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.002%)
Full breeding					
Autumn migration	0.6 (0.3-1.1)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Breeding	1.7 (0.8-2.7)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.001%)
Spring migration	0.8 (0.4-1.8)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.000%)	0.000% (0.000%-0.000%)
Annual Total	3.2 (1.5-5.6)	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)	0.001% (0.000%-0.002%)

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the construction and decommissioning phases will not result in an AEoI of the North Colonsay and Western Cliffs SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.29.2.3 Population size: Disturbance and Displacement (Operation and Maintenance)

The CO for the kittiwake feature of the North Colonsay and Western Cliffs SPA is to ensure that the integrity of the site is maintained or restored as appropriate. In terms of assessing potential impacts from disturbance and displacement this section assesses impacts against the CO target of maintaining or restoring the population of each qualifying feature. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the North Colonsay and Western Cliffs SPA as a result of disturbance and displacement.

As determined in Table A5.9, Project Option 1 and Project Option 2 have the same potential for adverse effects in terms of disturbance and displacement for kittiwake from operation and maintenance activities.

During the breeding bio-season, 594 kittiwake are estimated to occur in the PFI plus a 2km buffer. Provided the proportion of adult birds in the array is 47.4% (Appendix A19: Offshore and Intertidal Ornithology Apportioning), the total number of breeding adults in the array at risk of displacement is 281 (281.4) during the full breeding bio-season.

Of these 281 breeding adults, 0.4% are predicted to be breeding birds from North Colonsay and Western Cliffs SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning). Therefore, one (1.1) breeding adult at risk of displacement are attributed to North Colonsay and Western Cliffs SPA during the breeding bio-season (Table A5.156). Provided a displacement rate of 30% and a mortality rate of 1% to3% has been applied the consequent mortality is estimated is less than one (<0.1) breeding adults.

Considering the latest colony count of 11,014 individuals and an annual background mortality of 1,608 adults, this would represent a <0.001% to 0.001% increase in baseline mortality during the breeding bio-season.

The mean-peak number of kittiwake estimated to occur in the PFI plus the 2km buffer during the autumn migration bio-season is 930 individuals and 612 individuals during the spring migration.

Assuming that 0.1% and 0.2% of these kittiwake within the PFI plus 2km buffer are deemed to be breeding adults from North Colonsay and Western Cliffs SPA during the migration bio-seasons (Appendix A18: Offshore and Intertidal Ornithology Apportioning), the total abundance of breeding adults estimated to be displaced from the array plus 2km buffer one (1.2) during the autumn migration bio-season and one (1.0) during the spring migration (Table A5.156).

Provided, 30% displacement and 1% to 3% mortality have been applied, the total predicted consequent mortality from displacement is estimated at less than one individual during the autumn migration bio-season and the spring migration, (<0.1 and <0.1 individuals, respectively).

The consequent estimated mortality equates to an increase in baseline mortality of <0.001% and 0.001% during both the autumn migration bio-season and the spring migration based on the latest colony count of 11,014 individuals and an annual background mortality of 1,608 adults.

Throughout all bio-seasons, the number of kittiwake estimated to occur in the PFI plus a 2km buffer is 2,136 individuals, with one (3.4) of these being breeding adults from the North Colonsay and Western Cliffs SPA. The total predicted displacement consequent mortality throughout the operation and maintenance phases of the proposed development is less than one (<0.1) breeding adult per annum across all bio-seasons.

The predicted mortality of less than one in baseline mortality of 0.001% to 0.002% when considering the latest colony count. This level of impact would be indistinguishable from natural fluctuations in the population.

Conclusion of AEoI:

It is concluded beyond reasonable scientific doubt that disturbance and displacement during the operation phase will not result in an AEoI of the North Colonsay and Western Cliffs SPA, in view of the site's COs to restore the favourable conservation condition of the kittiwake QI, with specific regard to CO target to ensure population is a viable component, for Project Option 1 or Project Option 2.

5.4.29.2.4 Population size: Collision Risk (Operation)

The CO for the kittiwake feature of the North Colonsay and Western Cliffs SPA is to ensure that the integrity of the site is maintained or restored as appropriate. In terms of assessing potential impacts from collision risk this section assesses impacts against the CO target of maintaining or restoring the population of each qualifying feature. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population of the North Colonsay and Western Cliffs SPA as a result of collision risk.

The predicted collision mortality during the breeding bio-season is five (4.9) individuals. Assuming 47% of these five individuals, are breeding adults the total number of breeding adults in the array impacted by collision is two (2.3) per annum during the migration-free breeding bio-season.

Provided 0.4% of these collisions are breeding birds from the North Colonsay and Western Cliffs SPA (Appendix A18: Offshore and Intertidal Ornithology Apportioning), then the resultant mortality during the breeding bio-season is estimated to be less than one (<0. 1) breeding adults (Table A5.156).

Based on the latest colony count of 11,014 breeding adults and annual adult background mortality of 1,608 (1,608.0) individuals, the addition of less than one breeding adult mortality would represent a 0.001% increase in baseline mortality during the migration-free breeding bio-season (Table A5.156).

The predicted collision mortality as a result of the operational phase in the autumn migration bio-season is six (6.4) individuals, and seven (6.5) individuals during the spring migration, provided 0.1% and 0.2% of the kittiwake within the proposed development array area are deemed to be breeding adults from the North Colonsay and Western Cliffs SPA during the autumn migration bio- season and the spring migration (Appendix A18: Offshore and Intertidal Ornithology Apportioning). The consequent mortality of adult birds is less than one during the both migration bio- seasons, <0.1 during the autumn migration bio-season and <0.1 during the spring migration (Table A5.156).

Based on the latest colony count of breeding adults the addition of less than one predicted breeding adult mortality during the autumn breeding season and less than one mortality during the spring migration would indicate an increase in baseline mortality of 0.001% and 0.001%, respectively (Table A5.156).

Throughout the operational phase of the proposed development, the predicted resultant mortality across all bio-seasons, attributed to the North Colonsay and Western Cliffs SPA is less than one (<0.1) breeding adult per annum (Table A5.156).

The annual predicted mortality of less than one breeding adults from the North Colonsay and Western Cliffs SPA across all bio-seasons indicates an increase in baseline mortality of 0.002% when considering the latest colony count, respectively (Table A5.156). This level of impact would be indistinguishable from natural fluctuations in the population.

Table A5.156: Seasonal Collision Mortalities During the Operational Phase for Kittiwake at North Colonsay and Western Cliffs SPA (replaces Table 5.115 of the 2024 NIS)[33].

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Migration-free breeding		
Autumn Migration	0.0 (0.0-0.0)	0.001% (0.000%-0.002%)
Breeding	0.0 (0.0-0.1)	0.001% (0.000%-0.003%)
Spring Migration	0.0 (0.0-0.0)	0.001% (0.000%-0.003%)

[33] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Bio-season	Seasonal Predicted Collision Mortality	% increase in baseline mortality
Annual Total	0.0 (0.0-0.1)	0.002% (0.000%-0.008%)
Full breeding		
Autumn Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.001%)
Breeding	0.0 (0.0-0.1)	0.001% (0.000%-0.006%)
Spring Migration	0.0 (0.0-0.0)	0.000% (0.000%-0.002%)
Annual Total	0.0 (0.0-0.1)	0.002% (0.000%-0.009%)

5.4.29.2.5 Summary of AEoI Conclusions for kittiwake at the North Colonsay and Western Cliffs SPA (Offshore Impact Pathways)

It is concluded beyond reasonable scientific doubt that offshore impact pathways during the construction, operation and decommissioning phases of the proposed development (alone) will not result in an AEoI of the North Colonsay and Western Cliffs SPA in view of the site's COs to maintain the favourable conservation condition of the kittiwake QI, with specific regard to the target of maintaining or restoring the population of each qualifying feature, for Project Option 1 or Project Option 2.

5.4.30 Clonakilty Bay SPA

5.4.30.1 Migratory Collision Risk (Operation)

An assessment of migratory collision risk for QIs screened in for that impact at Clonakilty Bay SPA is provided in Section 5.4.31, concluding no AEoI for all assessed species.

5.4.31 Migratory Waterbird Assessment

Within the RFI there were a number of queries raised about data gaps within the migratory bird assessment due to lack of site-specific data. Consequently, the Developer has undertaken additional vantage-point surveys and collected considerable PAM data on Rockabill. These are discussed below.

In addition, the Developer has re-run the migratory CRM modelling utilising a more Irish-specific modelling approach in collaboration with other Irish Sea ORE applicants and has undertaken further data collection on migratory birds to inform species inclusion which is discussed in a new section in this report. Tables and analyses have been updated accordingly to account for the updated modelling. Full details on the approach are presented within Appendix A23: Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment.

The following ornithological QIs have been screened in due to the potential risk of collision during migration periods (Table A5.157). For further details regarding the migratory CRM (mCRM) assessment see Appendix A23 Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment.

The percentage increase in baseline mortality for each species is calculated using the summed citation counts for all SPAs within 100 km of the offshore development area and other SPAs beyond 100km that have >10% connectivity with the array area. The apportionment to each SPA is calculated by dividing the SPA citation count by the migratory Irish population as set out within Appendix A23 Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment.

The predicted impact is then multiplied by the apportionment to calculate the apportioned impact for each species per SPA. Using adult survival rates from the mCRM tool ("mCRM App"; HiDef Aerial Surveying Ltd., 2024) the baseline mortality for each species per SPA can be calculated. Then the apportioned impact was divided by the SPA baseline mortality to calculate the percentage increase in baseline mortality for each

QI of the relevant SPA. For further details regarding the approach to the mCRM see Appendix A23 Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment.

For QI species within the North West Irish Sea cSPA, SPA population counts were derived from DAS. In the case that these counts were higher than the Irish Migratory Population and would result in an impact proportion greater than one, 100% of the species' impact was apportioned.

The predicted annual collision mortality for each QI at designated sites screened in for this assessment are presented in Table A5.157. As outlined in Appendix A23: Offshore Ornithology Migratory Collision Risk Modelling: Irish East Coast Phase One Offshore Wind Projects Cumulative Assessment, species were only taken through to assessment if >1% of the Irish population was predicted to pass through the array area. From this process, greylag goose and bar-tailed godwit were screened out from further assessment.

The number of annual collision mortalities estimated for all QI are very low as such any changes in the baseline mortality for all QI are predicted to be non-material and indistinguishable from natural fluctuations in their populations.

The additional migratory bird surveys undertaken in autumn 2025 provide context to the mCRM outputs and the conclusions detailed below. These surveys provide robust, site-specific evidence of migratory activity within and around the Proposed Development. The combined vantage point and passive acoustic monitoring datasets demonstrate clear spatial and behavioural patterns in migration, significantly reducing previous uncertainty associated with the baseline and providing direct empirical context for the mCRM outputs.

A low number of both individuals and species were recorded from the offshore site (Rockabill Island) during the survey programme when compared to the onshore sites, indicating a relative lack of connectivity between the PFI and migratory flyways. This was reiterated by 95% of migratory movements occurring within 1km of the coastline, supporting the primary use of inshore routes, and only around 4% of observed migratory birds flying in a direction that might have seen them interact with the PFI.

Further to this, the results of the survey programme display that 89.2% of migratory birds were flying at heights that would provide negligible risk of collision (<20 metres). No species were recorded migrating at over 40 metres while a total of 23 species were recorded flying between 20 and 40 metres where they would be at potential collision height. However, an overwhelming majority of individuals of these species were recorded migrating through inshore waters, with 98.3% of individuals of these species migrating within 1km of the coast.

The programme of passive acoustic monitoring provided useful context on the nocturnal migration occurring in the area, detecting passerines and waders from the monitoring units. Many of the individuals recorded were either considered diurnal migrants that are recorded in greater detail in the vantage point data or were considered non-migratory using context from their calls and location. However, the data does indicate the waders and passerines were passing the monitoring unit and therefore may be utilising offshore flyways in low numbers.

The 2025 survey programme demonstrates that migratory activity of waders, waterbirds and terrestrial species within the PFI is likely to be both limited in magnitude and largely constrained to altitudes below the rotor-swept area.

Conclusion of AEoI:

Therefore, it is concluded that beyond reasonable scientific doubt, predicted mortality of all qualifying migratory waterbird QIs and their COs, in relation to collision risk effects of the proposed development alone and in-combination with other projects would not adversely affect the integrity of the designated sites screened in for this assessment.

Based on the increased risk of effects of Project Option 1, the same conclusion of no AEoI is drawn for Project Option 2.

Table A5.157: Predicted Annual Collision Mortalities to Migratory Waterbird QIs for All Designated Sites Screened In for the Proposed Development (replaces Table 5.116 of the 2024 NIS).

Site	Qualifying Interest	SPA citation population	Predicted annual collision mortality	% increase in baseline mortality (citation count)
North-West Irish Sea cSPA	Great northern diver	478	0.002	0.004
	Red-throated diver	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Common scoter	21,387	0.191	0.004
Skerries Island SPA	Light-bellied brent goose	242	0.000	0.002
	Purple sandpiper	46	0.000	0.002
	Turnstone	242	0.001	0.003
Lambay Island	Greylag goose			Not assessed (<1% of Irish population predicted to pass through offshore development area)
Rockabill SPA	Purple sandpiper	48	0.000	0.002
Poulaphouca Reservoir SPA	Greylag goose	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
Baldoyle Bay SPA	Bar-tailed godwit	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Golden plover	2,120	0.006	0.001
	Grey plover	200	0.001	0.003
	Light-bellied brent goose	726	0.001	0.002
	Ringed plover	223	0.001	0.001
	Shelduck	147	0.006	0.038
Blackwater Callows SPA	Black-tailed godwit	251	0.001	0.006
	Teal	898	0.061	0.014
	Whooper Swan	212	0.009	0.020
	Wigeon	2,313	0.116	0.011
Boyne Estuary SPA	Black-tailed godwit	471	0.002	0.006
	Golden plover	6,070	0.017	0.001
	Grey plover	146	0.001	0.003
	Knot	1,944	0.006	0.002
	Lapwing	4,771	0.019	0.001

Site	Qualifying Interest	SPA citation population	Predicted annual collision mortality	% increase in baseline mortality (citation count)
	Oystercatcher	1,179	0.005	0.003
	Redshank	583	0.002	0.001
	Sanderling	81	0.000	0.002
	Shelduck	218	0.009	0.038
	Turnstone	221	0.001	0.003
Clonakilty Bay SPA	Black-tailed Godwit	874	0.003	0.006
	Curlew	599	0.003	0.004
	Dunlin	1,172	0.004	0.001
	Shelduck	156	0.007	0.038
Cork Harbour SPA	Bar-tailed Godwit	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Black-tailed Godwit	1,896	0.007	0.006
	Curlew	2,237	0.009	0.004
	Dunlin	9,621	0.031	0.001
	Gadwall	6	0.000	0.000
	Golden Plover	3,342	0.010	0.001
	Goldeneye	21	0.001	0.025
	Great Crested Grebe	253	0.047	0.070
	Greenshank*	46	0.000	-
	Grey Plover	95	0.000	0.003
	Knot	26	0.000	0.002
	Lapwing	7,569	0.030	0.001
	Mallard	513	0.049	0.026
	Oystercatcher	1,809	0.007	0.003
	Pintail	57	0.003	0.016
	Pochard	72	0.005	0.020
	Red-breasted Merganser	121	0.007	0.030
	Redshank	2,149	0.007	0.001
	Ringed Plover	73	0.000	0.001
	Shelduck	2,009	0.085	0.038

Site	Qualifying Interest	SPA citation population	Predicted annual collision mortality	% increase in baseline mortality (citation count)
	Shoveler	103	0.090	0.207
	Teal	1,065	0.072	0.014
	Tufted Duck	64	0.003	0.017
	Turnstone	113	0.000	0.003
	Whooper Swan	5	0.000	0.020
	Wigeon	1,791	0.090	0.011
Courtmacsherry Bay SPA	Bar-tailed Godwit	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Black-tailed Godwit	506	0.002	0.006
	Curlew	1,357	0.006	0.004
	Dunlin	1,353	0.004	0.001
	Golden Plover	5,759	0.017	0.001
	Greenshank	26	0.000	-
	Lapwing	2,713	0.011	0.001
	Red breasted Merganser	63	0.004	0.030
	Shelduck	175	0.007	0.038
	Wigeon	934	0.047	0.011
	Great northern diver	27	0.000	0.002
Malahide Estuary SPA	Bar-tailed godwit	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Black-tailed godwit	409	0.002	0.006
	Dunlin	1,594	0.005	0.001
	Golden plover	1,843	0.005	0.001
	Goldeneye	215	0.012	0.025
	Great crested grebe	63	0.012	0.070
	Grey plover	201	0.001	0.003
	Knot	915	0.003	0.002
	Light-bellied brent goose	1,104	0.002	0.002
	Oystercatcher	1,360	0.005	0.003

Site	Qualifying Interest	SPA citation population	Predicted annual collision mortality	% increase in baseline mortality (citation count)
	Pintail	58	0.003	0.016
	Red-breasted merganser	99	0.006	0.030
	Redshank	581	0.002	0.001
	Shelduck	439	0.019	0.038
River Nanny Estuary and Shore SPA	Golden plover	1,759	0.005	0.001
	Knot	1,140	0.004	0.002
	Oystercatcher	1,041	0.004	0.003
	Ringed plover	185	0.001	0.001
	Sanderling	240	0.001	0.002
Rogerstown Estuary SPA	Black-tailed godwit	195	0.001	0.006
	Dunlin	2,745	0.009	0.001
	Grey plover	229	0.001	0.003
	Knot	2,454	0.008	0.002
	Light-bellied brent goose	1,069	0.002	0.002
	Greylag goose	Not assessed (<1% of Irish population predicted to pass through offshore development area)		
	Oystercatcher	1,345	0.005	0.003
	Redshank	450	0.002	0.001
	Ringed plover	188	0.001	0.001
	Shelduck	773	0.033	0.038
	Shoveler	59	0.051	0.207

*Adult survival rates could not be found for Greenshank therefore increase in baseline mortality could not be calculated for this species. Given the predicted annual collision mortality of 0.001 birds it can be assumed that any impacts on the population of this SPA are non-material and incapable of leading to an adverse effect on integrity.

5.5 Stage 2 Appropriate Assessment Alone Conclusion

It was concluded for all sites considered within this assessment that beyond reasonable scientific doubt there is no AEoI of the sites or their COs resulting from the proposed development alone.

6. Stage 2 In-Combination Assessment

Design refinements made in response to the RFI (see Appendix A7: Design Refinements) mean that WTGs are now proposed to be installed on jacket foundations with suction buckets, while the OSP will be mounted on jacket foundations with either drilled pin piles or suction buckets. Consequently, piling is no longer included in the construction strategy. Seabed preparation activities have been restricted to boulder clearance and UXO clearance only, with no dredging activities now required. The Alone assessments have been updated for Coastal and Marine Habitats, Migratory Fish, Marine Mammals and Ornithology (in Sections 5.1 to 5.4, respectively). Following these updates, the in-combination assessments set out in Sections 6.1 to 6.4 of this NIS have been revised, where relevant, to reflect the design refinements and the conclusions of the updated alone assessments.

In addition to these design-related updates, the text in this section has been revised to reflect a minor change in the in-combination assessment methodology, which has been updated to follow the NSIP (2024) guidance, as requested by An Bord Pleanála in RFI Section 5.

In summary, the key updates to the in-combination assessment include:

- **Reassessment of in-combination impact pathways arising from design refinements in response to RFI (See Appendix A7);**
- **Updates to the in-combination methodology, including revised tier definitions and updated long-list (Appendix A3: Longlist) and short-listing processes in response to RFI Section 5;**
- **Consideration of newly published COs for (c)SACs and (c)SPAs issued since submission of the 2024 NIS in response to RFI Section 1 (b);**
- **Inclusion of operational WTG noise pathway for migratory fish and marine mammals alone and in-combination assessments in response to RFI Sections 10 (h) and 11 (g);**
- **Inclusion of in-combination for Lambay Island SAC in response to RFI Section 9 (h); and**
- **Correction of minor errata within the 2024 NIS in response to RFI Section 1 (b).**

Further updates to the in-combination section also address specific RFI for each receptor topic. These are clearly identified in the bold text at the beginning of each topic-specific subsection.

6.1 Coastal and Marine Habitats

In RFI Section 9 (h) it was requested that Lambay Island SAC be included in the in-combination assessment. The key change required in this section is the addition of Section 6.1.6 which includes Lambay Island SAC. Furthermore, the text in this section has been revised to reflect a minor change in the in-combination assessment methodology, which has been updated to follow the NSIP (2024) guidance, as requested in RFI Section 5. There are also changes as a result of additional plans or projects identified for consideration in the in-combination assessment, as highlighted in Table A6.1.

The introductory text for section 6.1 of the 2024 NIS will be deleted and replaced with the following

For the purposes of the in-combination assessment a screening range of 24km from a designated site was applied to identify any plans and projects which may have the potential to interact with the proposed development to result in an AEoI.

The screening range has been determined by reference to the modelled tidal ellipse and sediment plume modelling which describes the maximum distance over which suspended sediments at concentrations above background levels may be displaced at 12km i.e. the distance at which no elevation above background suspended solids concentrations are observed for the maximum potential effect from the proposed development. The precautionary distance of 24km was selected to take into account the spatial extent of similar impacts arising from other projects.

For the in-combination effects assessment of the potential impacts on coastal and marine SACs related to the onshore development area, projects and plans occurring within the same hydrological catchment as the onshore development area and which have the potential to result in water quality effects were screened in.

Those SACs considered for in-combination assessment (see Table A5.1) are:

- Boyne Coast and Estuary SAC
- Malahide Estuary SAC
- Rockabill to Dalkey Island SAC
- Rogerstown Estuary SAC
- Baldoyle Bay SAC
- Lambay Island SAC

Plans and projects shortlisted for in-combination assessment are provided and considered in Table A6.1:, with a subsequent assessment of the screened in designated sites (SACs), as identified through application of the 24km screening range and hydrological catchment connectivity.

The in-combination assessment provided in Sections 6.1.1 – 6.1.5 considers the potential impacts from the screened in projects identified as Tier 1, 2 and 3 altogether in-combination with the proposed development.

As aforementioned, Table 6.1 of the 2024 NIS has been updated and is therefore replaced by Table A6.1 below, which presents the revised shortlist of projects screened into the in-combination assessment for coastal and marine habitats, using the most up-to-date available information (satisfying RFI Section 5). New and updated information is shown by grey shading.

Table A6.1 has been corrected to place the rationale for Marine INNS, Physical Processes and Suspended Sediment and Deposition into the correct columns throughout, and also to merge the Suspended Sediment and Deposition and Accidental Pollution columns into one column throughout to prevent duplication of rationale for ease of reference. Further detail is also included in the Physical Processes rationale column. Additional projects to be considered have been identified and added to the table, with rational provided as to whether they are screened in to the in-combination assessment. Tiering has been adjusted in line with NSIP (2024) guidance and planned programme/project information has been updated with new information in the public domain since the submission of the 2024 NIS. The In-combination Screening conclusions have also been made clearer.

Table A6.1: Plans and Projects Identified for Consideration within the Coastal and Marine Habitats In-Combination Assessment (replaces Table 6.1 in Section 6.1 of the 2024 NIS).

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
Plans and Projects Considered In-Combination with Offshore Activities										
Operations and Maintenance Facility (OMF) at Greenore	Tier 1 - Pre-Consent	Construction of an OMF at Greenore Port as a support base for three OWF developments on the East Coast of Ireland. Proposed activities include the installation of a 220m breakwater pontoon, 65m quay wall upgrades and 40,000m³ of capital dredging. Application for 10-year permission for development approved in 2024.	33.9	38.8	N/A[1]	The proposed dates of the works related to the OMF may overlap with that of the proposed development. However, due to the distance of the OMF from the SACs identified (i.e. >24km) there is no potential for an in-combination effect with the proposed development. Consequently, there is no potential for an in-combination effect between the proposed development and the OMF.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the proposed development and the OMF. Consequently, there is no potential for an in-combination effect between the proposed development and the OMF.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects. There is no direct spatial overlap between the proposed development and the OMF. Consequently, there is no potential for an in-combination effect between the proposed development and the OMF.	Not included for in-combination assessment across all potential impact pathways.
Oriel Wind Park	Tier 1 - Planning application	Installation of up to 25 WTGs, one OSP, and one export cable. Construction anticipated to take place between 2028-2030. Operational from 2030.	16.94km	21.61km	N/A[1]	The proposed dates of the works related to Oriel Wind Farm may overlap with that of the proposed development. Therefore, given the distance between the Oriel Wind Farm site and the Boyne Coast and Estuary SAC there is potential for in-combination effects with the proposed development. Other SACs identified are >24km from the Oriel Wind Farm site.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the proposed development Oriel Windfarm. Consequently, there is no potential for an in-combination effect between the proposed development and Oriel Wind Farm.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects. There is no direct spatial overlap between the proposed development and the Oriel Wind Park. Consequently, there is no potential for an in-combination effect between the proposed development and the Oriel Wind Park.	Included for in-combination assessment in relation to Suspended Sediment and Deposition and Accidental Pollution arising from offshore activities for the following SAC: Boyne Coast and Estuary SAC
Drogheda Port Company - Dumping site A1	Tier 1 - Consented	Release of dredged material from vessels at predefined dumping site approximately 4km northeast (Dumping site A1) from the Drogheda port entrance. Overlap in construction period.	11.7km	10.25km	N/A[1]	The proposed dates of the Drogheda Port Company dredging programme may overlap with that of the proposed development. Given the proximity of the dredging and disposal sites to the Rockabill to Dalkey Island SAC and Boyne Coast and Estuary SAC, there		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow	Included for in-combination assessment in relation to Suspended Sediment and Deposition and Accidental Pollution arising from offshore activities for the following SACs: Rockabill to Dalkey Island SAC

[1] Distance to the onshore cable route is Not Applicable (NA) for these plans and projects as they are onshore plans and projects and relate to the in-combination assessment for the offshore development area.

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
Drogheda Port Company - Dumping site A2	Tier 1 - Consented	Release of dredged material from vessels at predefined dumping site approximately 4km north (Dumping site A2) from the Drogheda port entrance. Overlap in construction period.	15.33km	14.28km	N/A[1]	is potential for in-combination effects with the proposed development. Other SACs identified are >24km from the Drogheda Port dredging and dumping activities.		This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the proposed development and the Drogheda Port Company dredge and disposal sites. Consequently, there is no potential for an in-combination effect between the proposed development and the Drogheda Port Company dredge and disposal sites.	dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects. There is no direct spatial overlap between the proposed development and the Drogheda Port dredging and dumping activities. Consequently, there is no potential for an in-combination effect between the proposed development and the Drogheda Port dredging and dumping activities.	Boyne Coast and Estuary SAC
Drogheda Port Company - dredging	Tier 1 - Consented	Maintenance dredging River Boyne, Dogheda – consented	19.84km	12.71km	N/A[1]					
Warrenpoint B	Tier 1 - Consented	Sea disposal of dredging material from Warrenpoint Harbour (Warrenpoint B) Licence.	23.75km	28.88km	N/A[1]	The proposed dates of the Warrenpoint dredging programme may overlap with that of the proposed development. However, due to the distance of the Warrenpoint dredging and disposal sites from the SACs identified (i.e. >24km) there is no potential for an in-combination effect with the proposed development. Consequently, there is no potential for an in-combination effect between the proposed development and the Warrenpoint dredge and disposal sites.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the proposed development and the Warrenpoint dredge and disposal sites. Consequently, there is no potential for an in-combination effect between the proposed development and the Warrenpoint dredge and disposal sites.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects. There is no direct spatial overlap between the proposed development and the Warrenpoint sea disposal site. Consequently, there is no potential for an in-combination effect between the proposed development and the Warrenpoint sea disposal site.	Not included for in-combination assessment across all potential impact pathways.
Interconnector 2 Scotland to Ireland	Tier 1 - Active	Operational pipelines may require maintenance activities	0.52km	2.68km	N/A[1]	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the proximity of these projects to the proposed development and the Rockabill to Dalkey Island SAC, Boyne Coast and Estuary SAC and Lambay Island SAC, there is potential for in-combination effects with the proposed development.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the active pipelines and cables. Consequently, there is no potential for an in-combination effect between the proposed development and active pipelines and cables.	Due to the nature of these projects, impacts associated with physical processes are not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and active pipelines and cables.	Included for in-combination assessment in relation to Suspended Sediment and Deposition and Accidental Pollution arising from offshore activities for the following SACs: Rockabill to Dalkey Island SAC Boyne Coast and Estuary SAC Lambay Island SAC Malahide SAC Rogerstown SAC
Interconnector 1 Scotland to Ireland	Tier 1 - Active		4.24km	10.60km	N/A[1]					
Havhingsten SEG 1 Telecoms Cable	Tier 1 - Active	Operational subsea cables may require maintenance activities.	0.68km	9.73km	N/A[1]					
Rockabill Telecoms Cable	Tier 1 - Active		4.87km	12.85km	N/A[1]					
East West Interconnector Power Cable	Tier 1 - Active		5.15km	11.57km	N/A[1]					
Hibernia Atlantic SEG C Telecoms Cable	Tier 1 - Active		7.79km	17.09km	N/A[1]					
Sirius South Telecoms Cable	Tier 1 - Active		9.41km	18.75km	N/A[1]					
CelticConnect Telecoms Cable	Tier 1 - Active		11.29km	20.07km	N/A[1]					

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
Zayo Emerald Bridge One Telecoms Cable	Tier 1 - Active		12.09km	20.23km	N/A[1]					
ESAT 2 Telecoms Cable	Tier 1 - Active		14.41km	24.19km	N/A[1]					
Oriel ECC Power Cable	Tier 1 – Planning Application	Construction of the export cable proposed 2028-2030. Operational from 2030.	18.06km	22.60km	N/A[1]	The proposed dates of the works related to Oriel Wind Farm may overlap with that of the proposed development. Therefore, given the distance between the Oriel Wind Farm site and the Boyne Coast and Estuary SAC there is potential for in-combination effects with the proposed development. Other SACs identified are >24km from the Oriel Wind Farm site.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area. There is no direct spatial overlap between the proposed development Oriel ECC Power Cable. Consequently, there is no potential for an in-combination effect between the proposed development and Oriel ECC Power Cable.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects. There is no direct spatial overlap between the proposed development and the Oriel ECC Power Cable. Consequently, there is no potential for an in-combination effect between the proposed development and the Oriel ECC Power Cable.	Included for in-combination assessment in relation to Suspended Sediment and Deposition and Accidental Pollution arising from offshore activities for the following SAC: Boyne Coast and Estuary SAC
NISA Site Investigation	Tier 1 - Consented	OWF related site investigation consented 2024-2031.	0km	0km	N/A[1]	Due to the nature of these projects, increases in SSC and sediment deposition or accidental pollution are not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and NISA Site Investigation.		Due to the nature of this project, introduction of INNS is not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and NISA Site Investigation.	Due to the nature of this project, changes to physical processes are not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and NISA Site Investigation.	Not included for in-combination assessment across all potential impact pathways.
MaresConnect Electricity Interconnector Site Investigation	Tier 1 - Approved	Geophysical survey for five months in summer/autumn of 2024; included in in-combination assessment to account for potential survey delays	10.35km	17.99km	N/A[1]	Due to the nature of these projects, increases in SSC and sediment deposition or accidental pollution are not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and MaresConnect Electricity Interconnector Site Investigation.		Due to the nature of this project, the introduction of INNS is not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and MaresConnect Electricity Interconnector Site Investigation.	Due to the nature of this project, changes to physical processes are not anticipated. Consequently, there is no potential for an in-combination effect between the proposed development and MaresConnect Electricity Interconnector Site Investigation.	Not included for in-combination assessment across all potential impact pathways.
Mares Connect Interconnector	Tier 2 – Pre-consent	Subsea power cable. Construction anticipated to take place 2026-2028; operational from 2029..	6.02km	12.26km	N/A[1]	The proposed dates of the works related to Mares Connect Interconnector may overlap with that of the proposed development. Therefore, given the distance between the Mares Connect Interconnector and the Rockabill to Dalkey Island SAC, Boyne Coast and Estuary SAC, Rogerstown Sac and Malahide SAC and Lambay Bay SAC, there is potential for in-combination effects with the proposed development.		The introduction of invasive species associated with the proposed development is anticipated to occur through the introduction of hard substrates in the form of foundation installation. This impact is therefore extremely localised and limited to the development area.	The presence of foundations and scour protection associated with the proposed development introduce changes to the local hydrodynamic and wave regime, potentially resulting in changes to the sediment transport pathways. However, changes in flow dynamics and associated effects will remain within the array area with small-scale changes around individual foundations having no perceived far-field effects.	Included for in-combination assessment in relation to Suspended Sediment and Deposition and Accidental Pollution arising from offshore activities for the following SACs: Rockabill to Dalkey Island SAC Boyne Coast and Estuary SAC Lambay Island SAC Malahide SAC

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
						Other SACs identified are >24km from the Mares Connect Interconnector.		There is no direct spatial overlap between the proposed development Mares Connect Interconnector. Consequently, there is no potential for an in-combination effect between the proposed development and Mares Connect Interconnector.	There is no direct spatial overlap between the proposed development and the Mares Connect Interconnector. Consequently, there is no potential for an in-combination effect between the proposed development and the Mares Connect Interconnector.	Rogerstown SAC
Plans and Projects Considered In-Combination with Onshore Activities										
Greater Dublin Drainage Project	Tier 1 – Consented	Greater Dublin Drainage Project	NA[2]	NA[1]	0	It is not considered likely that any direct or indirect in-combination effects will arise from the proposed development and this project. However, as the receptors are located within the same hydrological catchment as the onshore development area, this pathway has been considered in relation to potential suspended sediment transport and deposition and accidental pollution pathways within the onshore in-combination assessment.		No pathways exist for the transfer of marine INNS between marine and terrestrial habitats. Therefore, this impact pathway has not been considered within the onshore in-combination assessment.	No pathways exist between onshore and offshore physical processes. Therefore, this impact pathway has not been considered within the onshore in-combination assessment.	Included for assessments relating to Suspended Sediment and Deposition, and Accidental Pollution from onshore activities. Malahide Estuary SAC Rogerstown Estuary SAC Baldoyle Bay SAC
BusConnects Clongriffin to City Centre Core Bus Corridor Scheme	Tier 1 - Consented	Transport Infrastructure	NA[1]	NA[1]	0					
Planning ref. 316444	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0					
Planning ref. 314169	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.3					
Planning ref. 313302	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.35					
Planning ref. 313362	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.35					
Planning ref. 312112	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.52					
Planning ref. 313361	Tier 1 – Split decision	Residential Development	NA[1]	NA[1]	0.59					
Planning ref. 311016	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.89					
BusConnects Swords to City Centre Bus Corridor Scheme	Tier 1 – Consented	Transport Infrastructure	NA[1]	NA[1]	1.68					
F2IA/0668	Tier 1 – Consented	School Development	NA[1]	NA[1]	0					
Planning ref. F21A/0647	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0					
Synchronous Compensator Development south of Belcamp Substation	Tier 1 - Consented	Electricity Infrastructure	NA[1]	NA[1]	0.003					
Planning ref. 3696/18	Tier 1 - Consented	Residential Developments	NA[1]	NA[1]	0					
MetroLink – Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin	Tier 1 - Consented	Transport Infrastructure	NA[1]	NA[1]	0					

[2] Distance to the array area and the ECC are Not Applicable (NA) for these plans and projects as they are onshore plans and projects and relate to the in-combination assessment for the onshore development area. A distance has not been provided to the onshore development area however they have been identified as being in the same hydrological catchment as the onshore proposed development area and are therefore screened in for the in-combination assessment.

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
Metrolink 110kV proposed development of three 110kV electricity circuits	Tier 1 - Consented	Electricity Infrastructure	NA[1]	NA[1]	0					
Planning ref. 4137/23	Tier 1 - Consented	Residential Developments	NA[1]	NA[1]	0.05					
DART – Coastal North	Tier 1 - Consented	Infrastructure Development	NA[1]	NA[1]	0.0					
Fingal Coastal Way	Tier 3 – Pending application	Greenway	NA[1]	NA[1]	0					
R132 Connectivity Project	Tier 1 - Consented	Commercial Development	NA[1]	NA[1]	0					
Planning ref. 311059	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	3.2					
Planning ref. 312855	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0					
Planning ref. 319422	Tier 1 - Consented	Electricity Infrastructure	NA[1]	NA[1]	0					
4137/23	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0					
F23A/0503	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	1.73					
F23A/0586	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.59					
F24S/0541E	Tier 1 - Consented	Educational Development	NA[1]	NA[1]	0.79					
F24A/0576E	Tier 1 - Consented	Sports Facility	NA[1]	NA[1]	0.79					
F24A/0644E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	2.73					
F24A/0811E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0					
F24A/1004E	Tier 1 - Consented	Wastewater Infrastructure	NA[1]	NA[1]	0					
F24A/1010E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.19					
F24A/1059E	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	0.96					
F24A/1125E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.78					
F24A/1141E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	1.77					
F25A/0226E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0					
F25A/0585E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	2.13					
F25A/0689E	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	0					
F25A/0710E	Tier 1 – In planning	Park and Ride Facilities	NA[1]	NA[1]	0					
F25A/0776E	Tier 1 – Consented	Electricity Infrastructure	NA[1]	NA[1]	0.1					
F25A/0947E	Tier 1 – Consented	HGV Maintenance and Testing Centre	NA[1]	NA[1]	0.06					
F25A/0999E	Tier 1 – Pending appeal	Residential Development	NA[1]	NA[1]	0					

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Suspended Sediment and Deposition	Accidental Pollution	Marine INNS	Physical processes	Screening conclusion In-Combination
F25A/1004E	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	1.8					
F25A/1081E	Tier 1 – In planning	Sports Facility	NA[1]	NA[1]	1.61					
F25A/1084E	Tier 1 – In planning	Sports Facility	NA[1]	NA[1]	0.44					
F25A/1184E	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	0.9					
F25A/1191E/R3	Tier 1 – In planning	Renewable Energy Development	NA[1]	NA[1]	1.18					
LRD0018/S3	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0					
LRD0019/S3	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.87					
LRD0025/S3E	Tier 1 - Consented	Residential Development	NA[1]	NA[1]	0.95					
LRD0043/S3E	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.83					
LRD0046/S3	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0					
LRD0055/S3E	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	1.26					
LRD0058/S3E	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.76					
LRD0061/S3E	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.59					
LRD0068/S3E	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	0.06					
LRD0080/S3E	Tier 1 – Consented	Residential Development	NA[1]	NA[1]	0.58					
WEB5455/25	Tier 1 – Consented	Wastewater Infrastructure	NA[1]	NA[1]	1.13					
WEB5466/25	Tier 1 – In planning	Residential Development	NA[1]	NA[1]	1.72					

6.1.1 Malahide Estuary SAC

Following updates and amendments to Section 6.1, Section 6.1.1 has been revised throughout to ensure consistency with the updated in-combination assessment approach. The amendments provide clarification only and do not alter the underlying in-combination assessment conclusions. Therefore, Section 6.1.1 shall be deleted and replaced in full with the following text:

The following qualifying interests of the Malahide Estuary SAC have been screened in for further assessment:

- Mudflats and sandflats not covered by seawater at low tide;
- Salicornia and other annuals colonising mud and sand;
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*); and
- Mediterranean salt meadows (*Juncetalia maritimi*).

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1:Malahide Estuary SAC has been screened in for the following effects:

- Onshore and offshore suspended sediment / deposition;
- Onshore and offshore accidental pollution.

Due to the proximity to the SAC and the maximum extent of any impacts the projects considered for the in-combination assessment for this designated site are those onshore projects and plans occurring within the same hydrological catchment as the development area.

Due to the proximity to the SAC and the maximum extent of any impacts (i.e. within 24km for SSC) the offshore plans and projects considered for the in-combination assessment for this site are the Mares Connect Interconnector and the operational and maintenance activities of various subsea cables.

There are no other changes to this section. Refer to Section 6.1.1 of the 2024 NIS.

6.1.1.1 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.1.1.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions. Therefore, the following text shall be deleted:

'During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt from onshore activities into the aquatic environment and ultimately reach the marine environment. Through the CEMP the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities.

These will include pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out onshore; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

All other onshore projects considered in the in-combination assessment will be required to implement pollution contingency measures detailed in individual CEMPs.

No discharges (continuous or intermittent) of chemicals or construction materials, which may be toxic or persistent within the marine environment, are proposed during the construction phase of the proposed development. Consequently, it is considered that and there will be no significant onshore polluting effect from this project impacting coastal and marine habitats.'

And replaced with:

During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the aquatic and marine environment. Through the offshore EMP (Appendix A8) and the CEMP (Appendix A9) the developer has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operation, and decommissioning activities. These will include marine pollution contingency measures to address the risks, methods, and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident. The pollution contingency measures will also address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out onshore. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

Construction of the Mares Connect Interconnector will overlap with that of NISA and it is anticipated that an offshore EMP will be a required planning condition which will include appropriate marine pollution contingency measures. The other projects considered in this in combination assessment have similar measures through relevant environment management plans.

No discharges (continuous or intermittent) of chemicals or construction materials which may be toxic or persistent within the marine environment are proposed during the construction phase of the proposed development. Additionally, site-specific surveys indicated that the levels of contaminants within the sediments within the offshore development area that are likely to be disturbed did not exceed the upper limits according to the Irish Sediment Quality Guidelines (Aquafact, 2025; Natural Power Consultants, 2022 & 2023). Therefore, it is highly unlikely that any sediment disturbed by the projects considered in-combination will have a negative effect on the SAC.

6.1.1.1.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The conclusion has been updated to reflect the updated assessment above. Therefore, Section 6.1.1.1.2 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that accidental pollution from the onshore and offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Malahide Estuary SAC, in view of the site's COs with respect to all QIs from the Project Option 1 and Project Option 2.

There are no other changes to this section. Refer to Section 6.1.1.1.2 of the 2024 NIS.

6.1.1.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.1.2.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS. The CEMP referenced in this section has been updated and is provided in Appendix A9: CEMP.

Therefore, the following text shall be deleted:

'Increased suspended sediment arising from onshore works associated with the proposed development reaching the marine environment via surface water will be localised to the immediate downstream area of the works. Similarly, any SSC arising from other onshore projects within the same hydrological catchment will enter the SAC by the same route.

However, through the implementation of the mitigation measures detailed within the CEMP, the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities. All other onshore projects identified for in-combination assessment will be required to implement similar surface water contingency measures detailed in individual CEMPs.

Consequently, inputs of SSC from the proposed development and other onshore projects will be negligible and no significant in-combination effects are predicted from these onshore projects with the proposed development.'

And replaced with:

Increases in SSC associated with the offshore development area are anticipated to extend up to approximately 12km from the source. Therefore, a 24km ZoI, which is based on twice the maximum spring tidal excursion, is considered precautionary and appropriate for any potential effects. Consequently, due regard has been afforded to the possibility of the works associated with the Mares Connect Interconnector and the operational and maintenance activities of various subsea cables and the proposed development occurring simultaneously.

While there is some temporal overlap in the planned construction of the proposed development and the Marres Connect Power Cable, due to the intermittent and short-term nature of the works significant in-combination effects are not anticipated.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables and pipelines. Exact details and maintenance schedules are unknown; however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

However, increased SSC rapidly dissipates immediately following the cessation of activities with the concentrations reducing quickly to background levels (i.e., within a couple of tidal cycles). This, allied to the distance between the two projects, would indicate that there would be no additive process for the increased SSC within the water column.

With the exception of within the immediate vicinity of the activities described the SSC levels within the plumes from all three projects considered here will be below background levels recorded during storm events. Consequently, it is considered that all benthic QIs are expected to easily adapt to and/or tolerate the SSC plumes that are predicted both alone and cumulatively, particularly as SSC plumes are expected to quickly dissipate following cessation of activities.

For the decommissioning phase, the potential impacts are considered to be the same as construction, Although at a lesser magnitude. Therefore, the same conclusions pertaining to the construction phase are drawn for the decommissioning phase.

Increased suspended sediment arising from onshore works associated with the proposed development reaching the marine environment via surface water will be localised to the immediate downstream area of the works. Similarly, any SSC arising from other onshore projects within the same hydrological catchment will enter the SAC by the same route. However, through the implementation of the mitigation measures detailed within the CEMP, the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities. All other onshore projects identified for in-combination assessment will be required to implement similar surface water contingency measures detailed in individual CEMPs.

Consequently, inputs of SSC from the proposed development and other onshore projects will be negligible and no significant in-combination effects are predicted from these onshore projects with the proposed development

6.1.1.2.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The conclusion has been updated to reflect the revised assessment above. Therefore, Section 6.1.1.2.2 is deleted and replaced in full below:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the onshore and offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Malahide Estuary SAC, in view of the site's COs with respect to all QIs for either Project Option 1 and Project Option 2.

6.1.2 Rogerstown Estuary SAC

Following updates and amendments to Section 6.1, Section 6.1.2 has been revised throughout to ensure consistency with the updated in-combination assessment approach. The amendments provide clarification only and do not alter the underlying in-combination assessment conclusions. Therefore, Section 6.1.2 shall be deleted and replaced in full with the following text:

The following qualifying interests of the Rogerstown Estuary SAC have been screened in for further assessment:

- Estuaries
- Mudflats and sandflats not covered by seawater at low tide
- Salicornia and other annuals colonising mud and sand
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Mediterranean salt meadows (*Juncetalia maritimi*)

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1:Rogerstown Estuary SAC has been screened in for the following effects:

- Onshore and offshore suspended sediment / deposition;
- Onshore and offshore accidental pollution

Due to the proximity to the SAC and the maximum extent of any impacts the projects considered for the in-combination assessment for this designated site are those onshore projects and plans occurring within the same hydrological catchment as the development area.

Due to the proximity to the SAC and the maximum extent of any impacts (i.e. within 24km for SSC) the offshore plans and projects considered for the in-combination assessment for this site are the Mares Connect Interconnector and the operational and maintenance activities of various subsea cables.

6.1.2.1 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.2.1.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions.

The following text shall be deleted:

'During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt from onshore activities into the aquatic environment and ultimately reach the marine environment.

Through the CEMP the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities.rThese will include pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out onshore; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident. All other onshore projects considered in the in-combination assessment will be required to implement pollution contingency measures detailed in individual CEMPs. No discharges (continuous or intermittent) of chemicals or construction materials, which may be toxic or persistent within the marine environment, are proposed during the construction phase of the proposed development. Consequently, it is considered that and there will be no significant onshore polluting effect from this project impacting coastal and marine habitats.'

And replaced with:
During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the aquatic and marine environment. Through the offshore EMP (Appendix A8) and the CEMP (Appendix A9) the developer has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operation, and decommissioning activities. These will include marine pollution contingency measures to address the risks, methods, and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident. The pollution contingency measures will also address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out onshore. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

Construction of the Mares Connect Interconnector will overlap with that of NISA and it is anticipated that an offshore EMP will be a required planning condition which will include appropriate marine pollution contingency measures. The other projects considered in this in combination assessment have similar measures through relevant environment management plans.

No discharges (continuous or intermittent) of chemicals or construction materials which may be toxic or persistent within the marine environment are proposed during the construction phase of the proposed development. Additionally, site-specific surveys indicated that the levels of contaminants within the sediments within the offshore development area that are likely to be disturbed did not exceed the upper limits according to the Irish Sediment Quality Guidelines (Aquafact, 2025; Natural Power Consultants, 2022 & 2023). Therefore, it is highly unlikely that any sediment disturbed by the projects considered in-combination will have a negative effect on the SAC.

6.1.2.1.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The conclusion has been updated to reflect the revised assessment. Therefore, Section 6.1.2.1.2 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that accidental pollution from the onshore and offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Rogerstown SAC, in view of the site's COs with respect to all QIs for either Project Option 1 and Project Option 2.

6.1.2.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.2.2.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions.

The following text shall be deleted:

'Increased suspended sediment arising from onshore works associated with the proposed development reaching the marine environment via surface water will be localised to the immediate downstream area of the works. Similarly, any SSC arising from other onshore projects within the same hydrological catchment will enter the SAC by the same route. However, through the implementation of the mitigation measures detailed within the CEMP, the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities.

All other onshore projects identified for in-combination assessment will be required to implement similar surface water contingency measures detailed in individual CEMPs.

Consequently, inputs of SSC from the proposed development and other onshore projects will be negligible and no significant in-combination effects are predicted from these onshore projects with the proposed development.'

And replaced with:

Increases in SSC associated with the offshore development area are anticipated to extend up to approximately 12km from the source. Therefore, a 24km ZoI, which is based on twice the maximum spring tidal excursion, is considered precautionary and appropriate for any potential effects. Consequently, due regard has been afforded to the possibility of the works associated with the Mares Connect Interconnector and the operational and maintenance activities of various subsea cables and the proposed development occurring simultaneously.

While there is some temporal overlap in the planned construction of the proposed development and the Marres Connect Power Cable, due to the intermittent and short-term nature of the works significant in-combination effects are not anticipated.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables and pipelines. Exact details and maintenance schedules are unknown; however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

However, increased SSC rapidly dissipates immediately following the cessation of activities with the concentrations reducing quickly to background levels (i.e., within a couple of tidal cycles). This, allied to the distance between the two projects, would indicate that there would be no additive process for the increased SSC within the water column.

With the exception of within the immediate vicinity of the activities described the SSC levels within the plumes from all three projects considered here will be below background levels recorded during storm events. Consequently, it is considered that all benthic QIs are expected to easily adapt to and/or tolerate the SSC plumes that are predicted both alone and cumulatively, particularly as SSC plumes are expected to quickly dissipate following cessation of activities.

For the decommissioning phase, the potential impacts are considered to be the same as construction, Although at a lesser magnitude. Therefore, the same conclusions pertaining to the construction phase are drawn for the decommissioning phase.

Increased suspended sediment arising from onshore works associated with the proposed development reaching the marine environment via surface water will be localised to the immediate downstream area of the works. Similarly, any SSC arising from other onshore projects within the same hydrological catchment will enter the SAC by the same route. However, through the implementation of the mitigation measures detailed within the CEMP, the developer has identified best-practice techniques to minimise such inputs into the aquatic environment from all onshore construction activities. All other onshore projects identified for in-combination assessment will be required to implement similar surface water contingency measures detailed in individual CEMPs.

Consequently, inputs of SSC from the proposed development and other onshore projects will be negligible and no significant in-combination effects are predicted from these onshore projects with the proposed development

However, there are no further changes to this section. Refer to Section 6.1.2.2.1 in the 2024 NIS.

6.1.2.2.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.1.2.2.2 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the onshore and offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Rogerstown SAC, in view of the site's COs with respect to all QIs for either Project Option 1 and Project Option 2.

6.1.3 Baldoyle Bay SAC

Following updates and amendments to Section 6.1, Section 6.1.2 has been revised throughout to ensure consistency with the updated in-combination assessment approach. The amendments provide clarification only and do not alter the underlying in-combination assessment conclusions. Therefore, Section 6.1.3 shall be deleted and replaced in full with the following text:

The following qualifying interests of the Baldoyle Bay SAC have been screened in for further assessment:

- Tidal mudflats and sandflats
- Salicornia mud and other colonising mud and sand
- Atlantic salt meadows
- Mediterranean salt meadows

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1 Baldoyle Bay Estuary SAC has been screened in for the following effects:

- Onshore suspended sediment / deposition;
- Onshore accidental pollution

Due to the proximity to the SAC and the maximum extent of any impacts the projects considered for the in-combination assessment for this designated site are those onshore projects and plans occurring within the same hydrological catchment as the development area.

Baldoyle Bay SAC was screened into the assessment for onshore development activities only (see Table A5.1).

6.1.3.1 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.3.1.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS. The CEMP referenced in this section has been updated and is provided in Appendix A9: CEMP.

However, there are no other changes to this section. Refer to Section 6.1.3.1.1 in the 2024 NIS.

6.1.3.1.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.1.3.1.2 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that accidental pollution from the onshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Baldoyle Bay SAC, in view of the site's COs with respect to all QIs from for either Project Option 1 or Project Option 2.

6.1.3.2 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.3.2.1 Assessment

Table A6.1 has been updated and additional projects considered in this section. The assessment has been revisited in the light of these amendments and additions. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS. The CEMP referenced in this section has been updated and is provided in Appendix A9: CEMP.

However, there are no other changes to this section. Refer to Section 6.1.3.2.1 in the 2024 NIS.

6.1.3.2.2 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.1.3.2.2 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the onshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Baldoyle Bay SAC, in view of the site's COs with respect to all QIs for either Project Option 1 or Project Option 2.

6.1.4 Rockabill to Dalkey Island SAC

Following updates and amendments to Section 6.1, Section 6.1.4 has been revised to ensure consistency with the updated in-combination assessment approach. These revisions also take account of updates to the projects listed in Table A6.1 (indicated by the grey shading) and the updated sediment plume modelling outputs for the proposed development alone, as presented in Section 5.1.5.2 of this document and Appendix A11: Marine Physical Processes Numerical Modelling Assessment. Accordingly, the entirety of Section 6.1.4 of the 2024 NIS has been deleted and replaced with the following text and subsections:

The following qualifying interests of the Rockabill to Dalkey Island SAC have been screened in for further assessment:

- Reefs

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1, Rockabill to Dalkey Island SAC has been screened in for the following effects:

- Offshore suspended sediment / deposition;
- Offshore accidental pollution.

Due to their proximity to the SAC and the maximum extent of any impacts (i.e. within 24km for SSC) the projects considered for the in-combination assessment for this site is the Drogheda Port Company dredging programme, maintenance activities associated with existing subsea cables and operational oil and gas pipelines, and the construction of the Mares Connect Interconnector.

6.1.4.1 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.4.1.1 Assessment

Increases in SSC associated with proposed development are anticipated to extend up to approximately 12km from the source. Therefore, a 24km ZoI, which is based on twice the maximum spring tidal excursion, is considered precautionary and appropriate for any potential effects. Therefore, due regard has been afforded to the possibility of the works associated with the Drogheda Port Company dredging programmes, the Mares Connect Interconnector and the proposed development occurring simultaneously.

In relation to the Drogheda Port Company dredging programme the cause of effects is primarily capital dredging and disposal, while effects in relation to the Mares Connect Interconnector will primarily be in relation to construction activity. The potential effects from such works would be through temporary increases in SSC and associated sedimented deposition and smothering of the benthos and supporting habitats. While the project timelines overlap, given the intermittent nature of the dredging work at Drogheda and the distance between the projects, significant in-combination effects are not anticipated between the proposed development and the Drogheda Port Company dredging programme. Similarly, while there is some temporal overlap in the planned construction of the proposed development and the Marres Connect Power Cable, due to the intermittent and short-term nature of the works significant in-combination effects are not anticipated.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables and pipelines. Exact details and maintenance schedules are unknown; however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

With the exception of within the immediate vicinity of the activities, SSC levels within the resultant plumes from the projects being assessed here will be below background levels recorded during storm events. Because of this, it is considered that all benthic QIs are expected to easily adapt to and/or tolerate the SSC plumes that are predicted both alone and cumulatively, particularly as SSC plumes are expected to quickly dissipate following cessation of activities.

For the decommissioning phase, the potential impacts are considered to be the same as construction, however with a lesser magnitude. Therefore, the same projects are considered for this stage of development and the same conclusions are drawn.

6.1.4.1.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Rockabill to Dalkey SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

6.1.4.2 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.4.2.1 Assessment

During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the marine environment. Through the offshore EMP (Appendix A8) the developer has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operations and decommissioning activities. These will include a marine pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

Drogheda Port has an Emergency Plan that includes its Pollution Response Plan for all activities within the port including dredging vessels[3]. Construction of the Mares Connect Interconnector will overlap with that of the proposed development and it is anticipated that and offshore EMP (Appendix A8) will be a required planning condition which will include appropriate marine pollution contingency measures.

No discharges (continuous or intermittent) of chemicals or construction materials, which may be toxic or persistent within the marine environment, are proposed during the construction phase of the proposed development. Additionally, site-specific surveys indicated that within the benthic assessments, the levels of contaminants within the sediments that are likely to be disturbed did not exceed the upper limits according to the Irish Sediment Quality Guidelines (Aquafact, 2025; Natural Power Consultants, 2022 & 2023). Therefore, it is highly unlikely that any sediment disturbed by the projects considered in-combination will have a negative effect on the SAC.

6.1.4.2.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that accidental pollution from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Rockabill to Dalkey SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

6.1.5 Boyne Coast and Estuary SAC

Following updates and amendments to Section 6.1, Section 6.1.5 has been revised to ensure consistency with the updated in-combination assessment approach. These revisions also take account of updates to the projects listed in Table A6.1 (indicated by the grey shading) and the updated sediment plume modelling outputs for the proposed development alone, as presented in Section 5.1.6.2 of this document and Appendix A11: Marine Physical Processes Numerical Modelling Assessment. Accordingly, the entirety of Section 6.1.5 of the 2024 NIS has been deleted and replaced with the following text and subsections:

The following qualifying interests of the Boyne Coast and Estuary SAC have been screened in for further assessment:

- Estuaries;
- Mudflats and sandflats not covered by seawater at low tide;
- Salicornia and other annuals colonising mud and sand; and
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*).

[3] Drogheda Port Company Emergency Plan | Drogheda Port Company

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1: Boyne Coast and Estuary SAC has been screened in for the following effects:

- Offshore suspended sediment / deposition; and
- Offshore accidental pollution.

Due to their proximity to the SAC and the maximum extent of any impacts (i.e. within 24km for SSC) the projects considered for the in-combination assessment for this site is the Oriel Wind Park, Oriel ECC Power Cable, Drogheda Port Company dredging programme, maintenance activities associated with existing subsea cables and operational oil and gas pipelines, and the construction of the Mares Connect Interconnector.

6.1.5.1 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.5.1.1 Assessment

Increases in SSC associated with the proposed development are anticipated to extend up to approximately 12km from the source. Therefore, a 24km ZoI, which is based on twice the maximum spring tidal excursion, is considered precautionary and appropriate for any potential effects. Consequently, due regard has been afforded to the possibility of the works associated with the Drogheda Port Company dredging programme and Oriel Wind Farm and the proposed development occurring simultaneously.

In relation to the Drogheda Port Company maintenance dredging the cause of effects is primarily capital dredging and disposal. The potential effects from such works would be related to temporary increases in SSC and associated sediment deposition and smothering of the benthos and supporting habitats. While the project timelines overlap, given the intermittent nature of the dredging work at Drogheda and the distance between the projects, significant in-combination effects are not anticipated between the proposed development and the Drogheda Port Company dredging programme.

In relation to the Drogheda Port Company dredging programme the cause of effects is primarily capital dredging and disposal, while effects in relation to the Oriel Wind Park, Oriel ECC Power Cable and the Mares Connect Interconnector will primarily be in relation to construction activity. The potential effects from such works would be through temporary increases in SSC and associated sedimented deposition and smothering of the benthos and supporting habitats. While the project timelines overlap, given the intermittent nature of the dredging work at Drogheda and the distance between the projects, significant in-combination effects are not anticipated between the proposed development and the Drogheda Port Company dredging programme. Similarly, while there is some temporal overlap in the planned construction of the proposed development and the Oriel Wind Park and Oriel ECC Power Cable and the Marres Connect Power Cable, due to the intermittent and short term nature of the works significant in-combination effects are not anticipated.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables and pipelines. Exact details and maintenance schedules are unknown; however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

With the exception of within the immediate vicinity of the activities described, the SSC levels within the plumes from all three projects considered here will be below background levels recorded during storm events. Consequently, it is considered that all benthic QIs are expected to easily adapt to and/or tolerate the SSC plumes that are predicted both alone and cumulatively, particularly as SSC plumes are expected to quickly dissipate following cessation of activities.

For the decommissioning phase, the potential impacts are considered to be the same as construction, Although at a lesser magnitude. Therefore, the same conclusions pertaining to the construction phase are drawn for the decommissioning phase.

6.1.5.1.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Boyne Coast and Estuary SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

6.1.5.2 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.5.2.1 Assessment

During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the marine environment. Through the offshore EMP (Appendix A8) the developer has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operation and decommissioning activities. These will include marine pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

The other projects considered in this in combination assessment have similar measures through relevant environment management plans. For instance, Drogheda Port has an Emergency Plan that includes a Pollution Response Plan which considers all activities within the port including dredging vessels, while Oriel Wind Park will be required to have environmental management plans in place similar to those for the proposed development.

No discharges (continuous or intermittent) of chemicals or construction materials which may be toxic or persistent within the marine environment are proposed during the construction phase of the proposed development. Additionally, site-specific surveys indicated that the levels of contaminants within the sediments within the offshore development area that are likely to be disturbed did not exceed the upper limits according to the Irish Sediment Quality Guidelines (Aquafact, 2025; Natural Power Consultants, 2022 & 2023). Therefore, it is highly unlikely that any sediment disturbed by the projects considered in-combination will have a negative effect on the SAC.

6.1.5.2.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that accidental pollution from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Boyne Coast and Estuary SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

There are no other changes to this section. Refer back to Section 6.1.5 of the 2024 NIS.

6.1.6 Lambay Island SAC

In RFI Section 9 (h), it was requested that Lambay Island SAC be included in the in-combination assessment. In response, Section 6.1.6 has been added to this NIS to include the in-combination assessment for Lambay Island SAC, where relevant (see Table A6.1). The following text and subsections have been added and do not replace any text from the 2024 NIS:

The following qualifying interests of the Lambay Island SAC have been screened in for further assessment:

- Reefs

Based on the alone assessments for the proposed development (Section 5) and the consideration of plans and projects identified within Table A6.1, Lambay Island SAC has been screened in for the following effects:

- Offshore suspended sediment / deposition;
- Offshore accidental pollution.

Due to their proximity to the SAC and the maximum extent of any impacts (i.e. within 24km for SSC) the projects considered for the in-combination assessment for this site is the maintenance activities associated with existing subsea cables and operational oil and gas pipelines, and the construction of the Mares Connect Interconnector.

6.1.6.1 Suspended Sediment and Deposition (Construction, Operation and Decommissioning)

6.1.6.1.1 Assessment

Increases in SSC associated with proposed development are anticipated to extend up to approximately 12km from the source. Therefore, a 24km ZoI, which is based on twice the maximum spring tidal excursion, is considered precautionary and appropriate for any potential effects. Therefore, due regard has been afforded to the possibility of the works associated with the Drogheda Port Company dredging programmes, the Mares Connect Interconnector and the proposed development occurring simultaneously.

In relation to the Mares Connect Interconnector, in-combination effects will primarily be in relation to construction activity. The potential effects from such works would be through temporary increases in SSC and associated sedimented deposition and smothering of the benthos and supporting habitats. While there is some temporal overlap in the planned construction of the proposed development and the Marres Connect Interconnector, due to the intermittent and short term nature of the works significant in-combination effects are not anticipated.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables and pipelines. Exact details and maintenance schedules are unknown; however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

With the exception of within the immediate vicinity of the activities, SSC levels within the resultant plumes from the projects being assessed here will be below background levels recorded during storm events. Because of this, it is considered that all benthic Qualifying Interests are expected to easily adapt to and/or tolerate the SSC plumes that are predicted both alone and cumulatively, particularly as SSC plumes are expected to quickly dissipate following cessation of activities.

For the decommissioning phase, the potential impacts are considered to be the same as construction, however with a lesser magnitude. Therefore, the same projects are considered for this stage of development and the same conclusions are drawn.

6.1.6.1.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that suspended sediment and deposition from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Lambay Island SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

6.1.6.2 Accidental Pollution (Construction, Operation and Decommissioning)

6.1.6.2.1 Assessment

During all phases of the proposed development substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the marine environment. Through the offshore EMP (Appendix A8) the developer has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operations and decommissioning activities.

These will include a marine pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against this type of pollution incident.

Construction of the Mares Connect Interconnector will overlap with that of NISA and it is anticipated that and offshore EMP (Appendix A8) will be a required planning condition which will include appropriate marine pollution contingency measures.

No discharges (continuous or intermittent) of chemicals or construction materials, which may be toxic or persistent within the marine environment, are proposed during the construction phase of the proposed development. Additionally, site-specific surveys indicated that within the benthic assessments, the levels of contaminants within the sediments that are likely to be disturbed did not exceed the upper limits according to the Irish Sediment Quality Guidelines (Aquafact, 2025; Natural Power Consultants, 2022 & 2023). Therefore, it is highly unlikely that any sediment disturbed by the projects considered in-combination will have a negative effect on the SAC.

6.1.6.2.2 Conclusion of AEoI

Therefore, when factoring in the lack of potential adverse effects from the proposed development alone and the above considerations for the project in-combination, it is concluded beyond reasonable scientific doubt that accidental pollution from the offshore activities of the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Lambay Island SAC, in view of the site's COs with respect to all QIs, for either Project Option 1 or Project Option 2.

6.2 Migratory Fish

As detailed in Section 5.2, design refinements made in response to RFI Section 10 (a) mean that WTGs are now proposed to be installed on jacket foundations with suction buckets, while the OSP will be mounted on jacket foundations with either drilled pin piles or suction buckets. Consequently, piling is no longer included in the construction strategy. Seabed preparation activities have been restricted to boulder clearance and UXO clearance only, with no dredging activities now required. These changes have altered several design parameters, resulting in updates to the relevant characteristics of Project Option 1 and Project Option 2 for several impacts relevant to migratory fish QIs.

In addition to these design-related updates, the text in this section has been revised to reflect a minor change in the in-combination assessment methodology, which has been updated to follow the NSIP (2024) guidance, as requested by An Bord Pleanála in RFI Section 5. Furthermore, in response to RFI Section 11(g), operational noise from WTGs has also been screened into the assessment.

Table 6.1 in Section 6.2 of the 2024 NIS has also been updated to include the revised, topic-specific short-list of projects screened into the in-combination assessment for migratory fish QIs. The list of projects and plans screened into the in-combination assessment has been reviewed and updated to ensure the assessment is informed by the most current and up-to-date data, satisfying RFI Section 1(b). In accordance with Section 5 of the RFI, due consideration has been given to each of the Phase 1 ORE Projects, which have all been screened into the in-combination assessment. Further to this, all projects and activities that have ongoing impacts which are not part of the baseline have been retained in the in-combination impact assessment. This now also includes existing subsea cables and oil and gas pipelines within the 24km screening range to account for potential maintenance activities which may result in temporary seabed disturbance and associated changes to SSC and sediment deposition. As an additional clarification, and included here as an erratum, telecommunications cables have been screened out of the EMF assessment on the basis that the EMFs they emit are negligible and therefore not capable of giving rise to any meaningful in-combination effects.

To reflect these amendments, the introductory text of Section 6.2 of the 2024 NIS shall also be deleted and replaced with the text herein:

A range of proposed and consented plans and projects were scoped in for the in-combination assessment, based on the potential for AEoI from activities taking place in-combination with the proposed development. As for the project alone assessment, the only SAC considered in the in-combination assessment for qualifying migratory fish interests is the River Boyne and River Blackwater SAC.

To assess potential in-combination impacts from underwater noise, a screening range of 100km around the offshore development area was applied. As outlined in Section 5.2.2.2, high order clearance of UXO would represent the greatest impact for fish species and has consequently been used for underwater noise modelling and the impact assessment for the qualifying migratory fish species. The maximum predicted range for the onset of mortality or potential mortal injury in sensitive fish receptors from underwater noise from high order UXO clearance, based on the highest charge weight and the unweighted SPL_{peak} criteria from Popper et al. (2014), is approximately 810m from the detonation. Recoverable injury, TTS, and disturbance effects extend over a larger area, with moderate to high risk of such effects occurring in the intermediate field, potentially reaching hundreds of metres for Group 2 receptors (Atlantic salmon). For Group 1 receptors (river lamprey), low to moderate risk of recoverable injury, TTS, and disturbance is anticipated within the intermediate field (Popper et al., 2014).

When considering the potential for impacts to migratory fish from underwater noise in-combination with other consented or proposed projects that generate high intensity impulsive sounds, particularly those that include piling operations[4], the overall spatial extent within which effects may occur is expected to increase. On this basis, a screening range of 100km is considered suitably precautionary to encompass the area within which potential significant in-combination effects on migratory fish may arise, particularly given the mobile nature of the QIs.

For the operational noise impact from offshore wind turbines, the same 100km buffer has been applied, reflecting the scale of the NSIPs and the wide-ranging movement of the receptors; therefore, all East Coast Phase One projects have been screened into the assessment of this impact. For projects that generate continuous sounds only (e.g., dredging and rock placement, maintenance activities, and associated vessel operations) a precautionary 10km screening buffer has been applied, resulting in the screening in of potential maintenance activities associated with existing subsea cables and oil and gas pipelines.

To assess potential in-combination impacts associated with seabed-disturbance events, including increases in SSC, sediment deposition, and accidental pollution, a screening range of 24km from the offshore development area has been applied. This distance is informed by project-specific sediment plume modelling, which indicates that increases in SSC above natural background levels (i.e., greater than10 mg/l) remain within the tidal excursion buffer which based on typical flows during a spring tide extends over a total distance of approximately 12.7km in the central area of the ECC and 13.9km in the array area. A precautionary distance of 24km (twice the sedimentary ZoI of 12km adopted for the assessment of sedimentary impacts to migratory fish species from the proposed development alone) has therefore been selected to account for the potential spatial extent of similar impacts arising from other projects in the vicinity of the SAC.

A screening range of 24km has also been applied to assess potential in-combination effects from EMF, based on the localised nature of any potential EMF effects on the qualifying interests and their likely movement and migration patterns while at sea. Those projects included within the in-combination assessment are listed in Table A6.2.

Construction of the proposed development is scheduled to take place between 2028 to 2030, with operation commencing in 2031. After construction, the proposed development will be operational for 35 years.

As aforementioned, Table 6.1 in Section 6.2 of the 2024 NIS has been updated and is therefore replaced by Table A6.2 below, which presents the revised shortlist of projects screened into the in-combination assessment for migratory fish QIs, using the most up-to-date available information (satisfying RFI Sections 1(b)). Additional projects to be considered have been added to the table, with rational provided as to whether they are screened in to the in-combination assessment.

[4] Following design refinements in response to the RFI, impact piling is no longer included in the construction strategy for the proposed development.

Tiering has been adjusted in line with NSIP (2024) guidance and planned programme/project information has been updated with new information in the public domain since the submission of the 2024 NIS.

New and updated information is shown by grey shading in Table A6.2.

Table A6.2: Plans and Projects Identified for Consideration within the Migratory Fish In-Combination Assessment (replaces Table 6.1 in Section 6.2 of the 2024 NIS

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Underwater Noise (construction)	Suspended Sediment and Deposition	Accidental Pollution	EMF	Underwater Noise (Operational)	Screening conclusion In-Combination
Operations and Maintenance Facility (OMF) at Greenore Port	Tier 1 MAC received and planning consented	Construction of an OMF at Greenore Port as a support base for three OWF developments on the East Coast of Ireland. Proposed activities include the installation of a 220m breakwater pontoon, 65m quay wall upgrades and 40,000m³ of capital dredging. Application for 10-year permission for development approved in 2024.	34.12	38.77	NA	Piling required for the installation pontoons and quay wall. The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development. However, due to the distance of the OMF from the offshore development area and the estuary of the River Boyne, there is no potential for an in-combination effect with the proposed development.		Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase).
Oriel Wind Park	Tier 1 Pre-consent (planning application)	Installation of up to 25 WTGs, one OSP, and one export cable. Construction anticipated to take place between 2028-2030. Operational from 2030.	16.94	21.61	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the Oriel Wind Farm site from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.		The installation of inter-array cables at the Oriel OWF would result in additional anthropogenic EMFs, which could affect electro- and magneto-sensitive receptors in-combination with EMF at the proposed development (during the operation phase).	Overlap in operational periods. Therefore, given the distance of the Oriel Wind Farm site from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.	Included for assessments relating to Underwater Noise (during the construction and operational phases), Suspended Sediment and Deposition, Accidental Pollution, and EMF.
Oriel EEC Power Cable	Tier 1 Pre-consent (planning application)	Construction of the export cable proposed 2028-2030. Operational from 2030.	18.06	22.60	NA	Due to the distance of the project from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the proposed development.	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the Oriel export cable corridor from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.		The installation of export cable at the Oriel OWF would result in additional anthropogenic EMFs, which could affect electro- and magneto-sensitive receptors in-combination with EMF at the proposed development (during the operation phase).	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to EMF, Suspended Sediment and Deposition, and Accidental Pollution.
Dublin Array	Tier 1 Pre-consent (planning application)	Installation of up to 50 WTGs, two export cables, and one OSP. Offshore construction programmed for 2029-2032. Operational from 2033.	32.92	37.58	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the projects from the	The proposed dates of the works may overlap with that of the proposed development. However, due to the distance of the projects from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the proposed development		Due to the distance of the projects from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the	Overlap in operational periods. Therefore, given the distance of the Oriel Wind Farm site from the offshore development	Included for assessments relating to Underwater Noise (during the construction and operation phases).

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Underwater Noise (construction)	Suspended Sediment and Deposition	Accidental Pollution	EMF	Underwater Noise (Operational)	Screening conclusion In-Combination
Codling Wind Park	Tier 1 Pre-consent (planning application)	Installation of up to 75 WTGs, three export cables, and three OSPs. Construction anticipated for 2026-2029. Operational from 2023.	50.99	56.99	NA	offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			proposed development.	area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.	Included for assessments relating to Underwater Noise (during the construction and operation phases).
Arklow Bank Wind Park Phase 2	Tier 1 Pre-consent (planning application)	Installation of up to 53 WTGs, two OSPs, and two export cables. Construction is anticipated to take place 2027-2030. Operational from 2031.	76.36	80.13	NA						Included for assessments relating to Underwater Noise (during the construction and operation phases).
Arklow Bank Wind Park Phase 1	Tier 1 Operational	Operational wind farm consisting of seven WTGs.	88.27	91.54	NA	Due to the distance of the project from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the proposed development.			Due to the distance of the projects from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the proposed development.	Overlap in operational periods. Therefore, given the distance of the Oriel Wind Farm site from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.	Included for assessments relating to Underwater Noise (during the operation phase).
Drogheda Port Company (dumping site A1)	Tier 1 Consented	Release of dredged material (until 2029) from vessels at predefined dumping site A1 located approximately 4km northeast of the Drogheda port entrance. Overlap with construction period.	11.70	10.25	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Underwater Noise (construction)	Suspended Sediment and Deposition	Accidental Pollution	EMF	Underwater Noise (Operational)	Screening conclusion In-Combination
Drogheda Port Company (dumping site A2)	Tier 1 Consented	Release of dredged material (until 2029) from vessels at predefined dumping site A2 located approximately 4km north from the Drogheda port entrance. Overlap with construction period.	15.33	14.28	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.
Drogheda Port Company (dredging)	Tier 1 Consented	Maintenance dredging until 2029 within the commercial estuary of the river Boyne and seaward approaches. Overlap with construction period.	19.84	12.71	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.
EAST WEST INTERCONNECTOR Power Cable	Tier 1 Active	Operational subsea cables may require maintenance activities.	5.15km	11.57km	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of the project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			The installation of power cables at the proposed development would result in additional anthropogenic EMF, which could affect electro- and magneto sensitive receptors in combination with existing power cables.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to EMF, Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.
HAVHINGSTEN SEG 1 Telecommunication Cable	Tier 1 Active	Operational subsea cables may require maintenance activities.	0.68km	9.73km	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			Due to the nature of these projects, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.
ROCKABILL Telecommunication Cable	Tier 1 Active		4.87km	12.85km	NA						
HIBERNIA ATLANTIC SEG C Telecommunication Cable	Tier 1 Active		7.79km	17.09km	NA						
SIRIUS SOUTH Telecommunication Cable	Tier 1 Active		9.41km	18.75km	NA						
CelticConnect Telecommunication Cable	Tier 1 Active		11.29km	20.07km	NA	The proposed dates of the works may overlap with that of the proposed development. However, due to the distance of the projects from the offshore	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.				Included for assessments relating to Suspended Sediment and Deposition, and Accidental Pollution.
ZAYO EMERALD BRIDGE ONE Telecommunication Cable	Tier 1 Active		12.09km	20.23km	NA						

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Underwater Noise (construction)	Suspended Sediment and Deposition	Accidental Pollution	EMF	Underwater Noise (Operational)	Screening conclusion In-Combination
ESAT 2 Telecommunication Cable	Tier 1 Active		14.41km	24.19km	NA	development area and the estuary of the River Boyne, there is no potential for an in-combination effect with the proposed development.					
Interconnector 2 Scotland to Ireland Pipeline	Tier 1 Active	Operational pipelines may require maintenance activities.	0.52km	2.68km	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			Due to the nature of these projects, impacts from EMF are not anticipated.	Due to the nature of these projects, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase), Suspended Sediment and Deposition, and Accidental Pollution.
Interconnector 1 Scotland to Ireland Pipeline	Tier 1 Active		4.24km	10.60km	NA						
Warrenpoint B	Tier 1 Consented	Sea disposal of dredging material from Warrenpoint Harbour at Warrenpoint B sea disposal site.	23.75km	28.88km	NA	Due to the distance of the project from the offshore development area and the estuary of the River Boyne, there is no potential for in-combination effects with the proposed development	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of this project from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.		Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included in assessments relating to Suspended Sediment and Deposition, and Accidental Pollution.
Dublin Port Masterplan - MP2 Project	Tier 1 Consented	Construction activities, including piling, in Dublin Port scheduled to take place 2022-2032.	31.88	33.03	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.	The proposed dates of the works may overlap with that of the proposed development. However, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is no potential for an in-combination effect with the proposed development.		Due to the nature of this project, impacts from EMF are not anticipated.	Due to the nature of this project, impacts from operational noise (from turbines) are not anticipated.	Included for assessments relating to Underwater Noise (during the construction phase).
Dublin Port Masterplan - 3FM Plan	Tier 1 Planning application	Construction activities, including piling, in Dublin Port. Application for 15-year permission for development, application lodged but not yet granted.	35.77	31.38	NA						
MaresConnect Electricity Interconnector	Tier 2 Pre-consent	Subsea power cable. Construction anticipated to take place 2026-2028;	6.02	12.26	NA	The proposed dates of the works may overlap with that of the proposed development. Therefore, given the distance of these projects from the offshore development area and the estuary of the River Boyne, there is potential for in-combination effects from these impacts.			The installation of interconnector cables would result in additional anthropogenic EMFs, which could affect	Due to the nature of this project, impacts from operational noise (from	Included for assessments relating to EMF, Underwater noise (during the construction phase), Suspended Sediment and

Plan or Project	Tier and Stage of Development	Planned Programme	Distance to array area (km)	Distance to ECC (km)	Distance to onshore cable route (km)	Underwater Noise (construction)	Suspended Sediment and Deposition	Accidental Pollution	EMF	Underwater Noise (Operational)	Screening conclusion In-Combination
		operational from 2029.							electro- and magneto-sensitive receptors (during the operation phase).	turbines) are not anticipated.	Deposition, and Accidental Pollution.

6.2.1 River Boyne and River Blackwater SAC

The key change to this section is the inclusion of the impact of operational noise from WTGs, which has been screened into the assessment in response to RFI Section 11 (g). In addition, to ensure consistency throughout the in-combination assessment sections, the qualifying migratory fish interests have been added to Section 6.2.1. Therefore, the following text from Section 6.2.1 of the 2024 NIS shall be deleted:

Based on the alone assessments for the proposed development (Section 5.2), the plans and projects identified within Table 6.1 have been considered and the River Boyne and River Blackwater SAC is the only site that has been screened in, and for the following impacts:

- *In-combination underwater noise and vibration (construction and decommissioning phase).*
- *In-combination increases in SSC and associated sediment deposition (construction, operation and decommissioning phase).*
- *In-combination accidental pollution (construction, operation, and decommissioning phase); and*
- *In-combination EMF (operational phase).*

And be replaced with:

The following qualifying interests of the River Boyne and River Blackwater SAC have been screened in for further assessment:

- River lamprey (*Lampetra fluviatilis*)
- Atlantic salmon (*Salmo salar*)

Based on the alone assessments for the proposed development (Section 5.2), the plans and projects identified within Table A6.2 have been considered, and the River Boyne and River Blackwater SAC is the only site that has been screened in, and for the following impacts:

- In-combination underwater noise and vibration (construction and decommissioning phase);
- In-combination increases in SSC and associated sediment deposition (construction, operation and decommissioning phase);
- In-combination accidental pollution (construction, operation, and decommissioning phase);
- In-combination EMF (operational phase); and
- In-combination underwater noise generated by turbines (operational phase).

To ensure the in-combination assessment remains up to date, the list of projects and plans screened into the in-combination assessment for migratory fish QIs has been reviewed and updated, satisfying RFI Section 5. Therefore, the following text from Section 6.2.1 of the 2024 NIS shall be deleted:

Due to their proximity to the proposed development for various effects (e.g., within 100km for noise effects as stated within the SISAA and described within Table 6.1), all east coast Irish Phase One projects are included in the in-combination assessment for this site. The Phase 1 projects include the Oriel Offshore Wind Farm (OWF), Dublin Array, the Codling Wind Park, and the Arklow Bank Phase 2 Offshore Wind Farm. Other projects that may contribute to in-combination effects through simultaneous or sequential activities prior to or during the construction phase of the proposed development include the construction of the OMF at Greenore, dredging and associated sediment disposal at the Drogheda and Dublin ports, construction of the Mares Connect power cable, and activities associated with the Greenore Port extension, the construction of the Arklow Bank Operations and Maintenance Base, and the extension of the Ringsend Wastewater Treatment Plant. In addition, existing and proposed power and telecommunications cables are considered for their potential to give rise to in-combination effects with EMFs emitted from cables installed at the proposed development.

And be replaced with:

Due to their proximity to the proposed development for various effects (e.g., within 100km for impulsive noise effects as stated within the SISAA and described within Table A6.2), all East Coast Irish Phase One projects are included in the in-combination assessment for this site. The Phase One projects include the Oriel Wind Park, Dublin Array, the Codling Wind Park, and the Arklow Bank Wind Park Phase 2. Other projects that may contribute to in-combination effects through simultaneous activities during the construction phase of the proposed development include the construction of the OMF at Greenore, dredging within the River Boyne and associated offshore sediment disposal, at sea disposal of dredged material at Warrenpoint B, piling activities associated with the Dublin Port Masterplan, maintenance activities associated with existing subsea cables and operational oil and gas pipelines, and the construction of the Mares Connect Interconnector. In addition, active and proposed power transmission cables are considered for their potential to give rise to in-combination effects with EMFs emitted from cables installed at the proposed development.

There are no further changes to the introductory text of this section. Refer to Section 6.2.1 of the 2024 NIS.

6.2.1.1 In-combination Underwater Noise (Construction and Decommissioning Phase)

As aforementioned, as a result of design refinements in response to the RFI Section 10 (a), piling is no longer included in the construction strategy, and consequently the maximum design impact from underwater noise is anticipated to result from UXO clearance from the proposed development alone. Section 6.2.1.1 of the 2024 NIS has therefore been revised to reflect the design refinements and the subsequent change to the underwater noise design parameters. To ensure that all potential in-combination effects are captured fully, underwater noise is therefore assessed as a single impact pathway. Therefore Section 6.2.1.1 of the 2024 NIS shall be removed and replaced with the text herein.

Project Option 1 of the proposed development reflects the design option with the greatest potential for AEoI regarding the potential for impacts from underwater noise. Underwater noise from the proposed development will arise from UXO clearance, pre-construction surveys, installation of WTG and OSP foundations (WTGs will be installed on SBJs, while the OSP will be mounted on jacket foundations with either drilled pin piles or suction buckets), and noise emitted from construction vessels, and other construction activities (e.g., seabed preparation, cable installation, and placement of scour and cable protection).

As presented in Table A6.2, all proposed Phase One ORE projects within 100km from the proposed development (i.e., Oriel Wind Park, Codling Wind Park, Dublin Array, and Arklow Bank Wind Park Phase 2) have been taken forward to assess in-combination impacts from underwater noise on the basis of these projects generating impulsive sounds, the overlap in construction periods with the proposed development, and the mobile nature of many receptors. In addition, , the OMF at Greenore Port and construction activities associated with the Dublin Port Masterplan (MP2 Project and 3FM Plan) have been included as the proposed activities for these projects include piling which will generate high intensity impulsive underwater noise. For projects that generate continuous sounds only, a precautionary 10km screening buffer has been applied, resulting in the screening in of potential maintenance activities associated with existing subsea cables and oil and gas pipelines, and dredging and disposal operations (such as those proposed at Drogheda Port Company dumping sites A1 and A2, and Warrenpoint B disposal site).

While the assessment for the proposed development alone identified no potential for adverse effects from underwater noise, there is still the potential for effects to occur in-combination due to the proximity of the proposed development and the SAC with other projects. As for the proposed development alone, potential in-combination effects on the migratory fish QIs from underwater noise and vibration include mortality and potential mortal injury, recoverable injury, TTS, and behavioural as a result of construction and decommissioning activities associated with the proposed development and other projects (inclusive of UXO clearance and piling operations at other East Coast Phase One projects).

6.2.1.1.1 In-combination Underwater Noise from UXO Clearance and Piling (Construction Phase)

No piling operations are proposed as part of the proposed development project design. WTGs are proposed to be installed on SBJs, with the OSP mounted on jacket foundations with either drilled pin piles or suction buckets. Consequently, the only construction activity associated with the proposed development that would generate impulsive underwater noise is UXO clearance, which represents the greatest potential impact range.

Although the proposed development does not include piling, an in-combination assessment has been undertaken to consider whether underwater noise from other projects, particularly those involving piling or UXO clearance, could act cumulatively on the QIs of the SAC alongside the underwater noise generated by the proposed development.

Foundation installation activities (inclusive of piling) at other Phase One projects, and smaller scale coastal developments, occurring concurrently, or sequentially over prolonged periods of time, with noisy activities at the proposed development have the potential to incur in-combination effects on river lamprey, and Atlantic salmon as QIs of the SAC. The proposed construction periods of the East Coast Phase One ORE projects (i.e., Oriel Wind Park, Dublin Array, Codling Wind Park, and Arklow Bank Wind Park Phase 2) indicate the potential for construction works to occur concurrently with offshore construction activities at the proposed development (2028-2030). Piling operations at these offshore wind farm sites would be intermittent and short-term (i.e., lasting one to seven years, as defined by the EPA guidance, 2022). The project parameters (with respect to piling) and the proposed construction periods of the Phase One projects are summarised below:

- Oriel Wind Park is proposed to be located approximately 17km from the proposed development at its nearest point. The project would comprise up to 25 WTGs and one OSP, installed on monopile foundations of 9.6m diameter using piling followed by drilling (Oriel Windfarm, 2024a). Offshore construction is anticipated to commence in Q4 of 2028 and will take approximately 15 months, and operation is anticipated to commence in Q2 2030 (Oriel Windfarm, 2025a).
- Dublin Array is proposed to be located approximately 33km from the proposed development at its nearest point. The project would comprise up to 50 WTGs and one OSP, installed on either monopile or multi-leg foundations on pin piles using piling. Dates for offshore construction have been identified as 2029-2032, with piling operations anticipated to range from 18 to 30 months (Kish Offshore Wind Ltd., 2025).
- Codling Wind Park is proposed to be located approximately 51km from the proposed development at its nearest point. The project would comprise up to 75 WTGs and three OSPs on monopile foundations, installed using piling, drilling or vibropiling. Indicative dates for offshore construction activities at Codling Wind Park have been identified as 2026-2029 (Codling Wind Park, 2025).
- Arklow Bank Wind Park Phase 2 is proposed to be located approximately 76km from the proposed development at its nearest point. The project would comprise up to 53 WTGs installed on monopiles with a pile diameter between 7 to 11m and a maximum of two OSPs installed on monopiles with a pile diameter between 7 and 14m (SSE Renewables, 2026). Indicative dates for construction have been identified as 2027 to 2030.

Piling activities are also proposed at projects located at Greenore Port and within Dublin Port. Construction of an OMF at Greenore Port will involve piling during the construction of the quay wall and new pontoons (Greenore Port Unlimited Company, 2024). Application for a 10-year permission for development of the OMF was granted in 2024. Construction activities in Dublin Port as part of the MP2 Project include the piling for new quay walls and mooring dolphins (RPS, 2020). Application for a 15-year permission for development was granted in 2022, and construction is anticipated between 2022-2032. Piling operations are also proposed for the final phase of the Dublin Port Masterplan (3FM Plan) for the construction of a new jetty amongst other marine infrastructure (RPS, 2022). A 15-year permission for development has been applied for.

The likelihood of concurrent impulsive noise events (from UXO clearance and piling operations) between projects is low, thereby reducing the likelihood of in-combination effects. Moreover, as outlined previously, a NAS (e.g., a bubble curtain or similar) will be used if high-order UXO clearance is required at the proposed development, reducing the maximum sound levels produced and the area over which effects on QIs of the SAC may occur. In addition, the Developer is committed to not undertake any high order UXO detonations at the proposed development at the same time Codling Wind Park undertakes high order clearance within its OECC. While this measure is targeted toward reducing in-combination impacts to harbour porpoise protected within the Rockabill and Dalkey Island SAC, it would equally reduce the area affected by underwater noise and the sound levels received by migratory fish at any one time.

6.2.1.1.1.1 River lamprey

Assessment

The greatest underwater noise impact ranges, from the proposed development along are anticipated to arise from the controlled detonation of UXO. The maximum predicted ranges for the onset of mortality or potential mortal injury in sensitive fish receptors, based on the highest charge weight and the unweighted SPL_{peak} criteria from Popper et al. (2014), is approximately 810m from the detonation.

Site investigations at the proposed Oriel Wind Park indicated a low risk of encountering UXO within the development area and as such, UXO clearance is not anticipated to be required for this project (Oriel Windfarm, 2025b). At the proposed Codling Wind Park, up to ten UXO may require clearance (Codling Wind Park, 2025), while at Dublin Array up to four high order UXO detonations may take place (Kish Offshore Wind Ltd., 2025). For both projects, mortality and potential mortal injury during high-order UXO clearance is predicted to occur up to 810m from the detonation site, based on a maximum charge weight of 525kg. In addition, the Developer is committed to not undertake any high order UXO detonations at the proposed development at the same time Codling Wind Park undertakes high order clearance within its OECC. At Arklow Bank Wind Park Phase 2, the maximum charge weight required for high order UXO removal has been estimated at 800kg (plus a charge weight of 0.5kg), which is predicted to result in mortality and potential mortal injury in sensitive receptors up to 930m from the detonation site (SSE Renewables, 2026). Considering the localised nature of mortality and potential mortal injury, the impact ranges are unlikely to overlap with those from other screened in projects, or interact with the mouth of the River Boyne, and subsequently the risk of mortality in QIs of the SAC from in-combination effects from UXO clearance is considered to be low.

The relative risk of recoverable injury, TTS and disturbance of river lamprey is based on qualitative impact thresholds and is therefore applicable to all Phase One projects. With regards to the risk of recoverable injury of river lamprey from UXO clearance events, this is considered to be high in the near field (10s of meters) and low at intermediate (100s of meters) and far (1000s of meters) distances from the sound source. TTS and disturbance reactions will occur over larger areas, with high risk in the nearfield, moderate risk in the intermediate field, and low risk in the far field. Any potential TTS and disturbance effects arising from UXO detonations would be reversible and temporary, and sensitive receptors are anticipated to resume normal behaviour and distribution shortly after the clearance event. Moreover, UXO clearance operations at all East Coast Phase One OWF sites will follow a UXO mitigation hierarchy, with high order UXO detonation only used when other clearance options (e.g., avoidance, removal and low order deflagration) are not possible. Where high order UXO clearance will be required, these events will be discrete and brief (lasting less than one day), with impulse sounds emitted lasting several seconds. In addition, high order UXO clearance at the proposed development and Dublin Array will be undertaken using a NAS (e.g., a bubble curtain or similar), which will further reduce the likelihood of in-combination effects. Taking this into account, the risk of potential in-combination impacts from UXO clearance on river lamprey as a QI of the SAC is low.

Other Phase One projects undertaking piling activities, either concurrently, or sequentially over prolonged periods of time, with noise-generating activities at the proposed development have the potential to incur in-combination effects on river lamprey. Predictive underwater noise modelling undertaken to inform the EIARs of these respective developments indicates the range of impacts from underwater noise anticipated with regards to river lamprey. The outputs of the predictive modelling are summarised below:

- Piling of foundations at the Oriel Wind Park is expected to occur over a total of 26 days during the construction period, using a maximum hammer energy of 3,500kJ (Oriel Windfarm, 2024b). Impact ranges for the onset of TTS for river lamprey during piling are predicted to occur up to 9.6km for stationary receptors and up to 5.5km for fleeing receptors (Oriel Windfarm, 2025b).
- Impact piling of foundations at Dublin Array is expected to occur over a maximum of 125 days during the construction period using a maximum hammer energy of 6,372kJ during the piling of monopiles and 4,695kJ during the piling of pin piles. Impact ranges for river lamprey for the onset of TTS are predicted up to 29km for stationary receptors and 9.3km for fleeing receptors (Kish Offshore Wind Ltd., 2025).
- Piling of foundations at Codling Wind Park is expected to occur over a total of 75 days during the construction period using a maximum hammer energy of 4,400kJ. Impact ranges for the onset of TTS are predicted up to 34km for stationary receptors and 24km for fleeing receptors (Codling Wind Park, 2025).

- Piling of foundations for Arklow Bank Wind Park Phase 2 is expected to occur over a total of 75 days during the construction period using a maximum hammer energy of 3,500kJ. Impact ranges for the onset of TTS during piling are predicted up to 39km for stationary receptors and 28km for fleeing receptors (SSE Renewables, 2026).

As detailed above, piling activities are also proposed at projects located at Greenore Port and within Dublin Port. Noise modelling undertaken on behalf of the Dublin Port Company predicts that the underwater noise impact zone for piling associated with the MP2 Project will be confined to the navigational channel of Dublin Harbour and the River Liffey (RPS, 2020). Underwater noise modelling for piling associated with the 3FM Dublin Port project predicts that, under worst-case piling parameters for a static receptor, fish may experience TTS within a maximum range of 300 m during the longest continuous piling durations (1,200 blows or one hour) (RPS, 2022). Site-specific underwater noise modelling for the piling activities proposed at Greenore Port is not currently available. However, the project predicts similar impact ranges to those modelled for piling operations within Dublin Port for the Alexandra Basin Re-development, which constituted the first project of the Dublin Port Masterplan (Greenore Port Unlimited Company, 2024). As detailed in the Alexandra Basin Re-development EIAR (RPS,2014), injurious effects on salmon (smolts and adults) and river lamprey were predicted to occur up to 295m from the piling source (based on 5,000 pile strike). These estimates, however, were derived using the Carlson et al. (2007) method, which is based on a theoretical model, and should therefore be interpreted with caution. Drawing on the qualitative risk criteria for pile driving (as defined by Popper et al. (2014)), the risk of disturbance on river lamprey from piling activities at each of the projects described above is predicted to be high, up to tens of metres from the piling activity, moderate, up to hundreds of meters away, and low, up to thousands of meters away.

River lamprey typically remain within estuarine and inshore waters during their marine phase (Maitland, 2003). All East Coast Phase One offshore wind projects are located offshore, meaning that predicted ranges for the onset of in-combination mortality or recoverable injury from these projects occur outside the areas of primary importance for river lamprey. The likelihood of such injuries occurring is further reduced through the use of soft-start procedures, which allow mobile species such as river lamprey to move away from piling sounds (if there are in the vicinity of the piling operations). Combined with their low susceptibility to pressure-related injury due to the absence of a swim bladder, the risk of mortality or recoverable injury to river lamprey from the proposed development in-combination with other East Coast Phase One projects is considered low. In-combination TTS or behavioural effects may result in short-term redistribution of individual river lamprey. However, taking into consideration the estimated ranges of potential TTS and behavioural effects for river lamprey from the respective projects, and given the species' strong preference for inshore habitats, it is unlikely that they would occupy offshore areas where these effects are predicted to occur. Therefore, the risk of TTS or behavioural effects to river lamprey from underwater noise generated at the proposed development during UXO clearance in-combination with piling noise at other East Coas Phase One projects is considered low. Furthermore, any piling or UXO clearance activities would be intermittent in nature, reducing the likelihood of concurrent noise-generating events.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that underwater noise effects from UXO clearance associated with the proposed development, in-combination with underwater noise arising from piling and UXO clearance from other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the river lamprey QI, for either Project Option 1 or Project Option 2.

6.2.1.1.1.2 Atlantic salmon

As discussed in the proposed development alone assessments, tracking data indicate that Atlantic salmon smolts from the River Boyne and its tributaries leave the Irish Sea in a northward direction (Barry et al., 2020), suggesting a low likelihood of salmon from the River Boyne and Blackwater SAC to be present at Greenore Port, Dublin Harbour or within the development areas of Dublin Array, Arklow Bank Phase 2, and Codling Wind Park. The tracking data further showed that smolts move rapidly away from the coast towards the deeper waters of the Irish Sea, suggesting that salmons native to the SAC would also avoid the piling locations of the Oriel Wind Park. However, given this evidence is limited to a single study, it is assumed that there is still the potential for individuals from the Rivers Boyne and Blackwater to transit the East Coast Phase One development areas.

The greatest underwater noise impact ranges for the proposed development are anticipated to arise from the controlled detonation of UXO. The maximum predicted ranges for the onset of mortality or potential mortal injury is 810m from the detonation, with high risk of recoverable injury and behavioural effects, and moderate risk of TTS, predicted to occur up to hundreds of meters from the sound source. Similar impact ranges are predicted for UXO clearance operations at Dublin Array, Codling Wind Park, and Arklow Bank Wind Park Phase 2. Considering the distance between the proposed development and other East Coast Phase One projects and the predicted impact ranges for mortal effects, there is no potential for cumulative mortality from overlapping impact ranges during high order UXO clearance. Moreover, UXO clearance operations at the Phase One OWF sites will follow a UXO mitigation hierarchy similar to that adopted for the proposed development, with high order UXO detonation only used when other clearance options (e.g., avoidance, removal and low order deflagration) are not possible. In addition, if high order UXO clearance is required at the proposed development and Dublin Array, it will be undertaken using a NAS (e.g., a bubble curtain or similar), which will further reduce the likelihood of cumulative mortal and recoverable injuries due to UXO clearance operations. In addition, the Developer is committed to not undertake any high order UXO detonations at the proposed development at the same time Codling Wind Park undertakes high order clearance within its OECC.

Any potential TTS and disturbance effects arising from UXO detonations would be reversible and temporary, with Atlantic salmon anticipated to resume normal behaviour and distribution shortly after the clearance event. Moreover, each UXO detonation within the respective East Coast Phase One development areas would be a discrete and brief event (lasting less than one day), with impulsive sounds anticipated to be momentary (i.e., seconds to minutes). Therefore, the likelihood of concurrent clearance events between East Coast Phase One projects is assessed to be low. Moreover, while these events may result in some temporary disturbance and re-distribution to Atlantic salmon, given the brief nature of the impact, they are unlikely to result in widespread and long-term displacement of individuals from migration routes.

With respect to piling activities at other Phase One offshore wind projects, predictive modelling indicates that the maximum TTS impact ranges for stationary receptors extend up to 39km (Arklow Bank Wind Park Phase 2), while fleeing-receptor ranges, which are considered more representative of migratory salmon behaviour, are substantially smaller, with a maximum of 28km. Piling activities proposed at Dublin Port and Greenore Port are predicted to give rise to much more localised effects, with TTS ranges of up to 300 m from the piling source.

Impact piling has the potential to cause short-term disturbance to Atlantic salmon during their marine migration; however, any effects would be intermittent and temporary, arising from either concurrent or sequential piling activities across projects. The potential of the proposed development to contribute to in-combination effects on Atlantic salmon from impulsive underwater noise sources is low given the absence of piling operations and the low frequency and brief duration of any potential high order UXO clearance.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that underwater noise effects from UXO clearance associated with the proposed development, in-combination with underwater noise arising from piling and UXO clearance from other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the Atlantic salmon QI, for either Project Option 1 or Project Option 2.

6.2.1.1.2 In-combination Underwater Noise from Continuous Noise Sources

As discussed previously, non-impulsive sounds such as those emitted during cable installation, vessel movements, the drilling of foundations, or maintenance activities associated with existing subsea cables and oil and gas pipelines, and dredging and disposal operations (such as those proposed at Drogheda Port Company dumping sites A1 and A2, and Warrenpoint B disposal site) would not represent a risk of mortality and mortal injury to fish species. There is potential for TTS and behavioural effects, but current evidence suggests that these effects are temporary and reversible (Popper et al., 2014). Therefore, these activities are considered to have a much lower likelihood to result in adverse effects in fish compared to UXO clearance, both alone and in-combination with other projects.

It is anticipated that, following standard practices, vessels moving to and from offshore windfarm sites will, where practicable, use existing vessel routes for pre-existing vessel traffic, which fish will be accustomed to. They may also have become habituated to the noise generated by regular vessel movements, and therefore it is considered that potential in-combination effects may predominantly result from activities at the construction and decommissioning sites.

Assuming similar construction activities of the screened in projects, any potential recoverable injuries or TTS because of non-impulsive sounds are anticipated to be highly localised, and therefore the potential for in-combination effects is limited. Similarly, the risk of adverse in-combination behavioural reactions from overlapping noise contours or due to sequential disturbances from other projects considered in the assessment is concluded to be low, given the distance between the projects, the intermittent and short-term nature of the impact, and the reversibility of the effects.

6.2.1.1.2.1 River lamprey

Assessment

Any construction or vessel noise, or noise from maintenance of subsea cables and pipelines, or dredging and disposal operations would be intermittent and temporary, and any TTS or effects on behaviour would also be temporary and reversible. Moreover, given their preference for estuarine areas during their marine stage (Maitland et al., 2003), river lamprey will mostly avoid the areas over which TTS or behavioural responses are likely to occur, except for coastal areas near the landfall site. In addition, as a mobile species, river lamprey are considered able to move away from construction activities and might therefore not remain exposed to the impact for extended periods of time.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that non-impulsive underwater noise associated with the proposed development, in-combination with underwater noise arising from other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the river lamprey QI, for either Project Option 1 or Project Option 2.

6.2.1.1.2.2 Atlantic salmon

Assessment

Any construction or vessel noise, or noise from maintenance of subsea cables and pipelines, or dredging and disposal operations, would be intermittent and temporary, and any TTS or effects on behaviour would also be temporary and reversible. Given their migratory nature, Atlantic salmon are anticipated to be transient, and therefore any exposure to construction or vessel noise is anticipated to be temporary.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that non-impulsive underwater noise associated with the proposed development, in-combination with underwater noise arising from other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the Atlantic salmon QI, for either Project Option 1 or Project Option 2.

6.2.1.2 In-combination Increases in SSC and Sediment Deposition (Construction, Operation and Decommissioning Phase)

The key changes to this section are to reflect the project design refinements, the revised sediment plume modelling, and changes to the topic-specific short-list of projects screened into the in-combination assessment for migratory fish. Notable design refinements of relevance to this impact include the removal of dredging activities across the proposed development area, the removal of monopiles, and the use of SBJ foundations for the WTGs and OSP. To reflect these changes, Section 6.2.1.2 in the 2024 NIS shall be removed and replaced with the text herein:

Dredging and sediment disposal, repair and maintenance of existing subsea cables and pipelines, and the installation of new infrastructure, such as foundation and cables, will result in temporary increases in SSC and associated sediment deposition which may give rise to additive effects on migratory fish. This impact is associated primarily with activities that take place during the construction and decommissioning phases.

Increases in SSC above natural background levels (i.e., greater than 10 mg/l) associated with the proposed development are predicted to remain within the tidal excursion buffer, with the total tidal excursion distance extending approximately 12.7km in the central area of the ECC and 13.9km in the array area. Sediment plumes and deposition generated by other projects in the vicinity of the proposed development are anticipated to behave in a similar pattern as the sediments being disturbed by the proposed development due to expected similarities in activities combined with a similar environmental setting and sediment characteristics. Therefore, the applied 24km screening range from the proposed development area, which is based on twice the sedimentary ZoI (12km buffering the proposed development area), is considered precautionary and appropriate to assess potential in-combination impacts on the qualifying migratory fish species.

Based on the location of the SAC in relation the projects considered in the assessment, in-combination effects from sediment plumes have the potential to arise from construction works at the Oriel Wind Park, and the Mares Connect subsea cable, maintenance dredging and associated disposal of dredged material at predefined spoil dumping and disposal sites (dumping sites A1 and A2, and Warrenpoint B disposal site) and maintenance of subsea cables and pipelines.

Increases to SSC and associated sediment deposition at Oriel Wind Park will arise during site preparation activities (sandwave clearance), the drilling of foundations, and during the installation and maintenance of inter-array and export cables. Peak SSC of around 2,000 mg/l are predicted to arise during the installation of inter-array cables within the immediate vicinity of operations, and the largest spatial extent of sediment plumes is predicted during the drilling of foundations and cable trenching within the ECC (Oriel Windfarm, 2025b,c). Sediment plumes generated during the construction of Oriel Wind Park will be intermittent and are, like those arising during the construction of the proposed development, predicted to return to background levels within a couple of tidal cycles due to settling and wider dispersion (Oriel Windfarm, 2025b). Project-specific sediment plume modelling undertaken for Oriel Wind Park (Oriel Windfarm, 2025c) and the proposed development (Physical Processes Chapter) suggests that there is potential for sediment plumes generated during concurrent construction activities at the Oriel OWF and the proposed development to overlap. However, the potential increases in SSC, when considered in-combination, would still to be temporary and intermittent, with SSC across overlapping plumes likely to be within natural background levels. Any potential simultaneous disturbance effects on migratory fish due to concurrent activities are expected to be localised, temporary, and intermittent as sediment plumes are expected to quickly dissipate following cessation of activities.

Ongoing maintenance dredging activities at Drogheda Port in the River Boyne, and the disposal of dredged material offshore at dumping sites A1 and A2 may also contribute to the in-combination increase in SSC and sediment deposition through simultaneous dredging or disposal activities. Similarly, simultaneous disposal operations at the Warrenpoint B site also have the potential to give rise to in-combination effects. It is not known what volumes of sediment will be disturbed and/or released at any one time, however, given the intermittent nature of the dredging and disposal work at Drogheda Port, and Warrenpoint Port and the distance between the projects, significant in-combination effects are not anticipated between the proposed development and the Drogheda Port Company dredging and dumping at sea programme and disposal at Warrenpoint B.

There is the potential for construction works at the proposed development to occur concurrently with those proposed for the MaresConnect interconnector cable in 2028. The exact installation methodologies, location and the detailed construction programme for the MaresConnect interconnector cable are unknown at the time of writing, however, sediment released during the construction of MaresConnect is anticipated to behave in a similar pattern as the sediments disturbed by the proposed development due to expected similarities in activities combined with a similar environmental setting. Any potential simultaneous disturbance effects on migratory fish QIs during concurrent activities are expected to be localised, temporary and intermittent as sediment plumes would quickly dissipate following cessation of activities.

Simultaneous increase in SSC and sediment deposition may also arise during construction and operation of the proposed development and planned and unplanned maintenance of operational subsea cables (Havhingsten SEG 1, Rockabill, Hiberia Atlantica SEG C, Sirius South, CelticConnect, Zayo Emerald Bridge One, ESAT 2 telecommunication cables and the East West Interconnector power cable) and pipelines (Interconnector 1 and 2 Scotland to Ireland gas pipelines). Exact details and maintenance schedules are unknown for these projects, however, the lengths of cable and/ or pipelines to be replaced or reburied would likely be similar in scale to potential maintenance activities associated with the proposed development, and the potential impacts would be highly localised and occur over a short duration. Moreover, maintenance activities are expected to be infrequent over the lifetime of the assets, reducing the likelihood of concurrent activities with the proposed development.

For the decommissioning phase, the potential impacts are considered to be the same as during the construction phase, however, with a lesser magnitude. Therefore, the same projects are considered for this stage of development, and the same conclusions are drawn.

6.2.1.2.1 River lamprey

Assessment

As discussed previously, the capacity of river lamprey to accommodate increases in SSC and sediment deposition is assessed as high given the nature of resuspension and deposition within their natural higher energy estuarine environments. Moreover, river lamprey are mobile and would be able to relocate to nearby unimpacted areas. Therefore, the degree of overlap between river lamprey and areas subject to temporary, intermittent and localised increases in SSCs is predicted to be small in the context of available habitat, and any local in-combination changes in the species' distributions resulting from avoidance behaviour while at sea are expected to not be discernible from baseline conditions.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that increases in SSC and sediment deposition associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the river lamprey QI, for either Project Option 1 or Project Option 2.

6.2.1.2.2 Atlantic salmon

Assessment

With regards to Atlantic salmon, it has been concluded that temporary and intermitted increases in SSC at the proposed development might result in localised avoidance reactions during the duration of the plumes. However, due to the temporary and localised nature of the predicted changes in SSC and sediment deposition, any displacement will not result in a barrier effect that would prevent Atlantic salmon from leaving or accessing the SAC. Based on the location of the screened in projects and considering the likely northward migration of salmon when leaving the River Boyne, potential in-combination effects from sediment plumes are most likely to arise from concurrent activities at the proposed development, Oriel Wind Park and Oriel EEC, the Drogheda Port Company project (maintenance dredging and sediment disposal), and potential maintenance activities of the Interconnector 2, with plumes originating from the other screened in projects considered less likely to interact with the main migration routes of salmon to and from the SAC. Changes in SSC associated with these projects are also expected to be temporary and intermittent, with sediment plumes expected to quickly dissipate following cessation of activities.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that increases in SSC and sediment deposition associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the Atlantic salmon QI, for either Project Option 1 or Project Option 2.

6.2.1.3 In-combination Accidental Pollution (Construction, Operation and Decommissioning Phase)

The key change to this section is the inclusion of new 2025 site-specific sediment data, and changes to the topic-specific short-list of projects screened into the in-combination assessment for migratory fish. Therefore, Section 6.2.1.3 in the 2024 NIS shall be removed and replaced with the text herein:

Assessment

During all phases of the proposed development, substances such as grease, oil, fuel, anti-fouling paints and grouting materials may be accidentally released or spilt into the marine environment. Through the offshore EMP, the proposed development has identified best-practice techniques to minimise such inputs into the marine environment from all construction, operation and decommissioning activities. These will include marine pollution contingency measures to address the risks, methods and procedures to deal with any spills and collision incidents of the authorised project in relation to all activities carried out below HWM; a chemical risk review to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance; and a waste management plan. This commitment ensures the use of appropriate preventative measures and serves as mitigation against accidental pollution incidents.

The other projects considered in this in-combination assessment have similar measures through relevant environment management plans. For instance, Drogheda Port has an Emergency Plan that includes a Pollution Response Plan for all activities within the port including dredging vessels, and Oriel Wind Park, and associated works for the Oriel Export Cable Corridor will be required to have Environmental Management Plans (EMPs) in place similar to those for the proposed development. Likewise, it is anticipated that construction of the MaresConnect interconnector cable will require an offshore EMP (Appendix A8) which will include appropriate marine pollution contingency measures. Sea disposal sites (such as the A1 and A2 licensed disposal areas and the Warrenpoint B disposal site) operate under a Marine Licence/Foreshore Licence framework, which sets conditions for environmental protection, including pollution prevention, monitoring, and control of dredged material disposal activities. Subsea cables and pipelines (Havhingsten SEG 1, Rockabill, Hiberia Atlantica SEG C, Sirius South, CelticConnect, Zayo Emerald Bridge One, ESAT 2 telecommunication cables and the East West Interconnector power cable, Interconnector 1 and 2 Scotland to Ireland gas pipelines) are subject to marine and/or foreshore licensing frameworks that include site-specific environmental conditions. These conditions typically require the implementation of pollution prevention and environmental protection measures during installation, maintenance and repair works, including compliance with applicable vessel-source pollution controls under the MARPOL Convention and Ireland's Sea Pollution Acts.

No discharges (continuous or intermittent) of chemicals or construction materials, which may be toxic or persistent within the marine environment, are proposed during the construction phase of the proposed development. Additionally, site-specific survey data (AQUAFACT, 2025; Natural Power, 2022, 2023) indicate that the levels of sediment-bound contaminants within the array area and ECC are low and do not exceed the Upper Irish Action Levels. Moreover, any sediment-bound contaminants that may be released are likely to be rapidly diluted by tidal currents, and consequently increased bioavailability that could potentially result in adverse eco-toxicological effects to fish and shellfish species is not expected from the proposed development alone.

Conclusion of AEoI

Based on the considerations set out above, it can be concluded beyond reasonable scientific doubt that potential accidental pollution events associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the Atlantic salmon and river lamprey QIs, for either Project Option 1 or Project Option 2.

6.2.1.4 In-combination EMF (Operational Phase)

The key change to this section is the removal of operational telecommunication cables from the in-combination assessment for EMF effects on migratory fish on the basis that EMFs generated by these cables are negligible and have therefore no potential to give rise to likely significant in-combination effects on the migratory fish QIs. Furthermore, changes to the topic-specific short-list of projects screened into the in-combination assessment for migratory fish are reflected in this section.

For clarity, the changes to the in-combination assessment methodology do not alter the overall conclusion of the assessment: It is concluded beyond reasonable scientific doubt that EMFs generated by operational power cables associated with the proposed development in-combination with EMFs emitted by the projects considered in the assessment will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the river lamprey and Atlantic salmon QIs, for either Project Option 1 or Project Option 2.

To reflect the aforementioned changes, the following text shall be deleted:

As discussed previously, any potential behavioural responses of river lamprey and Atlantic salmon to EMF are expected to be highly localised, based on the rapid attenuation of EMFs within the marine environment Based on similar technology and project designs, the extent of EMF emissions from the Oriel wind farm and other existing power cables within the in-combination assessment area is also expected to be highly localised and restricted to discrete areas within the immediate proximity of the cable lines.

And be replaced with:

As discussed previously, any potential behavioural responses of river lamprey and Atlantic salmon to EMF are expected to be highly localised, based on the rapid attenuation of EMFs within the marine environment Based on similar technology and project designs, the extent of EMF emissions from the screened in projects (Oriel Wind Park and ECC, East West Interconnector Power Cable and the Mares Electricity Interconnector cable) within the in-combination assessment area is also expected to be highly localised and restricted to discrete areas within the immediate proximity of the cable lines

There are no further changes to this section. Refer to Section 6.2.1.4 of the 2024 NIS.

6.2.1.5 In-combination Operational Underwater Noise (Operational Phase)

Underwater noise arising from operational WTGs has been screened into the in-combination assessment in response to RFI Section 11 (g). Therefore, this impact has been added to the assessment and does not replace any text from the 2024 NIS.

Underwater noise arising from operational offshore wind turbines has the potential to alter the acoustic soundscape around WTGs. Whilst it is likely that some species present within the areas around the WTGs will be able to detect the operational turbine sounds, the emitted sound levels are below those known to cause physical injury in fish receptors. Potential effects are therefore limited to highly localised behavioural responses or TTS.

6.2.1.5.1 River lamprey

6.2.1.5.1.1 Assessment

Operational underwater noise from turbines will be continuous and long-term for the duration of the proposed development. As established in the project-alone assessment in Section 5.2.3.2.4 , such noise is unlikely to result in exclusion of fish receptors from the array area and would, at most, affect a small proportion of individuals in the immediate vicinity of turbine infrastructure, with any effects limited to the near-field for the most hearing-sensitive species.

In the in-combination context, the distance between the proposed development and other operational and proposed OWF projects (Oriel Wind Park, Dublin Array OWF, Codling Wind Park, Arklow Bank Wind Park Phases 1 and 2) means that the spatial extent of any potential behavioural or auditory effects will not overlap. Any disturbance arising from operational turbine noise would therefore remain highly localised and confined to individual turbine footprints. In addition, river lamprey typically remain within estuarine and inshore waters during their marine phase (Maitland, 2003). All the screened in offshore wind projects are located offshore, and therefore the likelihood of river lamprey to exhibit TTS or behavioural changes because of operational turbine sounds is low.

6.2.1.5.1.2 Conclusion of AEoI

Considering the highly localised nature of effects, the habitat preference of river lamprey, and the absence of overlapping exposure pathways, it can be concluded beyond reasonable scientific doubt that operational underwater noise associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the river lamprey QI, for either Project Option 1 or Project Option 2.

6.2.1.5.2 Atlantic salmon

6.2.1.5.2.1 Assessment

Underwater noise generated during turbine operation is continuous and will persist for the lifetime of the proposed development. As concluded in the project-alone assessment, operational noise is unlikely to lead to the exclusion of fish receptors from the array area and would, at most, affect a small proportion of individuals in the immediate vicinity of infrastructure and potentially within the near-field for the most hearing-sensitive species.

Given the distance between the proposed development and other operational and proposed offshore wind farm projects included in the in-combination assessment, the spatial extent of any behavioural or auditory effects associated with operational turbine noise will not overlap. Any effects would remain confined to localised areas around individual turbine foundations. Moreover, given their migratory nature, Atlantic salmon are anticipated to be transient across marine areas, and therefore any exposure to operational turbine noise is anticipated to be temporary.

6.2.1.5.2.2 Conclusion of AEoI

Considering the highly localised nature of effects, the migratory nature of Atlantic salmon, and the absence of overlapping exposure pathways, it can be concluded beyond reasonable scientific doubt that operational underwater noise associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI of the River Boyne and River Blackwater SAC, in view of the site's conservation objectives with respect to the Atlantic salmon QI, for either Project Option 1 or Project Option 2.

6.3 Marine Mammals

As detailed in Section 5.3.1, following design refinements in response to the RFI (see Appendix A7: Design Refinements) WTGs are now proposed with suction-bucket jacket (SBJ) foundations, and OSPs as jacket foundations with either drilled pin piles or SBJ foundations. Consequently, piling is no longer included in the construction strategy and there are amendments to the projects to be screened in due to changes in construction timeframe and the revision of the foundation installation method.

In addition to these design-related updates, the text in this section has been revised to reflect a minor change in the in-combination assessment methodology, which has been updated to follow the NSIP (2024) guidance, as requested by An Bord Pleanála in RFI Section 5. There are also changes in the methodology of the in-combination assessment.

Table 6.2 in Section 6.3 of the 2024 NIS has also been updated to include the revised, topic-specific short-list of projects screened into the in-combination assessment for marine mammal QIs. The list of projects and plans screened into the in-combination assessment has been reviewed and updated to ensure the assessment is informed by the most current and up-to-date data, satisfying RFI Section 1(b). For clarity Table A6.3 replaces Table 6-2 in Section 6.3 of the 2024 NIS.

Additional rationale is provided in Sections 6.3.1, 6.3.2.1 and 6.3.2.2 regarding in-combination underwater noise impacts and in-combination project screening outcomes. Table A6.4, A6.5 and A6.6 are additional tables provided and do not replace any in the 2024 NIS.

Figure A6.1 is also a new additional figure and does not replace any presented in the NIS.

To reflect these amendments the entire section 6.3.1 to 6.3.2.3 shall be deleted and replaced with:

Based on the alone assessments for the proposed development (Section 5.3, Table A5.6), the relevant SAC sites with a QI of marine mammals have been screened in for the following impacts:

- In-combination underwater noise (construction and decommissioning).
- In-combination vessel disturbance (construction, operation, and decommissioning).
- In-combination vessel collision (construction, operation, and decommissioning).
- In-combination changes to prey (construction, operation, and decommissioning; and
- In-combination accidental pollution (construction, operation, and decommissioning).

6.3.1 In-combination underwater noise

For marine mammals, the main potential impacts from the proposed development in-combination with other plans and projects are associated with in-combination underwater noise due to:

- Pre-construction geophysical surveys; and
- UXO clearance.

While piling activities are anticipated to take place at other OWF developments, no piling shall take place at the proposed development, and therefore underwater noise impacts associated with piling are screened-out of the in-combination assessment.

It should be noted that disturbance from other (non-piling) construction activities (including SBJ installation) is anticipated to be highly localised and will be closely associated with the disturbance from vessel presence required for the activity. Measurements during the installation of the SBJ offshore wind turbine foundations have demonstrated that the noise from the suction pumps could not be detected >500 m from the source, and that the average sound pressure level at 750m did not differ from the background noise during active construction (Koschinski and Luderann, 2020). More recently, measurements during installation of steel jackets using suction bucket caissons in Scotland showed that PAM sites within the array area detected a 3 - 5dB median increase during hours of suction compared to baseline (Chudzinska et al., 2026). However, the data also showed that when comparing suction and non-suction hours within a construction day, the differences were relatively minor suggesting that vessel traffic, mobilisation, and ancillary operations contribute substantially to the overall increase in underwater noise on construction days. As such, cumulative effects have been assessed under vessel disturbance (screened-in) and the potential for cumulative effects due to other (non-piling) construction activities (including SBJ installation) was not considered further.

Auditory injury (PTS) from other construction activities, pre-construction surveys and UXO clearance was screened out of the in-combination assessment. For other construction activities, the injury ranges based on the non-impulsive weighted SEL_{cum} PTS-onset thresholds are below 50 m and vessel noise is anticipated to deter animals from the injury zone. For UXO clearance and pre-construction surveys, it is a requirement of European Protected Species legislation that a suitable mitigation is put in place across all projects to reduce injury risk to marine mammals to negligible levels. For the proposed development the Developer has committed to at-source noise reduction (e.g. bubble curtain) in the unlikely event that high-order UXO clearance is required. Additionally, the updated Marine Mammal Mitigation Protocol (MMMP) (Appendix A10) will be followed, which puts forward mitigation options that will be implemented to minimise the risk of any auditory injury to marine mammals from pre-construction surveys (methods include the use of MMO, PAM) and UXO clearance (methods include MMO and ADD).

Operational WTG noise has been screened out due to the extremely limited impact zone predicted for the proposed development and other OWF in the Irish Sea (<200 m for level B harassment).

Due to the near absence of empirical studies of marine mammal responses to geophysical surveys and lack of activity-specific thresholds, the assessment presents the impacts associated with geophysical surveys drawing on the recent review by Majewska et al. (2025) and updated guidance from JNCC (2025). The JNCC guidance recommends a 3 km Effective Deterrent Range (EDR) to assess significant disturbance to harbour porpoise within SACs from geophysical surveys undertaken as a part of the proposed development such as SBPs, USBL, and MBES with an operating frequency of ⩽12 kHz operating in waters ⩽200 m depth. This EDR is used as a proxy for other geophysical surveys such as sub-bottom imager (SBI), side scan sonar (SSS) and ultra-high resolution seismic (UHRS). There are no project-specific mitigation measures that could reduce the risk of disturbance due to geophysical surveys.

It is expected that all Projects considered in the in-combination assessment will use low-order deflagration as the primary UXO clearance method. This aligns with the advice provided in the joint interim position statement released in 2022 and updated in 2025 (DEFRA et al., 2022, DEFRA et al., 2025). There is also a possibility that in rare cases low-order clearance cannot be carried out, the high order clearance may be required. In that case, noise abatement system/s (NAS) such as bubble curtain are anticipated to be used. As such, for UXO clearance, the in-combination assessment uses an EDR of 5 km EDR for low-order UXO clearance and an EDR of 10 km for high-order clearance with bubble curtain (JNCC, 2025b).

6.3.1.1 Project Screening

In general, the first project screening for marine mammals takes place on a Management Unit (MU) scale. That is, the inclusion of other plans, projects, and activities for which the in-combination assessment is based on. The screening process identifies whether there is overlap between a project and marine mammal MUs. For the proposed development, this included the Celtic and Irish Seas (CIS) MU (which is the MU of relevance for the harbour porpoise feature of this SAC), the Irish Seas (IS) MU (which is the MU of relevance for the bottlenose dolphin) and the East and Southeast Regions (which are the seal MUs of relevance for grey and harbour seals). However, following the revision of the foundation installation method, piling is no longer proposed. As this activity was previously identified as having the greatest potential to result in large-scale effects due to extensive underwater noise propagation, screening of the Project on a marine mammal MU basis is no longer considered necessary. Potential in-combination effects are now expected to be less far-reaching and more localised in nature.

As such the assessment considers projects located in the Irish Sea only, and those which have temporal overlap with the proposed development.

Plans and projects screened in for consideration within the marine mammals in-combination assessment are outlined in Table A6-3.

Table A6.3: Plans and Projects Screened In for Consideration within the Marine Mammals In-Combination Assessment (replaces Table 6.2 in Section 6.3 in the 2024 NIS).

Project	Project Details	Tier	Distance to Array (km)	Distance to ECC (km)	Underwater noise	Vessel disturbance	Vessel collision	Changes to prey	Accidental pollution
Proposed Development	OWF Construction 2027 - 2030	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oriel	OWF Construction 2028 - 2030	1	16.94	21.61	The proposed dates of work may overlap with the UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Oriel ECC	Subsea Cable Construction 2028 – 2030	1	18.06	22.60					
Oriel pre-construction geophysical surveys	Geophysical survey 2026 – 2029	2	18.03	22.59	The proposed dates of work may overlap with geophysical surveys at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Dublin Array	OWF Construction 2029 - 2030	1	32.92	37.58	There is no temporal overlap of proposed works with the geophysical surveys and UXO clearance at the proposed development. Therefore, it is not included in the in-	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.

Project	Project Details	Tier	Distance to Array (km)	Distance to ECC (km)	Underwater noise	Vessel disturbance	Vessel collision	Changes to prey	Accidental pollution
Dublin Array ECC	Subsea Cable Construction 2029 – 2031		41.92	42.15	combination assessment.		The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Dublin Array pre-construction geophysical surveys	Geophysical survey 2026 – 2028	2	35.17	31.31	The proposed dates of work may overlap with geophysical surveys at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Codling Wind Park	OWF Construction 2026 – 2039	1	50.99	56.99	The proposed dates of work may overlap with the UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Codling Wind Park ECC	Subsea Cable Construction 2026 – 2029		35.71	31.14					
Codling pre-construction geophysical surveys	Geophysical survey 2026 – 2029	2	34.68	31.61	The proposed dates of work may overlap with geophysical surveys at the proposed development.	The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development.

Project	Project Details	Tier	Distance to Array (km)	Distance to ECC (km)	Underwater noise	Vessel disturbance	Vessel collision	Changes to prey	Accidental pollution
					Therefore, it is included in the in-combination assessment.	Therefore, it is included in the in-combination assessment.	Therefore, it is included in the in-combination assessment.	Therefore, it is included in the in-combination assessment.	Therefore, it is included in the in-combination assessment.
Arklow Bank Wind Park 2	OWF Construction 2027 – 2030	1	76.36	80.13	The proposed dates of work may overlap with the UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Arklow Bank Wind Park 2 ECC	Subsea Cable Construction 2027 – 2030		75.47	79.21					
Mona	OWF Construction 2026 – 2028	1	117.53	124.82	The proposed dates of work may overlap with the geophysical surveys and UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Mooir Vannin (Isle of Man)	OWF Construction 2028 - 2031	1	118.33	126.84	The proposed dates of work may overlap with the geophysical surveys and UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.

Project	Project Details	Tier	Distance to Array (km)	Distance to ECC (km)	Underwater noise	Vessel disturbance	Vessel collision	Changes to prey	Accidental pollution
Foreshore licence application for a gas pipeline trenchless crossing of River Tolka, Dublin	Geophysical survey 2026 – 2031	2	35.76	29.49	The proposed dates of work may overlap with geophysical surveys at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
East Coast Rail Infrastructure Protection Projects (ECRIPP)	Geophysical survey 2026 – 2031	2	47.64	47.49	The proposed dates of work may overlap with geophysical surveys at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.
Port of Waterford - Offshore Renewable Energy Capable Terminal (Belview)	UXO clearance	1	167.55	160.35	The proposed dates of work may overlap with the UXO clearance at the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.

Project	Project Details	Tier	Distance to Array (km)	Distance to ECC (km)	Underwater noise	Vessel disturbance	Vessel collision	Changes to prey	Accidental pollution
Mares Connect	Subsea Cable Construction 2028	2	6.02	12.26	There is no indication in the public domain that the geophysical surveys and/or UXO clearance will be carried out as a part of the construction in 2028. Therefore, it is not included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.	The proposed dates of the works may overlap with that of the proposed development. Therefore, it is included in the in-combination assessment.

6.3.1.1.1 Geophysical Surveys

Given the small disturbance ranges expected from geophysical surveys and resulting 3 km EDR (see section 6.3.1) this assessment considers only survey activities in the Irish Sea that are expected to occur in 2028 when the proposed development is conducting survey activities. There are seven other projects (not including activities arising from the proposed development) that are likely to be surveying in 2028 (Table A6.4).

Table A6.4: Offshore survey projects screened into the CEA (within the Irish Sea and surveying in 2028).

Offshore Development	Developer / Applicant	Tier
NISA pre-construction geophysical surveys	North Irish Sea Array (NISA) Windfarm Limited	1
Codling pre-construction geophysical surveys	Codling Wind Park Limited (CWPL)	1
Dublin Array pre-construction geophysical surveys	Bray Offshore Wind Ltd and Kish Offshore Wind Ltd	1
Oriel pre-construction geophysical surveys	Oriel Windfarm Ltd	1
Mona offshore wind farm	Mona Offshore Wind Holdings Limited	1
Mooir Vannin	Ørsted	1
Foreshore licence application for a gas pipeline trenchless crossing of River Tolka, Dublin	Bord Gais Network	2
East Coast Rail Infrastructure Protection Projects (ECRIPP) geophysical site investigation	Iarnród Éireann	1

6.3.1.1.2 UXO Clearance

Given the small disturbance ranges expected from low order clearance of UXOs and resulting 5 km EDR (see section 6.3.1), this assessment considers only UXO clearance activities in the Irish Sea that are expected to occur in 2028 when the proposed development is conducting pre-construction activities, including UXO clearance. There are six other projects that are planned to be carrying out construction activities in 2028 (Table A6.5).

Table A6.5: Offshore projects with potential to carry out UXO clearance screened into the in-combination assessment.

Type	Offshore Development	Developer / Applicant	Tier
OWF	NISA UXO clearance	North Irish Sea Array (NISA) Windfarm Limited	1
OWF	Oriel	Oriel Windfarm Ltd	1
OWF	Codling Wind Park	Codling Wind Park Limited (CWPL)	1
OWF	Arklow Bank Wind Park (ABWP) 2	Sure Partners Ltd	1
OWF	Mona offshore wind farm	Mona Offshore Wind Holdings Limited	1
OWF	Mooir Vannin	Ørsted	1
Port	Port of Waterford - Offshore Renewable Energy Capable Terminal (Belview)	Port of Waterford	1
Wave/Tidal	None constructing in the Irish Sea in 2028		
CCS	None constructing in the Irish Sea in 2028		
Cables	None constructing in the Irish Sea in 2028*		

*Although MaresConnect is constructing in 2028, based on the information on the public domain there is no indication that UXO clearance can be expected as a part of the construction.

6.3.1.1.3 Vessel disturbance, vessel collision, changes to prey and accidental pollution

Given the localised scale of these impacts, the qualitative assessment considers all offshore projects that are constructing in the Irish Sea from 2026 onwards (Table A6.3).

6.3.2 Rockabill to Dalkey Island SAC

In response to RFI Section 10 (i), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) as well as the inclusion of the USBL. Further, following further design refinement in response to RFI Section 10 (a), the key changes to this section are revision of the foundation installation method for the proposed development and changes in the methodology of the in-combination assessment. The entire section 6.3.1.1 of the 2024 NIS shall be deleted and replaced with:

6.3.2.1.1 Geophysical Surveys

6.3.2.1.1.1 In situ impacts

For *in situ* disturbance from geophysical surveys taking place in the proposed development ECC, a 3 km EDR results in up to a maximum of 0.04 km^2 impacted area within the SAC (<0.01% SAC area). For geophysical surveys occurring within the array area, a 3 km EDR results in up to a maximum of 0.39 km^2 impacted area within the SAC (0.01% SAC area).

For other projects screened into the in-combination assessment, when considering an EDR measured from the location closest to the SAC, there is an overlap for six projects (proposed development array area, proposed development ECC, Codling OECC, Dublin Array array area, Dublin Array OECC and ECRIPP Site B, Table A6.6). If all six projects were to conduct geophysical surveys at the same time, then the overlap would result in up to 51.28 km^2 impacted area within the SAC (18.7% SAC area, Figure A6.1); which is within the daily threshold for significant disturbance that is used to assess impacts to porpoise SACs in England, Wales and Northern Ireland (JNCC 2020). It is noted that six geophysical surveys occurring at the same time in the vicinity of the SAC is extremely unlikely to occur. The chance of all six projects conducting geophysical surveys at the same time within the SAC is negligible, in particular given current Condition wording on Foreshore Investigation licences and Maritime Usage Licences that requires projects to avoid a temporal overlap when the vessel to vessel distance between survey vessels is 10km or less.

Table A6.6: 3 km EDR for geophysical surveys with respect to Rockabill to Dalkey Island SAC (for projects within the Irish Sea that are surveying in 2028).

Offshore Development	Developer / Applicant	Tier	SAC area overlap (km2)	% SAC area
NISA pre-construction geophysical surveys (ECC)	North Irish Sea Array (NISA) Windfarm Limited; Statkraft	2	0.39	0.1%
NISA pre-construction geophysical surveys (array area)			0.04	0.0%
Codling pre-construction geophysical surveys (OECC)	Codling Wind Park Limited (CWPL)	2	23.29	8.5%
Dublin Array pre-construction geophysical surveys (array area)	RWE Renewables Ireland	2	4.17	1.5%
Dublin Array pre-construction geophysical surveys (OECC)			10.27	3.8%
Oriel pre-construction geophysical surveys	Oriel Windfarm Ltd	2	0	0%
Mona offshore wind farm	Mona Offshore Wind Holdings Limited	1	0	0%
Mooir Vannin	Ørsted	1	0	0%

Offshore Development	Developer / Applicant	Tier	SAC area overlap (km2)	% SAC area
Foreshore licence application for a gas pipeline trenchless crossing of River Tolka, Dublin	Bord Gais Network	2	0	0%
East Coast Rail Infrastructure Protection Projects (ECRIPP) geophysical site investigation	Iarnród Éireann	2	13.12	4.8%

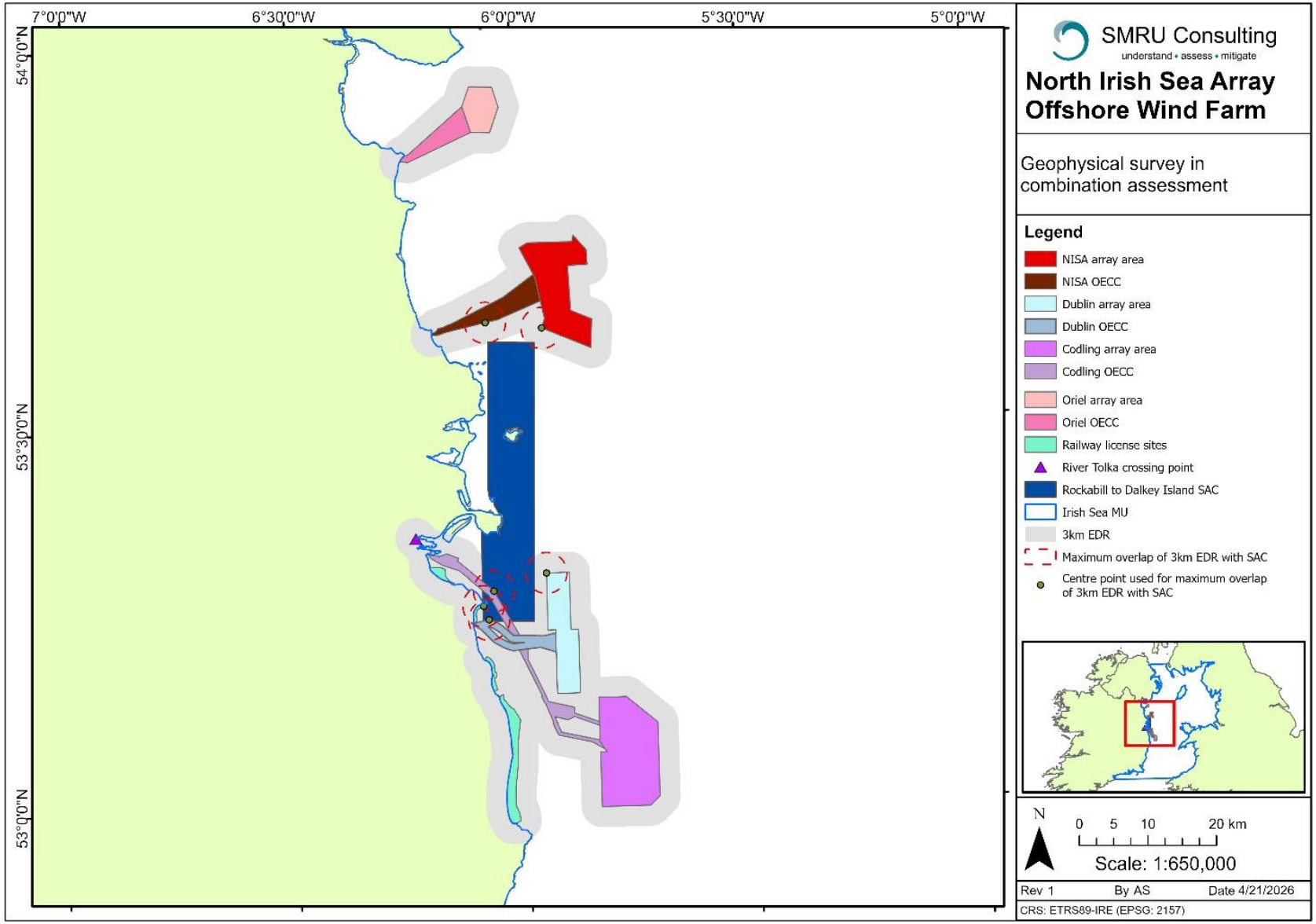


Figure A6.1: 3 km EDR for geophysical surveys in-combination with other projects with potential overlap with the Rockabill to Dalkey Island SAC.

6.3.2.1.1.2 Ex-situ impacts

For *ex situ* disturbance from geophysical surveys, using the SCANS IV block CS-D density (0.2803 porpoise/km^2), the number of harbour porpoise predicted to impacted is 8 individuals per project (0.01% of the Celtic and Irish Sea MU). Similar numbers are expected to be impacted at other geophysical surveys in the Irish Sea.

It is anticipated that the noise emitted from geophysical survey equipment will be rapidly attenuated with distance from source such that noise levels at which behavioural disturbance would be anticipated to occur will be of small spatial extent. In particular, it is noted that those sources with higher source levels (SBP, UHRS), along with the SBL, are highly directional, with noise levels outside of the main beam considerably lower and therefore with limited horizontal propagation of noise levels. The consequence of the impact is short-term, intermittent over the course of the geophysical survey campaigns, with temporary behavioural effects that are very unlikely to alter survival and reproductive rates to the extent that the population trajectory would be altered.

Assessment

The CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of harbour porpoise from the site, the potential for behavioral disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioral disturbance is not expected to impede harbour porpoise access to suitable habitat within the site in the long term.

Regarding Target 2, while temporary displacement of harbour porpoise within the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the harbour porpoise community within the site.

6.3.2.1.2 UXO Clearance

6.3.2.1.2.1 In situ impacts

For a 5 km EDR for low-order UXO clearance occurring within the proposed development ECC, this results in an overlap with up to a maximum of 6.7 km^2 of the SAC area (2.5% SAC area). For UXO clearance occurring within the proposed development array area, there is overlap with up to a maximum of 6.3 km^2 of the SAC area (2.3% SAC area). For a 10 km EDR for high order UXO clearance with noise abatement occurring within the proposed development ECC and array area, this results in an overlap with up to a maximum of 43.54 km^2 of the SAC area (15.58% SAC area).

For projects screened into the in-combination assessment, when considering both EDRs measured from the location closest to the SAC, there is an overlap for two projects (proposed development (incl. array area & OECC) and Codling OECC; Table A6.7 and Table A6.8).

If both projects were to conduct high-order clearance with the bubble curtain at the locations closest to the SAC, then the overlap could result in up to 143.56 km^2 impacted area within the SAC. This represent an overlap of 52.59% of the SAC area (Figure A6.1). In order to avoid negative impacts, as a mitigation the Developer committed not to carry out a concurrent high order detonation with Codling OECC high order detonation.

If both projects were to conduct low-order clearance at the locations closest to the SAC, then the overlap could result in up to 66.4 km^2 impacted area within the SAC (24% SAC area, Figure A6.3); which is above the daily threshold for significant disturbance that is used to assess impacts to porpoise SACs in England, Wales and Northern Ireland (JNCC 2020). However, it is extremely unlikely that UXO clearance would occur within the areas closest to the SAC at both the proposed development array area and OECC and Codling OECC within the same day.

Table A6.7: 10 km EDR for high-order UXO clearance with noise abatement with respect to Rockabill to Dalkey Island SAC (for projects constructing in the Irish Sea in 2028).

Type	Offshore Development	Developer / Applicant	Tier	SAC area overlap (km^2)	% SAC area
OWF	NISA UXO clearance (array area and OECC)	North Irish Sea Array (NISA) Windfarm Limited; Statkraft	1	43.54	15.58%
OWF	Codling Wind Park (OECC)	Fred. Olsen Seawind, EDF	1	100.02	37.01%
Port	Port of Waterford - Offshore Renewable Energy Capable Terminal (Belview)	Port of Waterford	1	0	0%
OWF	Arklow Bank Wind Park (ABWP) 2	SSE Renewables / Sure Partners Ltd	1	0	0%
OWF	Oriel	Oriel Windfarm Ltd	1	0	0%
OWF	Mona offshore wind farm	EnBW and BP	1	0	0%
OWF	Mooir Vannin	Ørsted	1	0	0%

Table A6.8: 5 km EDR for low-order UXO clearance with respect to Rockabill to Dalkey Island SAC (for projects constructing in the Irish Sea in 2028).

Type	Offshore Development	Developer / Applicant	Tier	SAC area overlap (km^2)	% SAC area
OWF	NISA UXO clearance (array area)	North Irish Sea Array (NISA) Windfarm Limited; Statkraft	1	6.3	2.3%
	NISA UXO clearance (OECC)			6.7	2.5%
OWF	Codling Wind Park (OECC)	Fred. Olsen Seawind, EDF	1	53.4	19.6%
Port	Port of Waterford - Offshore Renewable Energy Capable Terminal (Belview)	Port of Waterford	1	0	0%
OWF	Arklow Bank Wind Park (ABWP) 2	SSE Renewables / Sure Partners Ltd	1	0	0%
OWF	Oriel	Oriel Windfarm Ltd	1	0	0%
OWF	Mona offshore wind farm	EnBW and BP	1	0	0%
OWF	Mooir Vannin	Ørsted	1	0	0%

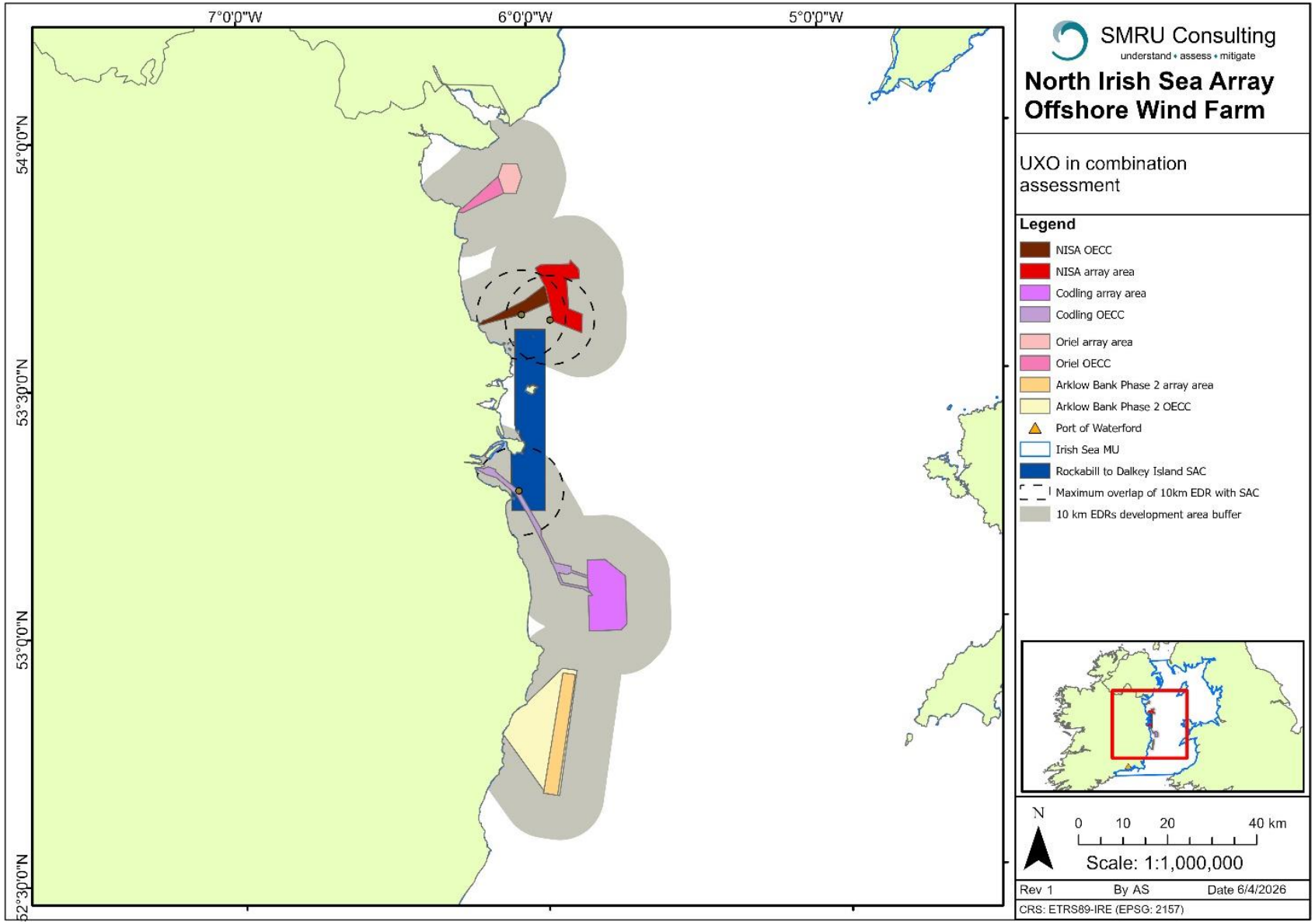


Figure A6.2: 10 km EDR for high-order UXO clearance with noise abatement in-combination with other projects with potential overlap with the Rockabill to Dalkey Island SAC.

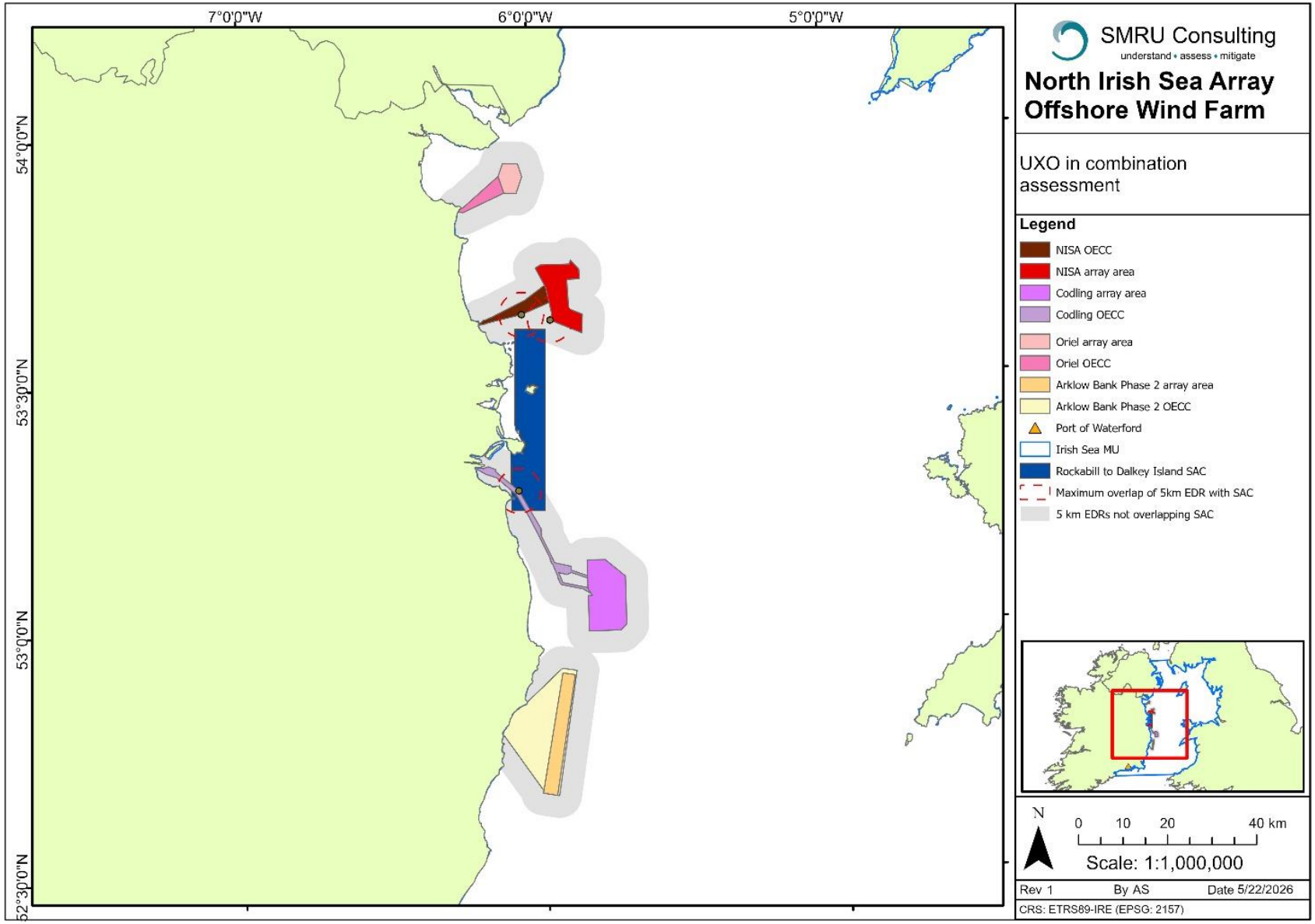


Figure A6.3: 5 km EDR for low order UXO clearance in-combination with other projects with potential overlap with the Rockabill to Dalkey Island SAC.

6.3.2.1.2.2 Ex-situ impacts

When considering *ex situ* impacts of disturbance from high-order with bubble curtain and low-order UXO clearance, a maximum of 66 and 22 harbour porpoise individuals, respectively, are at risk of being disturbed (0.11% and 0.03% of the Celtic and Irish Sea MU). Similar numbers are expected to be impacted at other UXO clearance campaigns in the Irish Sea. It is expected that the detonation of a UXO would elicit a startle response and potentially very short duration behavioural responses and would therefore not be expected to cause widespread and prolonged displacement (JNCC, 2020). Given the small percentage of the MUs predicted to be impacted per UXO clearance event, and the fact the consequence of the impact is likely to be short-term, intermittent during the UXO clearance campaigns, and with temporary behavioural effects that are very unlikely to affect the survival and reproductive rates to the extent that the population trajectory would be altered.

Assessment

The CO for the SAC is to maintain favourable conservation condition of harbour porpoise with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of harbour porpoise from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede harbour porpoise access to suitable habitat within the site in the long term.

Regarding Target 2, while temporary displacement of harbour porpoise within the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the harbour porpoise community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance, and/or geophysical surveys in-combination with other projects within the Irish Sea will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site's CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.2.2 In combination effects from vessel disturbance

The key change to this section is a slight change in the total number of vessels and return trips during construction and operational phases at the proposed development compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that beyond reasonable scientific doubt disturbance arising from vessel presence in-combination with other projects will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.2.3 In-combination effects from vessel collision risk

The key change to this section is a slight change in the total number of vessels and return trips during construction and operational phases compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that vessel collisions in-combination with other projects will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2. However, the following text of Section 6.3.1.3 shall be deleted:

A maximum of 66 construction vessels may be on site simultaneously with a maximum total of 2386 return vessel trips to port throughout the construction phase for the proposed development alone and a similar number would be expected for the decommissioning stage. A maximum of 21 operational and maintenance vessels may be on site simultaneously with a maximum total of 1018 return vessel trips to port throughout the operational and maintenance phase Vessel numbers are not available for the projects considering in-combination at this stage. For the OMP (Tier 1), vessel numbers are expected to be low, for Tier 2 projects

(other Phase 1 developments), vessel numbers for each project are likely to be of a similar scale to the proposed development.

And replaced with:

A maximum of 70 construction vessels may be on site simultaneously with a maximum total of 3,032 return vessel trips to port throughout the construction phase for the proposed development alone and a similar number would be expected for the decommissioning stage. A maximum of 12 operational and maintenance vessels may be on site simultaneously with a maximum total of 1,261 return vessel trips to port throughout the operational and maintenance phase. Vessel numbers are not available for other projects (see Table A6.3) considered in the in-combination assessment at this stage, however, vessel numbers for each offshore wind farm project are assumed to be of a similar scale to the proposed development.

6.3.2.4 In-Combination Effects from Changes to Prey

There are no changes to this section. Refer to Section 6.3.1.4 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that changes to prey in-combination with other projects will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.2.5 In-Combination Effects from Accidental Pollution

here are no changes to this section. Refer to Section 6.3.1.4 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that accidental pollution in-combination with other projects will not result in an AEoI of the Rockabill to Dalkey Island SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.3 Lambay Island SAC

6.3.3.1 Assessment (Harbour porpoise)

As described in Section 5.3.3.2, since the 2024 NIS, new Conservation Objectives, specific to the Lambay Island SAC were published. However, the CO, the attributes and targets for harbour porpoise are consistent with those previously considered in the 2024 NIS. There are no changes to this section. Refer to Section 6.3.2.1 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that any impacts acting in-combination with other projects will not result in an AEoI of the Lambay Island SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.3.2 In-Combination Effects from Underwater Noise (Grey/harbour seal)

In response to RFI Section 10 (i), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) as well as the inclusion of the USBL, and following further design refinement in response to RFI Section 10 (a), the key changes to this section are revision of the foundation installation method for the proposed development and changes in the methodology of the in-combination assessment. The entire section 6.3.2.1 shall be deleted and replaced with:

6.3.3.2.1 Geophysical Surveys

There is no overlap for a 3 km EDR for geophysical surveys at the proposed development with the Lambay Island SAC, nor from any of the other offshore projects conducting geophysical surveys in 2028 (the same time as the proposed development, Table A6.3).

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Given that there is no overlap of behavioural disturbance ranges with the SAC, it is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, there will be no overlap of the behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, disturbance is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the grey and harbour seal community within the site.

6.3.3.2.2 UXO Clearance

Assessment

The relevant CO for the SAC is to maintain a favourable conservation condition of grey and harbour seals within the site. This is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Breeding behaviour; Target 2: The breeding sites should be maintained in a natural condition.
- Attribute 3: Moulting behaviour; Target 3: The moult haul-out sites should be maintained in a natural condition.
- Attribute 4: Resting behaviour; Target 4: The resting haul-out sites should be maintained in a natural condition.
- Attribute 5: Disturbance; Target 5: Human activities should occur at levels that do not adversely affect the grey and harbour seal population at the site.

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of grey and harbour seals from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Given that there is no overlap of behavioural disturbance ranges with the SAC, the proposed development is not expected to impede grey and harbour seals access to suitable habitat within the site in the long term.

Regarding Targets 2 – 4, there will be no overlap of the behavioural disturbance ranges with the SAC and as such it will not result in interference with or disturbance of grey and harbour seal breeding, moulting and resting behaviours. Therefore, disturbance is not considered to impact the conservation of breeding, moult and resting haul-out sites in a natural condition.

Regarding Target 5, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of seals outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the grey and harbour seal community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance, and/or geophysical surveys in-combination with other projects within the Irish Sea will not result in an AEoI of the Lambay Island SAC, in view of the site's CO with respect to the grey and harbour seal QIs for Project Option for either Project Option 1 or Project Option 2.

6.3.3.3 In-Combination Effects from Vessel Disturbance (grey/harbour seal)

The key change to this section is a slight change in the total number of vessels and return trips during construction and operational phases of the proposed development compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that disturbance arising from vessel presence in-combination with other projects will not result in an AEoI of the Lambay Island SAC, in view of the site CO with respect to the grey and harbour seal Qs for either Project Option 1 or Project Option 2.

6.3.3.4 In-Combination Effects from Vessel Collision (grey/harbour seal)

The key change to this section is a slight change in the total number of vessels and return trips during construction and operational phases of the proposed development compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that vessel collision in-combination with other projects will not result in an AEoI of the Lambay Island SAC, in view of the site CO with respect to the grey and harbour seal QIs for either Project Option 1 or Project Option 2.

6.3.3.5 In-Combination Effects from Accidental Pollution (grey/harbour seal)

There are no changes to this section. Refer to Section 6.3.2.5 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS with the conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that accidental pollution in-combination with other projects will not result in an AEoI of the Lambay Island SAC, in view of the site CO with respect to the grey seal and harbour seal QI for either Project Option 1 or Project Option 2.

6.3.4 Hook Head SAC

6.3.4.1 Assessment (Harbour porpoise)

As described in Section 5.3, since the 2024 NIS, new Conservation Objectives, specific to the Hook Head SAC were published. However, the CO, the attributes and targets for harbour porpoise are consistent with those previously considered in the 2024 NIS. There are no changes to this section. Refer to Section 6.3.3.1 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that any impacts acting in-combination with other projects will not result in an AEoI of the Hook Head SAC, in view of the site CO with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.4.2 In-Combination Effects from Underwater Noise (Bottlenose dolphin)

In response to RFI Section 10 (i), the changes for this section are the new EDRs advised for pre-construction geophysical surveys (JNCC, 2025) as well as the inclusion of the USBL. Further, following further design refinement in response to RFI Section 10 (a), the key changes to this section are revision of the foundation installation method for the proposed development and changes in the methodology of the in-combination assessment. The entire section 6.3.3.2 shall deleted be and replaced with:

6.3.4.2.1 Geophysical Surveys

There is no overlap for a 3 km EDR for geophysical surveys at the proposed development with the Hook Head SAC, nor from any of the other offshore projects conducting geophysical surveys in 2028 (the same time as the proposed development).

Assessment

The CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphins from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphin outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the bottlenose dolphin community within the site.

6.3.4.2.2 UXO Clearance

There is no overlap for a 10 km and 5 km EDR for UXO clearance at the proposed development with the Hook Head SAC, nor from any of the other offshore projects conducting UXO clearance in 2028 (the same time as the proposed development).

Assessment

As identified above, the CO for the SAC is to maintain favourable conservation condition of bottlenose dolphin with the site. This is defined by the following targets: 'Species range within the site [is] not [..] restricted by artificial barriers' (Target 1) and 'Human activities should occur at levels that do not adversely affect the bottlenose dolphin community at the site' (Target 2).

Regarding Target 1, which relates to artificial barriers that could result in the exclusion of bottlenose dolphins from the site, the potential for behavioural disturbance, being a reversible effect, does not constitute a permanent barrier to movement or access. Consequently, behavioural disturbance is not expected to impede bottlenose dolphin access to suitable habitat within the site in the long term.

Regarding Target 2, there will be no overlap of the behavioural disturbance ranges with the SAC. While temporary displacement of bottlenose dolphin outside the SAC cannot be ruled out, it is considered highly unlikely that such displacement would occur at a magnitude that could result in any 'significant negative impacts' on individual animals or on the bottlenose dolphin community within the site.

Conclusion of AEoI

It is concluded beyond reasonable scientific doubt that disturbance arising from UXO clearance, and/or geophysical surveys in-combination with other projects within the Irish Sea will not result in an AEoI of the Hook Head SAC, in view of the site's CO with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.4.3 In-Combination Effects from Vessel Disturbance (bottlenose dolphin)

The key change to this section (Section 6.3.3.3 in 2024 NIS) is a slight change in the total number of vessels and return trips during construction and operational phases of the proposed development compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that disturbance arising from vessel presence in-combination with other projects will not result in an AEoI of the Hook Head SAC, in view of the site CO with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.4.4 In-Combination Effects from Vessel Collision (bottlenose dolphin)

The key change to this section (Section 6.3.3.4 in 2024 NIS) is a slight change in the total number of vessels and return trips during construction and operational phases of the proposed development compared to the 2024 NIS. This makes no change to the resulting assessment conclusions. Therefore, the conclusion remains that vessel collision in-combination with other projects will not result in an AEoI of the Hook Head SAC, in view of the site CO with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.4.5 In-Combination Effects from Changes to Prey (bottlenose dolphin)

There are no changes to this section. Refer to Section 6.3.3.5 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that disturbance arising from changes to prey in-combination with other projects will not result in an AEoI of the Hook Head SAC, in view of the site CO with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.4.6 In-Combination Effects from Accidental Pollution (bottlenose dolphin)

There are no changes to this section. Refer to Section 6.3.3.6 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that disturbance arising from changes to prey in-combination with other projects will not result in an AEoI of the Hook Head SAC, in view of the site CO with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.5 Codling Fault Zone SAC

The key change to this section since the 2024 NIS is the publication of a site-specific CO for harbour porpoise, specific to the Codling Fault Zone SAC (NPWS 2024, 2025). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.4 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Codling Fault Zone SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.

- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.3 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Colding Fault Zone SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.6 North Anglesey Marine/ Gogledd Môn Forol SAC

There are no changes to this section. Refer to Section 6.3.5 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the North Anglesey Marine/ Gogledd Môn Forol SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.7 Murlough SAC

There are no changes to this section. Refer to Section 6.3.6 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Murlough SAC, in view of the site COs with respect to the harbour seal QI for either Project Option 1 or Project Option 2.

6.3.8 North Channel SAC

There are no changes to this section. Refer to Section 6.3.7 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the North Channel SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.9 Glannau Ynys Gybi/ Holy Island Coast SAC

There are no changes to this section. Refer to Section 6.3.8 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Glannau Ynys Gybi/ Holy Island Coast SAC, in view of the site COs with respect to the grey seal QI for either Project Option 1 or Project Option 2.

6.3.10 West Wales Marine/ Gorllewin Cymru Forol SAC

There are no changes to this section. Refer to Section 6.3.9 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the West Wales Marine/ Gorllewin Cymru Forol SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.11 Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC

There are no changes to this section. Refer to Section 6.3.10 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC, in view of the site COs with respect to the bottlenose dolphin QIs for either Project Option 1 or Project Option 2.

6.3.12 Blackwater Bank SAC

The key change to this section since the 2024 NIS is the publication of a site-specific CO for harbour porpoise, specific to the Blackwater Bank SAC (NPWS 2024, 2024). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.11 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Blackwater Bank SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.3 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Blackwater Bank SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.13 Carnsore Point SAC

The key change to this section since the 2024 NIS is the publication of a site-specific CO for harbour porpoise, specific to the Carnsore Point SAC (NPWS, 2024). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.12 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Carnsore Point SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.3 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Carnsore Point SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.14 Cardigan Bay/ Bae Ceredigion SAC

There are no changes to this section. Refer to Section 6.3.13 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Cardigan Bay/ Bae Ceredigion SAC, in view of the site COs with respect to the bottlenose dolphin QI for either Project Option 1 or Project Option 2.

6.3.15 Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC

There are no changes to this section. Refer to Section 6.3.14 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.16 Roaringwater Bay and Islands SAC

There are no changes to this section. Refer to Section 6.3.15 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Roaringwater Bay and Islands SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.17 Blasket Islands SAC

There are no changes to this section. Refer to Section 6.3.16 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Blasket Islands SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.18 Kenmare River SAC

The key change to this section since the 2024 NIS is the publication of a site-specific CO for harbour porpoise, specific to the Kenmare River SAC (NPWS 2026). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.17 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Kenmare River SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Kenmare River SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.19 Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC

The key change to this section since the 2024 NIS is the publication of a site-specific CO for harbour porpoise, specific to the Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC (NPWS 2026). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.18 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed d*evelopment.* Section 6.3.3 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Bunduff Lough and Machair/ Trawlua/ Mullaghmore SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.20 Nord Bretagne DH SAC

There are no changes to this section. Refer to Section 6.3.19 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Nord Bretagne SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.21 West Connacht Coast SAC

The key change to this section since the 2024 NIS is the publication of site-specific CO for harbour porpoise, specific to the West Connacht Coast SAC (NPWS 2024, 2025). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.20 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the West Connacht Coast SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the West Connacht Coast SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.22 Mers Celtiques – Talus du golfe de Gascogne SAC

There are no changes to this section. Refer to Section 6.3.21 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Mers Celtiques – Talus du golfe de Gascogne SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.23 Récifs et landes de la Hague SAC

There are no changes to this section. Refer to Section 6.3.22 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Récifs et landes de la Hague SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.24 Anse de Vauville SAC

There are no changes to this section. Refer to Section 6.3.23 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Anse de Vauville SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.25 Banc et récifs de Surtainville SAC

There are no changes to this section. Refer to Section 6.3.24 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Banc et récifs de Surtainville SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.26 Tregor Goëlo SAC

There are no changes to this section. Refer to Section 6.3.25 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Tregor Goëlo SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.27 Belgica Mound SAC

The key change to this section is the publication of site-specific CO for harbour porpoise, specific to the Belgica Mound Province SAC since the 2024 NIS (NPWS 2024). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.26 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Belgica Mound Province SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Belgica Mound SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.28 Baie de Morlaix SAC

There are no changes to this section. Refer to Section 6.3.27 of the 2024 NIS. Therefore ,the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Baie de Morlaix SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.29 Abers-Côtes des légendes SAC

There are no changes to this section. Refer to Section 6.3.28 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Abers-Côtes des légendes SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.30 Ouessant-Molène SAC

There are no changes to this section. Refer to Section 6.3.29 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Ouessant-Molène SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.31 Chausey SAC

There are no changes to this section. Refer to Section 6.3.30 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Chausey SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.32 Baie de Saint-Brieuc – Est SAC

There are no changes to this section. Refer to Section 6.3.31 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Baie de Saint-Brieuc – Est SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.33 Côtes de Crozon SAC

There are no changes to this section. Refer to Section 6.3.32 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Côtes de Crozon SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.34 Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC

There are no changes to this section. Refer to Section 6.3.33 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.35 Baie du Mont Saint-Michel SAC

There are no changes to this section. Refer to Section 6.3.34 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Baie du Mont Saint-Michel SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.36 Kilkieran Bay and Islands SAC

The key change to this section is the publication of site-specific CO for harbour porpoise, specific to the Kilkieran Bay and Islands SAC since the 2024 NIS (NPWS, 2026). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.35 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Kilkieran Bay and Islands SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Kilkieran Bay and Islands SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.37 Chaussée de Sein SAC

There are no changes to this section. Refer to Section 6.3.36 of the 2024 NIS. Therefore, the Developer can confirm the assessment and conclusion of no AEoI remains unchanged from the 2024 NIS and conclusion below presented again for clarity.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Chaussée de Sein SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.3.38 Inishmore Island SAC

The key change to this section is the publication of site-specific CO for harbour porpoise, specific to the Inishmore Island SAC since the 2024 NIS (NPWS 2024). The CO, the attributes and targets are consistent with those previously considered in the 2024 NIS. Therefore, the conclusion with respect to AEoI remains unchanged. However, the following text of Section 6.3.37 shall be deleted:

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. As Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts incombination with other plans, projects and activities, given the greater distance to the site and the consequently reduced likelihood of impacts to individuals associated with the SAC and scale of effect on the population of the SAC, it is considered that the potential for AEoI is the same or reduced for this site. Therefore, it is concluded that there is no AEoI from any impacts on the harbour porpoise QI of this site from the proposed development in-combination with other plans, projects and activities.

And replaced with:

For harbour porpoise, the CO for the Inishmore Island SAC are to maintain a favourable conservation condition of the QI. This CO is defined by the following attributes and targets:

- Attribute 1: Access to suitable habitat; Target 1: Species range within the site should not be restricted by artificial barriers to site use.
- Attribute 2: Disturbance; Target 2: Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

Given that the range of habitat for harbour porpoise available is extensive, the likelihood and or severity of the effect experienced locally is considered to be negligible. Consideration is given to the assessment for Rockabill to Dalkey Island SAC, which is designated for the same QI and is located nearer to the proposed development. Section 6.3.1 concluded no AEoI on harbour porpoise QIs for all screened in impacts in-combination with other plans, projects and activities. Given the greater distance to the site from the proposed development and the consequently reduced likelihood of contribution to impacts to individuals associated with the SAC, it is considered that the potential for AEoI is the same or reduced for this site.

For clarity, it is concluded beyond reasonable scientific doubt that there is no AEoI from any impacts acting in combination with other plans or projects on the Inishmore Island SAC, in view of the site COs with respect to the harbour porpoise QI for either Project Option 1 or Project Option 2.

6.4 Ornithology

This section has been updated to reflect the revised project-alone impacts following the introduction of the PFI, as detailed in Section 5.4 (Ornithology), to incorporate an additional 12 months of NWIS DAS data to inform the quantitative assessment (see RFI Section 8 (cii)), and to account for updated guidance around project alone impacts (e.g., the release of recent Joint SNCB guidance on CRM) as discussed in the project alone assessment. All relevant projects have also been reviewed to ensure the in-combination assessment is up to date.

For context, the approach to the assessment is discussed in Section 5.4.1, individual assessments covered in sections 5.4.2 to 5.4.12 for the construction and decommissioning phases, and 5.4.13 to 5.4.30 for the operational phase.

To clarify wording, the following paragraph from Section 6.4 shall be deleted:

In general, any impacts below a 1% increase in baseline mortality are considered to be indistinguishable from natural fluctuations in the baseline population. This is the level above which triggers further analysis in the form of a population viability analysis (PVA) is required.

And replaced by:

In general, any impacts below a 1% increase in baseline mortality are considered to be indistinguishable from natural fluctuations in the baseline population. Impacts above this level trigger further analysis in the form of a PVA.

Additionally, Table 6.3, within Section 6.4 of the 2024 NIS is now replaced with Table A6.9 with updated impacts for relevant sites and species. All changes are highlighted in grey.

For migratory collisions, it is concluded that beyond reasonable scientific doubt, predicted mortality of all qualifying migratory waterbird QIs and their COs, in relation to collision risk effects of the proposed development alone would not adversely affect the integrity of the designated sites screened in for this assessment (see 5.4.31). As such, none of these species have been carried through for consideration for in-combination assessment and as such, are not included in Table A6.9.

Table A6.9: Summary of the Designated Sites and Ornithological QIs Considered for Relevant Impact Pathways During the Operational Phase for the Proposed Development In-Combination Assessment (replaces Table 6.3 in Section 6.4 of the 2024 NIS)

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
North-West Irish Sea cSPA	Great black-backed gull	13.4	5.551%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Black headed gull	0.0	0.005%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Common gull	3.1	0.061%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Manx shearwater	4.4	0.002%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Common scoter	-	-	No	Within the NWIS cSPA only Oriel's ECC has overlap and therefore there is no potential for an in-combination effect during operation. In addition, Oriel did not assess common scoter during operation and therefore there is no in-combination impact to assess. Therefore, there is no potential for AEoI in combination with other projects.
	Red-throated diver	2.1	0.613%	Yes	N/A
	Great northern diver	0.1	0.160%	No	Great northern diver have not been assessed for disturbance within the array area during the operational phase due to the trivial numbers recorded during DAS data collection. Therefore there is no potential for an in-combination effect.
	Fulmar	0.0	0.017%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Shag	-	-	No	Screened out for project alone and therefore no potential for likely significant effects in combination with other projects.

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
	Cormorant	-	-	No	Screened out for project alone and therefore no potential for likely significant effects in combination with other projects
	Little gull	-	-	No	Screened out for project alone and therefore no potential for likely significant effects in combination with other projects
	Kittiwake	17.9	2.626%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Lesser black-backed gull	1.0	0.257%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Herring gull	42.4	0.968%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Guillemot	110.3	0.554%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Razorbill	29.7	0.215%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Little tern	-	-	No	Screened out for project alone and therefore no potential for likely significant effects in combination with other projects
	Common tern	0.6	0.133%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Arctic tern	0.3	0.046%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.
	Roseate tern	1.2	0.193%	No	Within the NWIS cSPA there are no WTGs from other OWFs so there is no other collision risk or displacement risk to consider in-combination with the proposed development.

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
Rockabill SPA	Common tern	0.4	0.189%	No	0.4 adult mortalities are attributed to this SPA. Assessment alone concluded potential for trivial and inconsequential level of effect at 0.189% increase in baseline mortality, that would be well within the error margins of the assessment. There are no other relevant projects which have been screened into the in-combination assessment and as such there is no potential for an in-combination effect.
	Arctic tern	0.0	0.729%	No	Assessment alone concluded potential for trivial and inconsequential level of effect (<0.1 adult mortalities are attributed to this SPA), that would be well within the error margins of the assessment. There are no other relevant projects which have been screened into the in-combination assessment and as such there is no potential for an in-combination effect.
	Roseate tern	0.7	0.131%	No	Assessment alone concluded a low level of effect (0.7 adult mortalities are attributed to this SPA). There are no other relevant projects which have been screened into the in-combination assessment that have published impacts to the Rockabill roseate tern population and as such there is no potential for an in-combination effect.
Skerries Islands SPA	Herring gull	0.0	0.022%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Ireland's Eye SPA	Guillemot	0.9	0.292%	Yes	N/A
	Razorbill	0.1	0.069%	Yes	N/A
	Kittiwake	0.1	0.080%	Yes	N/A
	Herring gull	0.2	0.094%	Yes	N/A
Saltee Islands SPA	Guillemot	3.2	0.150%	Yes	N/A
	Razorbill	0.2	0.022%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI.

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
					The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Kittiwake	0.0	0.020%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Lesser black-backed gull	0.0	0.002%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Gannet	0.0	0.002%	No	Less than 0.1 individual mortalities are attributed to this SPA. Assessment alone concluded potential for trivial and inconsequential level of effect, that would be well within the error margins of the assessment and therefore no potential for any contribution for an in-combination effect
Howth Head Coast SPA	Kittiwake	0.3	0.063%	Yes	N/A
Lambay Island SPA	Guillemot	13.4	0.369%	Yes	N/A
	Puffin	0.2	1.474%	Yes	N/A
	Razorbill	0.7	0.103%	Yes	N/A
	Kittiwake	1.5	0.238%	Yes	N/A
	Herring gull	1.0	0.150%	Yes	N/A
	Lesser black-backed gull	0.2	0.134%	Yes	N/A

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
	Fulmar	0.0	0.000%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Wicklow Head SPA	Kittiwake	0.0	0.018%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Rathlin Island SPA	Kittiwake	0.3	0.010%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Ailsa Craig SPA	Kittiwake	0.0	0.017%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Gannet	0.4	0.008%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
	Lesser black-backed gull	0.0	0.004%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Helvick Head SPA	Kittiwake	0.0	0.012%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Ribble & Alt Estuaries SPA	Lesser black-backed gull	0.0	0.010%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	Kittiwake	0.1	0.011%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
	Lesser black-backed gull	0.0	0.002%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.

Designated Site	Offshore and Intertidal Ornithology QI(s) screened in	Mean predicted impact (breeding adults)	Increase in baseline mortality	Progressed to In-combination	Rationale for screening out
Grassholm SPA	Gannet	0.3	0.011%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Horn Head to Fanad Head SPA	Kittiwake	0.1	0.012%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
North Colonsay and Western Cliffs SPA	Kittiwake	0.0	0.020%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.
Morecambe Bay and Duddon Estuary SPA	Lesser black-backed gull	0.0	0.000%	No	The project-alone assessment concluded that predicted mortality would be indistinguishable from background levels and therefore has no potential to result in an AEoI. The predicted effect is below the 0.05% increase in baseline mortality screening threshold for inclusion in the in-combination assessment; accordingly, the proposed development would not make a material contribution to any in-combination effect and is screened out from further assessment.

In addition, in response to RFI Section 5, due to an update on the project approach to tiering which has been updated to follow the NSIP (2024) guidance, the following text on tiering from Section 6.4 of the 2024 NIS shall be deleted:

It is noted that some identified developments may not actually be taken forward, or fully built as outlined within their planning applications/consents. This is predominantly relevant for projects which are 'proposed' or identified in development plans but yet to submit a NIS, or report to inform appropriate assessment (RIAA) for UK projects. To account for this potential uncertainty, a tiering approach is undertaken, assigning tiers to each project which reflects their current stage within the planning and development process. This approach uses the following categorisations:

- *Tier 1*
  - *the OMF which is required for the operatioh on of the proposed development.*
- *Tier 2*
  - *Phase One Projects (proposed offshore renewable energy projects) located off the east coast of Ireland. Such projects include Oriel Windfarm, Codling Wind Park I and II, Arklow Bank II and Dublin Array. The proposed development is also a Phase One Project. Whilst none of these other Phase One Projects have submitted applications to the planning authority (ABP) at the time of writing of this NIS, they have been included in the cumulative impact assessment given the location and nature of these projects, given that they have all been awarded Marine Area Consent (MAC) and have more certainty of proceeding through the consenting process at the same time as the proposed development and given feedback from ABP during pre-application consultations. As outlined in Section 15.2.7, a single value for Phase one projects is included in the cumulative assessment. Given its location on the Irish west coast, and lack of functional connectivity with east coast SPAs, Sceirde OWF was the only Irish Phase One project not included in the in-combination assessment.*
- *Tier 3*
  - *Operational projects*
- *Projects under construction*
- *Projects which have been consented*
- *Projects for which an application has been submitted; and*
- *Projects that have published preliminary environmental impacts assessments.*
  - *Projects which have been scoped into the assessment and their relevant tiers are presented in Table 6.4 below. It should be noted that projects which fit the criteria for inclusion are only included for the cumulative effects assessment if there is sufficient data available to do so. The following projects do not have available information to add to a quantitative cumulative assessment and therefore not considered further in the impact assessment.*
- *Projects which have submitted a scoping report*
- *Projects which have been identified in a relevant development plan (but have not submitted a scoping report); and*
- *Projects which have been identified in other plans and programmes.*

And be replaced with:

It is noted that some identified developments may not actually be taken forward, or fully built as outlined within their planning applications/consents. This is predominantly relevant for projects which are 'proposed' or identified in development plans but yet to submit a NIS, or report to inform appropriate assessment (RIAA) for UK projects. To account for this potential uncertainty, a tiering approach is undertaken, assigning tiers to each project which reflects their current stage within the planning and development process. This approach uses the following categorisations.

The planned, existing and/or approved projects selected through the screening exercise as potentially relevant to the assessment of impacts to offshore and intertidal ornithology are presented in the Addendum to the SISAA Section 3.4.5.

The tiers for the assessment are:

- Tier 1 – All existing, submitted and approved projects (not yet in operation/part of baseline), including the OMF option being considered which involves the adaption and leasing part of an existing port facility at Greenore O&M and East Coast Phase One Projects
- Tier 2 – All projects that have scoping reports or have a MAC
- Tier 3 – All other projects that have been identified in the relevant Development Plans and other plans and programmes as appropriate.

The tiering structure is intended to provide an understanding of the potential for likely significant effects of all existing submitted and approved projects (tier one); followed by a cumulative assessment of the likely significant effect of that scenario combined with all projects that have scoping reports or MAC (tier two); and lastly the combination of tier one and tier two with all other projects in the planning process (tier three).

Additionally, Table 6.4, within Section 6.4 of the 2024 NIS is now replaced with Table A6.10 which highlights in-combination projects screened in for further assessment.

Table A6.10: Plans and Projects Identified for Consideration within the Ornithology In-Combination Assessment (replaces Table 6.4 in Section 6.4 of the 2024 NIS)

Development Type	Project Name	Distance to array area (km)	Distance to ECC (km)	Distance to the Proposed Development Boundary (km)	Current Status	Planned Programme	Tier
OWF	Awel-y-Mor	131.6	139.5	NA	Consented	2026 - 2030	1
	Erebus	235.1	239.6	NA	Consented	2025 - 2027	1
	Morgan	111.5	119.9	NA	Consented	2028 - 2029	1
	Mona	117.3	124.8	NA	Consented	2026 - 2027	1
	Morecambe	138.9	146.5	NA	Consented	2026-2029	1
	Gwynt y Mor	143.2	151.2	NA	Operational	N/A	1
	Rhyl Flats	144.5	152.8	NA	Operational	N/A	1
	Burbo Bank Extension	163.4	171.1	NA	Operational	N/A	1
	North Hoyle	157.5	165.5	NA	Operational	N/A	1
	Walney Extension 3	133.3	141.8	NA	Operational	N/A	1
	Walney Extension 4	133.3	141.8	NA	Operational	N/A	1
	West of Duddon Sands	153.2	161.5	NA	Operational	N/A	1
	Walney 2	148.3	156.7	NA	Operational	N/A	1
	Walney 1	153.7	162.0	NA	Operational	N/A	1
	Burbo Bank	173.6	181.3	NA	Operational	N/A	1

Development Type	Project Name	Distance to array area (km)	Distance to ECC (km)	Distance to the Proposed Development Boundary (km)	Current Status	Planned Programme	Tier
	Ormonde	160.7	169.1	NA	Operational	N/A	1
	Barrow	167.7	175.9	NA	Operational	N/A	1
	Robin Rigg East	176.7	184.9	NA	Operational	N/A	1
	Robin Rigg West	176.7	184.9	NA	Operational	N/A	1
	Arklow Bank Phase 1	88.3	91.3	NA	Operational	N/A	1
	Sceirde Rocks Windfarm	646.7	645.4	NA	Application withdrawn	2026 - 2030	1
	Oriel Wind Farm	16.9	21.6	16.9	Phase 1 (MAC Awarded)	2025-2026	1
	Codling Wind Park	50.9	56.9	50.9	Phase 1 (MAC awarded)	2026-2028	1
	Arklow Bank	76.4	80.0	76.4	Phase 1 (MAC awarded)	2025/26-2028/29	1
	Dublin Array	32.9	37.6	32.9	Phase 1 (MAC awarded)	2026-2028	1
	North Channel Wind 2	112.88	120.01	NA	Pre-planning application	2028 - 2031	2
	North Channel Wind 1	135.36	141.72	NA	Pre-planning application	2028 - 2031	2
	Tonn Nua	194.39	188.22	NA	Pre-planning application	NA	2
	Machair	235.23	239.92	NA	Pre-planning application	2029 - 2032	2
	Draig y Mor	84.46	94.28	NA	Concept/Early Planning	N/A	3

Development Type	Project Name	Distance to array area (km)	Distance to ECC (km)	Distance to the Proposed Development Boundary (km)	Current Status	Planned Programme	Tier
	Danu	187.23	187.17	NA	Concept/Early Planning	N/A	3
	Malin Sea Wind	192.70	197.39	NA	Concept/Early Planning	N/A	3
	Manannán	196.96	193.82	NA	Concept/Early Planning	N/A	3
	Lí Ban	201.33	196.32	NA	Concept/Early Planning	N/A	3
	Gwynt Glas	242.29	246.21	NA	Concept/Early Planning	2032-2035	3
	Round 5 PDA 2	265.66	269.40	NA	Concept/Early Planning	N/A	3
	Round 5 PDA 3	286.64	291.86	NA	Concept/Early Planning	N/A	3
Tidal Energy	Minesto	73.3	80.4	NA	Operational	N/A	3
Onshore projects and plans	Broadmeadow Way - Greenway between Malahide Demesne and Newbridge Demesne	NA[5]	NA[2]	0.63	Consented	2024-2026	3
	DART+ Coastal North	NA[2]	NA[2]	0	Consented	No up-to-date information available on construction timelines at time of writing.	3

[5] Distance to the array area and the ECC are Not Applicable (NA) for these Tier 3 plans and projects as they are onshore plans and projects and relate to the in-combination assessment for the onshore development area. A distance has not been provided to the onshore development area, however, they have been identified as being located within 300m of the onshore development area, and are therefore screened in for the in-combination assessment.

Development Type	Project Name	Distance to array area (km)	Distance to ECC (km)	Distance to the Proposed Development Boundary (km)	Current Status	Planned Programme	Tier
	Fingal Coastal Way	NA[2]	NA[2]	0	Consented	No up-to-date information available on construction timelines at time of writing.	3
	Bremore Regional Park Development Project	NA[2]	NA[2]	0	Consented	Granted June 2021. Expiry date June 2026. No up-to-date information available on construction timelines at time of writing.	3

There are no further changes to this section. Refer to Section 6.4 in the 2024 NIS.

6.4.1 Construction & Decommissioning

This section has been updated where appropriate due to (1) the introduction of the PFI (in response to RFI Section 6) and (2) the addition of new baseline DAS data collected across the NWIS cSPA (in response to RFI Section 1 (b), 8 (cii) and 8 (ciii)). As a result, the baseline (monthly average density in the PFI) has been updated since the 2024 NIS. Any updates made in response to specific RFI are set out within the relevant SPA and species-specific sections. For SPAs designated for onshore ornithological features only (Malahide Estuary SPA, Rogerstown Estuary SPA, and Baldoyle Bay SPA), no changes are made as assessments for these features are not reliant on density data from the PFI.

6.4.1.1 Offshore Disturbance and Displacement

In-combination effects during construction have been assessed with reference to the impact pathways identified for the operational phase, adopting a proportionate and precautionary approach consistent with Section 6.4 of the 2024 NIS.

For seabird species subject to displacement and disturbance within the PFI, construction impacts are predicted to be of lower magnitude and shorter duration than operational effects, reflecting the temporary and intermittent nature of construction activities. As applied in the 2024 NIS, construction-phase displacement from the array area (PFI) is therefore assumed to represent 50% of operational impacts.

On this basis, the in-combination assessment for construction-phase displacement effects primarily draws on and signposts to the operational in-combination assessment (Section 6.4 of the 2024 NIS), which is considered conservative for these species. No additional adverse in-combination effects are predicted for auks, kittiwake, gulls and other displacement-sensitive species beyond those already assessed and ruled out for the operational phase.

A targeted construction-specific assessment is, however, undertaken for receptors where construction effects are not adequately represented by operational impacts. In particular, divers and seaducks within the NWIS cSPA are sensitive to short-term disturbance from construction vessel activity, and potential in-combination effects for these receptors have therefore been assessed explicitly.

This approach ensures a robust assessment while avoiding duplication, with reliance on the operational assessment (Section 6.4.6 of the 2024 NIS) where precautionary, and targeted analysis where necessary.

Therefore, there are no changes to this section. Refer to Section 6.4.1.1 in the 2024 NIS. This text does not replace any text from the 2024 NIS.

6.4.1.2 Onshore Disturbance and Displacement

There are no changes to this section. Refer to Section 6.4.1.2 in the 2024 NIS.

6.4.1.3 Onshore Surface Water Run-off of Suspended Sediment/Deposition and Accidental Pollution

There are no changes to this section. Refer to Section 6.4.1.3 in the 2024 NIS.

6.4.2 North-West Irish Sea cSPA

Given the update to the ornithology baseline, introduction of the PFI and a number of changes made to the SPA components of the in-combination ornithology assessment, Section 6.4.2 of the 2024 NIS shall be replaced in its entirety.

Red-throated diver have been screened in for assessment during the construction and decommissioning phases in relation to disturbance and displacement effects associated with the offshore ECC +2km buffer. For this addendum, the red-throated diver assessment has been updated to incorporate the additional NWIS DAS dataset which covers the ECC +2km buffer.

Red-throated diver were raised in the RFI in relation to the baseline data underpinning the assessment. These baseline data concerns have been addressed through the inclusion of the Developer's NWIS DAS data, which now form the primary evidence base for the assessment of divers across the NWIS cSPA because this dataset is derived directly from surveys undertaken within the assessment area and represents the most recent and comprehensive evidence available, providing a more robust and reliable basis for establishing a baseline than alternative data sources.

6.4.2.1 Red-throated diver

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributed and targets (Section 5.4.1.1.2). A site-specific CO attribute for the red-throated diver QI of the NWIS cSPA is the non-breeding population size, with a target that there should be no significant decline. The Developer has therefore undertaken an assessment of potential in-combination impacts on the CO 'To maintain the favourable conservation condition of red-throated diver at North-west Irish Sea SPA', (specifically the target of no significant decline to the non-breeding population size attribute) as a result of disturbance and displacement in-combination with Phase One Projects during the construction and decommissioning phases.

An in-combination assessment has been explored with other offshore wind farm developments (Phase One Projects); however, it is recognised that no other consented, proposed or foreseeable projects have provided quantitative or spatially explicit assessments of construction- or decommissioning-phase disturbance and displacement effects on red-throated diver in relation to the NWIS cSPA. In the absence of project-alone construction-phase assessments for this species from other developments, there is no robust evidence base upon which to undertake a quantitative in-combination assessment for this phase.

Accordingly, the assessment for red-throated diver during construction and decommissioning is qualitative only, informed by the nature, scale and duration of anticipated vessel activity within the ECC.

The construction and decommissioning phases would result in temporary and localised vessel-related disturbance, confined to discrete periods and restricted spatial extents. Red-throated diver is a highly mobile species within the non-breeding season, and any displacement arising from vessel movement would be short-term and fully reversible, with no mechanism for persistence beyond the period of activity. This conclusion is consistent with findings from comparable assessments, where construction-phase disturbance of a similar nature and scale did not result in measurable population-level effects, nor contribute to increases in baseline mortality approaching the 1% threshold.

Therefore, given the temporary, localised and reversible nature of the impact, meaning an absence of any pathway for meaningful in-combination contribution to baseline mortality, there is no plausible pathway for adverse in-combination effects on red-throated diver during the construction and decommissioning phases.

6.4.2.1.1 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that vessel movement / presence during the construction and decommissioning phase within the proposed ECC associated with the proposed development, in-combination with other plans and projects, would not result in an AEoI of the NWIS cSPA in view of the site's CO to maintain the favourable conservation condition of red-throated diver QI, with specific regard to the non-breeding population size attribute for either Project Option 1 or Project Option 2.

6.4.2.2 Onshore Disturbance and Displacement to QIs

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS.

However, there are no other changes to this section. Refer to Section 6.4.2.2 in the 2024 NIS.

6.4.2.2.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.2.2.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that onshore disturbance and displacement associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the North-West Irish Sea cSPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.2.3 Onshore Surface Water Run-off of Suspended Sediment/Deposition and Accidental Pollution

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS.

However, there are no other changes to this section. Refer to Section 6.4.2.3 in the 2024 NIS.

6.4.2.3.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.2.3.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that surface water run-off, suspended sediment deposition and accidental pollution from the onshore activities associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the North-West Irish Sea cSPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.3 Malahide Estuary SPA

6.4.3.1 Onshore Disturbance and Displacement

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS.

However, there are no changes to this section. Refer to Section 6.4.3.1 in the 2024 NIS.

6.4.3.1.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.3.1.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that onshore disturbance and displacement from the onshore activities associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Malahide Estuary SPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.3.2 Onshore Surface Water Run-off of Suspended Sediment/Deposition and Accidental Pollution

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS.

However, there are no changes to this section. Refer to Section 6.4.3.2 in the 2024 NIS.

6.4.3.2.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.3.2.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that surface water run-off, suspended sediment deposition and accidental pollution from the onshore activities associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Malahide Estuary SPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.4 Rogerstown Estuary SPA

6.4.4.1 Onshore Surface Water Run-off of Suspended Sediment/Deposition and Accidental Pollution

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS.

However, there are no changes to this section. Refer to Section 6.4.4.1 in the 2024 NIS.

6.4.4.1.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.3.2.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that surface water run-off, suspended sediment deposition and accidental pollution from the onshore activities associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Rogerstown Estuary SPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.5 Baldoyle Bay SPA

6.4.5.1 Onshore Surface Water Run-off of Suspended Sediment/Deposition and Accidental Pollution

Table A6.10 has been checked and no additional projects are considered in this section. It is confirmed that there is no change to the assessment rationale or outcomes as provided in the 2024 NIS. However, there are no changes to this section. Refer to Section 6.4.4.1 in the 2024 NIS.

6.4.5.1.1 Conclusion of AEoI

This section has been revised to refine and standardise the wording of the in-combination assessment conclusion, including acknowledging alignment with the site's COs. The underlying assessment outcome remains unchanged. Therefore, Section 6.4.3.2.1 is deleted and replaced in full with the following text:

Therefore, when factoring in the lack of potential adverse effect from the proposed development alone and the above considerations for the projects considered for in-combination effects, it can be concluded beyond reasonable scientific doubt that surface water run-off, suspended sediment deposition and accidental pollution from the onshore activities associated with the proposed development, in-combination with other plans and projects, will not result in an AEoI on the Baldoyle Bay SPA, in view of the site's COs with respect to all designated QIs from the proposed development.

6.4.6 Operation and Maintenance

Given the update to the ornithology baseline (as a result of RFI Section 1(b)), responses to the RFI and a number of changes made to the SPA components of the in-combination ornithology assessment, these following sections replace the 2024 NIS in-combination assessment in its entirety.

The selection of impact pathways taken forward for the in-combination assessment is based on the outcomes of the project alone assessment (Section 5.4), with only those pathways capable of resulting in population-level effects to SPAs progressed further.

Across all species, this screening demonstrates that collision and displacement/disturbance represent the only impact pathways with the potential to give rise to likely significant effects on survival or productivity, and therefore to influence population trajectories. These pathways are quantified within the alone assessment and provide the basis for subsequent in-combination assessment.

All other pathways identified in the project alone assessment (e.g. barrier effects, indirect effects and temporary construction disturbance) were screened out as having no potential for likely significant effect, as they are localised, short-term and behavioural in nature, with no evidence of any mechanism by which they could give rise to measurable changes in survival or productivity in-combination. Accordingly, they are not considered further.

This approach is consistent with Section 6.4 of the 2024 NIS, which focuses the in-combination assessment on those impact pathways that can be robustly linked to population-level outcomes.

Note that for the Skerries Islands SPA, herring gull is no longer screened into the in-combination assessment, as the project-alone assessment identified 0.0 predicted mortalities, a level that is indistinguishable from background levels (0.022% increase in baseline mortality). This is below the 0.05% screening threshold, therefore, the proposed development would not materially contribute to in-combination effects and is screened out.

6.4.6.1 Collision Risk and Disturbance and Displacement

There are no changes to this section. Refer to Section 6.4.6.1 in the 2024 NIS.

6.4.7 North-West Irish Sea cSPA

6.4.7.1 Red-throated diver

Red-throated diver has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement from the array area in-combination with Phase One Projects in relation to the CO for this species as a designated QI of the NWIS cSPA.

The CO for red-throated diver feature of the NWIS cSPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (Section 5.4.1.1.2). A site-specific CO attribute for the red-throated diver QI of the NWIS cSPA is the non-breeding population size, with a target that there should be no significant decline. The non-breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential in-combination impacts on the red-throated diver population size of the NWIS as a result of disturbance and displacement in-combination with Phase One Projects during the operational phases.

An assessment has been undertaken to estimate the annual red-throated diver population within the NWIS cSPA potentially subject to displacement-related mortality as a result of the Proposed Development alone and in-combination with other OWFs for which relevant information is available. For red-throated diver, the relevant ZoI is defined as projects located within 10 km of the NWIS cSPA; projects beyond 10 km are not considered to have the potential to affect the non-breeding population using the site. The only other OWFs within this ZoI are Dublin Array OWF and Oriel OWF.

The assessment of operational disturbance and displacement effects on red-throated diver across offshore wind farm projects in the Irish Sea has been undertaken using different but complementary approaches, reflecting varying levels of evidence and precaution. The Dublin Array NIS presents a quantitative, array-specific assessment of operational disturbance and displacement for red-throated diver.

This approach derives predicted displacement-consequent mortality based on modelled use of the array area, applying a displacement rate of approximately 52% and mortality rates of 1–2%. This results in estimated project-alone operational mortality of approximately 0.13–0.25 adult birds per annum attributable to the NWIS cSPA.

By contrast, the Oriel Wind Farm NIS Addendum (Appendix H Addendum: Offshore Ornithology - Supporting Information) does not undertake array-specific modelling for red-throated diver. Instead, it adopts a screening-level, precautionary approach for the operational phase, presenting indicative values of approximately 0.43–0.48 birds, based on an assumption of 100% displacement within a 10 km zone of influence from the Oriel array area. These values are not derived from modelled array usage, and are explicitly intended as upper-bound screening estimates to test whether effects could conceivably approach significance.

Taken together, the Dublin and Oriel assessments indicate that:

- Operational disturbance and displacement effects on red-throated diver are expected to be low in magnitude, whether assessed using array-specific modelling or precautionary assumptions.
- Even where highly precautionary assumptions are applied (e.g. 100% displacement over broad spatial extents), predicted impacts remain limited to fractions of a single adult bird per annum.
- There is no consistent evidence base across projects to support a robust in-combination assessment.

However, an in-combination assessment has focused on the scale of effects relative to the SPA population and its ability to meet Conservation Objectives based on the information available.

In the context of the NWIS cSPA red-throated diver population, based on the most recent NWIS DAS abundance estimate of 1,512 individuals, the predicted operational effects reported by NISA (0.6 birds), Dublin Array (maximum of 0.25 birds) and Oriel (maximum of 0.48 birds) would increase the baseline mortality by 0.387%. Any such change would be indistinguishable from natural population fluctuations and would not undermine the Conservation Objectives of the NWIS cSPA. Furthermore, impacts arising from vessel disturbance will be mitigated following the employment of the Environmental Vessel Management Plan (Appendix 11: Environmental Vessel Management Plan of the 2024 NIS). Implementation of the measures outlined in this Plan will reduce impacts to divers considerably (further detail is discussed in Addendum to NIS Section 5.4)

6.4.7.1.1 Conclusion of AEoI

Therefore it is concluded beyond reasonable scientific doubt that disturbance and displacement arising from vessel movement and presence of WTGs during the operational phases within the proposed ECC and array areas associated with the proposed development, in-combination with other plans and projects, would not result in an AEoI of the NWIS cSPA, in view of the site's COs with respect to the red-throated diver QI for Project Options 1 and 2. Subject to natural change, the red-throated diver QI will therefore be maintained in the long term with respect to disturbance and displacement.

6.4.8 Ireland's Eye SPA

6.4.8.1 Guillemot

Guillemot have been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A5-9) from the proposed development in-combination with other OWFs and tidal energy projects in relation to the CO for this species at Ireland's Eye SPA. Based on the MMF+1SD of guillemot (73.2+80.5km) (Woodward et al., 2019) from Ireland's Eye SPA, several OWFs and tidal energy projects are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.8.1.1 Operation - Disturbance and Displacement

The CO for the guillemot feature of Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the guillemot population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on guillemot. However, on request, a NatureScot displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.11.

Seasonal and annual population estimates of breeding adult guillemot from relevant OWFs apportioned to the Ireland's Eye SPA are presented in Table A6.11.

Table A6.11: Seasonal and Annual Guillemot Population at Ireland's Eye SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.7 in the 2024 NIS).

Project	Seasonal population at risk of displacement		
	Breeding bio-season	Non-breeding bio- season	Annual total
The proposed development (site-specific approach)	16	164	180
The proposed development (generic approach)	264	146	410
All other tier 1 projects	1,495	342	1,838
Total (proposed development site-specific approach)	1,511	506	2,017
Total (proposed development generic approach)	1,759	488	2,247

6.4.8.1.2 Annual Total

Throughout all bio-seasons, the in-combination number of guillemot at risk of displacement from all other screened in projects, including the proposed development, apportioned to Ireland's Eye SPA is 2,017 individuals (Table A6.12). The total predicted displacement consequent mortality is ten (10.1) breeding adults. See Table A6.12 for the in-combination displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023) (60% displacement, 3 to 5% mortality), alongside a seasonal breakdown of impacts, see Table A6.12.

The predicted mortality of ten breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 3.274% when considering the latest colony count of 5,051 individuals and an annual background mortality of 308 adults. The proposed development alone contributes less than one (0.9) breeding adult mortality per annum which equates to a 0.292% increase in baseline mortality per annum.

Overall, the level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts through a PVA.

Table A6.12: In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phase for Guillemot at Ireland's Eye SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count (replaces Table 6.8 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum)			% increase in baseline mortality (recent count)		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Proposed development site-specific approach to bio-seasons							
Breeding	1,511	7.6	27.2	45.3	2.453	8.829	14.716
Non-breeding	506	2.5	3.0	9.1	0.821	0.985	2.955
Annual total	2,017	10.1	30.2	54.5	3.274	9.815	17.671
Proposed development generic approach to bio-seasons							
Breeding	1,759	8.8	31.7	52.8	2.855	10.278	17.130
Non-breeding	488	2.4	2.9	8.8	0.792	0.950	2.851
Annual total	2,247	11.2	34.6	61.6	3.647	11.228	19.980

Table A6.13: PVA Outputs for Breeding Adult Ireland's Eye SPA Guillemot Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects (replaces Table 6.9 in the 2024 NIS).

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	50%, 1%	0.9	1.000	0.995	0.015%	0.542%
In-combination	50%, 1%	10.1	0.998	0.924	0.222%	7.603%
Proposed development alone	60%, 1% - 3%	1.3	1.000	0.991	0.025%	0.928%
In-combination	60%, 1% - 3%	30.2	0.993	0.786	0.667%	21.437%
Proposed development alone	60%, 3% - 5%	3.4	0.999	0.973	0.074%	2.708%
In-combination	60%, 3% - 5%	54.5	0.988	0.646	1.205%	35.402%
Proposed development generic approach to bio-seasons						
Proposed development alone	50%, 1%	2.0	1.000	0.984	0.045%	1.649%
In-combination	50%, 1%	11.2	0.998	0.915	0.250%	8.532%
Proposed development alone	60%, 1% - 3%	5.6	0.999	0.956	0.125%	4.431%
In-combination	60%, 1% - 3%	34.6	0.992	0.758	0.764%	24.157%
Proposed development alone	60%, 3% - 5%	10.5	0.998	0.920	0.233%	8.041%
In-combination	60%, 3% - 5%	61.6	0.986	0.610	1.365%	39.015%

Assuming an annual mortality of ten breeding adults from Ireland's Eye SPA and 50% displacement and 1% mortality, the CGR and CPS are 0.998 and 0.924, respectively. This represents a median reduction of 0.222% in annual growth rate compared to the baseline scenario and a relative reduction in final population size of 7.603% over the 35-year period. See Table A6.13 for the results of the PVA as per the Guidance and the generic approach to bio-seasons for the proposed development (also Appendix A:21: Additional Guillemot Ecological Evidence Note).

The guillemot colony at Ireland's Eye SPA is increasing in size by an average of 4.5% per annum from 2,191 (1999) to 4,410 (2015) individuals between the Seabird 2000 count and the Seabirds Count (2015-2023). More recently the colony has increased further to 5,186 individuals in 2024 and remaining similar in 2025 (5,051 individuals).

Given the in-combination impact is predicted as a 0.222% annual reduction in growth rate relative to an unimpacted population, the predicted level of change would not have any meaningful effect on the population growth rate over the long term and would not cause the current increasing growth rate to be reversed. Even based on the generic approach to bio-seasons and the NatureScot displacement rates, the impact is not predicted to cause a reversal of the long-term trend.

6.4.8.1.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase of the proposed development, in-combination with other plans and projects, would not result in an AEoI of the Ireland's Eye SPA, in view of the CO to maintain the favourable conservation condition of the guillemot QI for either Project Options 1 and Project Option 2, with specific regard to the population size attribute.

6.4.8.2 Razorbill

Razorbill has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of razorbill (88.7+75.9km) (Woodward et al., 2019) from Ireland's Eye SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.8.2.1 Operation - Disturbance and Displacement

The CO for the razorbill feature of Ireland's Eye SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2) In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the razorbill population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix 17:Offshore and Intertidal Ornithology Displacement Analysis, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on razorbill. However, on request, the NatureScot displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.15.

Seasonal and annual population estimates of breeding adult razorbill of the Ireland's Eye SPA at all OWFs included in the in-combination assessment are presented in Table A6.14.

Table A6.14: Seasonal and Annual Razorbill Population at Ireland's Eye SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.10 of the 2024 NIS).

Project	Seasonal population at risk of displacement					
	Spring migration	Breeding bio-season	Autumm migration	Migration - free winter	Non-breeding total	Annual total
The proposed development (site-specific approach)	2	8	12	5	20	27
The proposed development (generic approach)	2	48	12	5	20	68
All other tier 1 projects	112	191	141	100	500	691
Total (proposed development site-specific approach)	114	199	153	106	520	719
Total (proposed development generic approach)	114	239	153	106	520	759

6.4.8.2.2 Annual Total

Throughout all bio-seasons, the in-combination number of razorbill at risk of displacement from all other screened in projects, including the proposed development, apportioned to Ireland's Eye SPA is 719 individuals. The total predicted displacement consequent mortality is four (3.6) breeding adults. See Table A6.15 for the in-combination displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023) (60% displacement, 3% to 5% mortality), alongside a seasonal breakdown of impacts.

The predicted mortality of four breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 2.007% when considering the latest colony count of 1,706 individuals and an annual background mortality of 179 adults. The proposed development alone contributes less than one (0.1) breeding adult mortality per annum which equates to a 0.069% increase in baseline mortality per annum.

Table A6.15: In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phase for Razorbill at Ireland's Eye SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count[6] (replaces Table 6.11 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated mortality (breeding adults per annum)			% increase in baseline mortality		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Proposed development site-specific approach to bio-seasons							
Autumn	153	0.8	0.9	2.8	0.428%	0.513%	1.539%
Breeding	199	1.0	3.6	6.0	0.555%	1.997%	3.328%
Winter	106	0.5	0.6	1.9	0.295%	0.355%	1.064%
Spring	114	0.6	0.7	2.1	0.319%	0.382%	1.147%
Annual total	719	3.6	6.7	15.3	2.007%	3.739%	8.555%
Proposed development generic approach to bio-seasons							
Autumn	153	0.8	0.9	2.8	0.428%	0.513%	1.539%
Breeding	239	1.2	4.3	7.2	0.667%	2.401%	4.001%
Winter	106	0.5	0.6	1.9	0.295%	0.355%	1.064%
Spring	114	0.6	0.7	2.1	0.319%	0.382%	1.147%
Annual total	759	3.8	7.4	16.5	2.119%	4.143%	9.228%

[6] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Overall, the level of impact is greater than a 1% increase and therefore requires further consideration through a PVA.

Table A6.16: PVA Outputs for Breeding Adult Ireland's Eye SPA Razorbill Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects (replaces Table 6.12 in the 2024 NIS).

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	50%, 1%	0.1	1.000	0.998	0.003%	0.173%
In-combination	50%, 1%	3.6	0.998	0.919	0.235%	8.106%
Proposed development alone	60%, 1% - 3%	0.3	1.000	0.994	0.014%	0.595%
In-combination	60%, 1% - 3%	6.7	0.996	0.852	0.443%	14.770%
Proposed development alone	60%, 3% - 5%	0.6	1.000	0.987	0.038%	1.343%
In-combination	60%, 3% - 5%	15.3	0.990	0.691	1.023%	30.915%
Proposed development generic approach to bio-seasons						
Proposed development alone	50%, 1%	0.3	1.000	0.993	0.019%	0.673%
In-combination	50%, 1%	3.8	0.998	0.915	0.247%	8.487%
Proposed development alone	60%, 1% - 3%	1.0	0.999	0.976	0.067%	2.423%
In-combination	60%, 1% - 3%	7.4	0.995	0.837	0.493%	16.291%
Proposed development alone	60%, 3% - 5%	1.8	0.999	0.958	0.114%	4.195%
In-combination	60%, 3% - 5%	16.5	0.989	0.671	1.105%	32.904%

Assuming an annual mortality of four breeding adults from Ireland's Eye SPA and 50% displacement and 1% mortality (the Applicant's approach), the CGR and CPS are 0.998 and 0.919, respectively. This represents a 0.235% reduction in growth rate and a reduction in final population size of 8.106% relative to an unimpacted population over the 35-year period. See the Appendix A20: Offshore and Intertidal Population Viability Analysis, for the results of the PVA as per the range 50% displacement to 70% displacement, 1 to 5% mortality.

The razorbill colony at Ireland's Eye SPA appears to be increasing with a mean annual increase of 7.5% from 522 to 1,600 individuals between the Seabird 2000 count and the Seabirds Count (2015-2023). Razorbill numbers have since remained elevated, with recent counts of 1,652 individuals in 2024 and 1,706 individuals in 2025.

Given the in-combination impact is predicted as a 0.235% annual reduction in relative growth rate (less than the 0.5% threshold), the predicted level of change would not have any meaningful effect on the population growth rate over the long term and would not cause the current increasing growth rate to be reversed based on this data.

Even when considering the NatureScot displacement rates, and the generic approach to bio-seasons, the predicted impact would not cause a reversal of the population based on the outlined long-term population trend (i.e., the predicted reduction in annual growth rate from the highly precautionary Guidance high approach (1.105% reduction in annual growth rate) is lower than the average annual population growth rate based on the long term trend of ~4.8% per annum).

There is, therefore, no potential for an AEoI to the COs of the razorbill QI of Ireland's Eye SPA in relation to disturbance and displacement effects during the operational phase from the proposed development in-combination with other plans and projects and therefore, subject to natural change, the razorbill QI will be maintained in the long term with respect to potential for adverse effects from disturbance and displacement.

6.4.8.2.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Ireland's Eye SPA, in view of the CO to maintain the favourable conservation condition of the razorbill QI for either Project Options 1 and Project Option 2, with specific regard to the population size attribute.

6.4.8.3 Kittiwake

Kittiwake has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement and collision risk (see Table A5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species (Table A5-54). Based on the MMF+1SD of kittiwake (156.1+144.5km) (Woodward et al., 2019) from Ireland's Eye SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.8.3.1 Operation – Disturbance and displacement

The CO for the kittiwake feature of Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, kittiwake is not considered vulnerable to impacts from disturbance and displacement, though an assessment is provided using NatureScot (2022) advised rates of 30% displacement, and 1% to 3% mortality in Table A6.18.

Seasonal and annual population estimates of breeding adult kittiwake of the Ireland's Eye SPA at all OWFs included in the in-combination assessment are presented in Table A6.18.

Table A6.17 Seasonal and Annual Kittiwake Population at Ireland's Eye SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment

Project	Seasonal population at risk of displacement				
	Spring migration	Breeding	Autumn migration	Non-breeding total [7]	Annual total
The proposed development (site-specific approach)	1	10	1	1	11
The proposed development (generic approach)	1	15	0	1	16
All other tier 1 projects	34	126	61	95	221
Total (proposed development site-specific approach)	35	136	62	97	232
Total (proposed development generic approach)	35	141	61	96	237

6.4.8.3.2 Annual Total

Throughout all bio-seasons, the in-combination number of kittiwake at risk of displacement from all screened in projects, including the proposed development, apportioned to Ireland's Eye SPA is 232 individuals. The total predicted displacement consequent mortality is one (0.7) to two (2.1) breeding adults. See Table A6.18 for a seasonal breakdown of impacts.

The predicted mortality of one (0.7) to two (2.1) breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.605%% to 1.816% when considering the latest colony count of 788 individuals and an annual background mortality of 115 (115.0) adults. The proposed development alone contributes less than one (0.1 to 0.1) breeding adult mortality per annum which equates to a 0.049% to a 0.121% increase in baseline mortality per annum.

Table A6.18 In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phases for Kittiwake at Ireland's Eye SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count

Bio-season	Abundance of adults apportioned to SPA (array area plus 2km buffer)	Estimated mortality		% increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Proposed development site-specific approach to bio-seasons					
Autumn	62	0.2	0.6	0.160%	0.481%
Breeding	136	0.4	1.2	0.353%	1.060%
Spring	35	0.1	0.3	0.092%	0.275%
Annual total	232	0.7	2.1	0.605%	1.816%

[7] Note the sum of the spring and autumn migration mortality estimates may not equal the non-breeding total as some projects in the in-combination assessment only provided a single non-breeding season mortality which is captured within this column.

Bio-season	Abundance of adults apportioned to SPA (array area plus 2km buffer)	Estimated mortality		% increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Proposed development generic approach to bio-seasons					
Autumn	61	0.2	0.6	0.159%	0.478%
Breeding	141	0.4	1.3	0.366%	1.099%
Spring	35	0.1	0.3	0.091%	0.274%
Annual total	237	0.7	2.1	0.617%	1.851%

Overall, the level of impact is greater than a 1% increase in baseline mortality per annum (based on NatureScot high only) and therefore requires further consideration through a PVA.

Table 6.19 PVA Outputs for Breeding Adult Ireland's Eye SPA Kittiwake Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	30%, 1%	0.0	1.000	0.998	0.010%	0.215%
In-combination	30%, 1%	0.7	0.999	0.965	0.095%	3.480%
Proposed development alone	30%, 3%	0.1	1.000	0.993	0.027%	0.712%
In-combination	30%, 3%	2.1	0.997	0.894	0.314%	10.578%
Proposed development generic approach to bio-seasons						
Proposed development alone	30%, 1%	0.1	1.000	0.996	0.010%	0.441%
In-combination	30%, 1%	0.7	0.999	0.963	0.107%	3.686%
Proposed development alone	30%, 3%	0.1	1.000	0.993	0.018%	0.744%
In-combination	30%, 3%	2.1	0.997	0.893	0.315%	10.672%

Assuming an annual mortality of one (0.7) to two (2.1) breeding adults from Ireland's Eye SPA the CGR and CPS are 0.999 to 0.997 and 0.965 to 0.894, respectively. This represents a 0.095% to 0.314% reduction in growth rate and a reduction in final population size of 3.480% to 10.578% over the 35-year period.

The kittiwake population at Ireland's Eye SPA appears to be declining overall, falling from 1882 to 910 individuals between the Seabird 2000 count and the Seabirds Count (2015–2023). Numbers then dropped from 910 in 2015 to 564 in 2024. However, the population rebounded in 2025, increasing by 39.7% to 788 individuals.

For all scenarios modelled using PVA, the predicted impact was very small. Even based on the generic approach to bio-seasons and using the NatureScot high displacement rates, the predicted impact represents a <0.5% (0.3%) reduction in annual population growth rate which is sufficiently small that it would have no meaningful effect on the population growth rate over the long term, especially when compared with natural fluctuations in the population (e.g. between the 2024 to 2025 change of 39.7%).

6.4.8.3.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Ireland's Eye SPA, in view of the CO to maintain the favourable conservation condition of the kittiwake QI for either Project Options 1 and Project Option 2, with specific regard to the population size attribute.

6.4.8.3.4 Operation - Collision risk

The CO for the kittiwake feature of Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2) In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult kittiwake of the Ireland's Eye SPA at all OWFs included in the in-combination assessment are presented in Table A6.20.

Table A6.20: Seasonal and Annual Kittiwake Collision Mortalities at Ireland's Eye SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.13 in the 2024 NIS).

Project	Seasonal mortality attributed to SPA				
	Spring migration	Breeding	Autumn migration	Non-breeding total [8]	Annual total
The proposed development (site-specific approach)	0.0	0.1	0.0	0.0	0.1
The proposed development (generic approach)	0.0	0.2	0.0	0.0	0.2
All other tier 1 projects	0.2	2.5	0.2	0.5	3.1
Total (proposed development site-specific approach)	0.3	2.6	0.2	0.6	3.2
Total (proposed development generic approach)	0.3	2.7	0.2	0.6	3.2

[8] Note the sum of the spring and autumn migration mortality estimates may not equal the non-breeding total as some projects in the in-combination assessment only provided a single non-breeding season mortality which is captured within this column.

6.4.8.3.5 Annual Total

Throughout all bio-seasons, the in-combination predicted collision consequent mortalities of kittiwake from all other screened in projects, including the proposed development, apportioned to Ireland's Eye SPA is three (3.2) breeding adults. Impacts based on the generic approach are provided in Table A6.21 alongside a seasonal breakdown of impacts.

The predicted mortality of three breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 2.738% when considering the latest colony count of 788 individuals and a background mortality of 115 individuals. The proposed development alone contributes less than one (0.1) breeding adult mortality per annum which equates to an increase in baseline mortality of 0.080%.

Table A6.21 In-combination Collision Mortalities during the Operation and Maintenance Phase for Kittiwake at Ireland's Eye SPA Based on the Latest NPWS Colony Count.

Bio-season	Estimated mortality		% increase in baseline mortality	
	Proposed Development site-specific approach	Proposed Development generic approach	Proposed Development site-specific approach	Proposed Development generic approach
Autumn	0.2	0.2	0.209%	0.207%
Breeding	2.6	2.7	2.255%	2.321%
Spring	0.3	0.3	0.222%	0.219%
Annual total	3.6	3.7	3.155%	3.217%

Overall, the level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts through a PVA.

Table A6.22 PVA Outputs for Breeding Adult Ireland's Eye SPA Kittiwake Incorporating Mean Collision Impacts of the Proposed Development Alone and In-Combination with Other Projects

Scenario	Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons					
Proposed development alone	0.1	1.000	0.996	0.018%	0.393%
In-combination	3.2	0.995	0.845	0.467%	15.544%
Proposed development generic approach to bio-seasons					
Proposed development alone	0.1	1.000	0.991	0.029%	0.943%
In-combination	3.2	0.995	0.841	0.480%	15.859%

Assuming an annual mortality of three breeding adults from Ireland's Eye SPA the CGR and CPS are 0.995 and 0.845, respectively. This represents a 0.467% reduction in growth rate and a reduction in final population size of 15.544% relative to an unimpacted population over the 35-year period.

As described in Section 6.4.8.3.2 the kittiwake population at Ireland's Eye has been declining since the Seabird 200 Count, with some recovery seem in 2025. In the context of long-term trends (4.4% reduction in numbers between Seabirds 2000 Count and Seabirds Count 2015 – 2023), the predicted impact of a 0.467% relative reduction in growth rate would not have any meaningful effect on the population growth rate over the long term. The impact from the proposed development represents just 2.8% of the in-combination total, with only 0.1 mortality predicted, representing a 0.018% reduction in annual population growth rate.

Furthermore, the predicted collision impacts (both from the proposed development and other projects) are considered to be overestimates based on several layers of precaution built into both the assessment and PVA.

One of these elements of precaution is in CRM parameters. Avoidance rates applied in the assessment are based on the UK joint SNCB guidance (SNCBs, 2024), which draws on the work of Özsanlav-Harris *et al.* (2023). This guidance recommends the use of generic avoidance rates for gulls, with a single rate applied across all gull species. However, the underlying study also derives species-specific avoidance rates and identifies these as more appropriate for assessment purposes, as they are expected to provide more representative collision risk model outputs than rates applied generically across broad taxonomic groups. Despite this, the use of species-specific avoidance rates is not currently advocated within the latest UK SNCB guidance. However, by using the species-specific avoidance rate for kittiwake (0.9979) as opposed to the all gulls rate (0.9929), the in-combination collision mortalities would be reduced by 70.4%. This represents just one element of precaution in the assessment. For example, the flight speed applied within the collision risk modelling (13.1 m/s) is higher than values reported in the available literature. Skov *et al*. (2019) recorded a mean flight speed of 8.7 m/s, based on data collected at the Thanet offshore wind farm. Application of this lower, empirically derived flight speed would be expected to further reduce predicted collision estimates, as it would decrease the flux of birds passing through the proposed development area.

Additionally, PVA modelling has not accounted for density dependent regulation which makes the outcomes highly precautionary. The Ireland's Eye SPA population has been modelled as a closed population (i.e., not accounting for factors such as competition or food availability being a reduced constraint on population resources when population numbers are reduced. Therefore, in reality, the predicted reduction in population growth rate will be considerably lower.

6.4.8.3.6 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Ireland's Eye SPA, in view of the CO to restore the favourable conservation condition of the kittiwake QI for either Project Options 1 and Project Option 2, with specific regard to the population size attribute.

6.4.8.4 Herring gull

Herring gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of herring gull (58.8+26.8km) (Woodward et al., 2019) from Ireland's Eye SPA, several OWFs are within foraging range.

6.4.8.4.1 Operation - Collision Risk

The CO for the herring gull feature of the Ireland's Eye SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to collision risk and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the herring gull population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult herring gull of the Ireland's Eye SPA at all OWFs included in the in-combination assessment are presented in Table A6.23.

Table A6.23: Seasonal and Annual Herring Gull Collision Mortalities at Ireland's Eye SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.14 in the 2024 NIS).

Project	Seasonal Mortality attributed to SPA		
	Breeding	Non-breeding total	Annual total
The proposed development	0.1	0.1	0.2
All other tier 1 projects	2.2	0.8	3.1
Total	2.3	0.8	3.3

Annual Total

Throughout all bio-seasons, the in-combination predicted collision consequent mortalities of herring gull, including those from the proposed development, apportioned to Ireland's Eye SPA is (3.4) breeding adults.

The predicted mortality of three breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 1.447% when considering the latest colony count of 1,394 individuals and a background mortality of 231 individuals.

Overall, the level of impact is greater than a 1% increase in baseline mortality, therefore, further consideration is given to these impacts below through a PVA.

Table A6.24: PVA Outputs for Breeding Adult Ireland's Eye SPA Herring Gull Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects (replaces Table 6.15 in the 2024 NIS).

Scenario	Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development alone	0.2	1.000	0.991	0.025%	0.898%
In-combination	3.4	0.997	0.903	0.282%	9.665%

Assuming an annual mortality of three breeding adults from Ireland's Eye SPA, the CGR and CPS are 0.997 and 0.903, respectively. This represents a 0.282% reduction in growth rate, when assessing against the latest robust colony count, and a reduction in final population size of 9.665% over the 35-year period. Further details regarding the PVA are presented in the Appendix A20: Offshore and Intertidal Ornithology Population Viability Analysis.

The herring gull colony at Ireland's Eye SPA is increasing. Between the Seabird 2000 Count and the Seabirds Count (2015-2023) the colony increased from 492 individuals to 636, representing a 29.3% increase and an annual population growth rate of 1.62%. The most recent count of 1,393 individuals in 2025 represents a further 119% increase over the last 10 years, with an annual increase of 8.1% per annum.

The predicted in-combination impact of a 0.282% reduction in annual growth rate compared to an unimpacted population would not have any meaningful effect on the population growth rate over the long term and would not cause any reversal of the ongoing population observed over the last 25 years.

6.4.8.4.2 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Ireland's Eye SPA, in view of the CO to restore the favourable conservation condition of the herring gull QI for either Project Options 1 and Project Option 2, with specific regard to the population size attribute.

6.4.9 Saltee Islands SPA

6.4.9.1 Guillemot

Guillemot has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of guillemot (73.2+80.5km) (Woodward et al., 2019) from Saltee Islands SPA, several OWFs are within foraging range.

The proposed development is located 169.3km from the Saltee Island SPA which is outside MMF+1SD for guillemot (73.2+80.5km) (Woodward et al., 2019) and therefore this species has been screened out for the breeding bio-season in the alone assessment above. However, guillemot will disperse throughout the bio-geographical region outside of the breeding season and a proportion of individuals from Saltee Islands SPA are likely to be present within the array area; therefore, guillemot have been screened in for the non-breeding bio-season for the alone assessment (above) and in-combination presented here.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.9.1.1 Operation - Disturbance and Displacement

The CO for the guillemot feature of the Saltee Islands SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population abundance, the target for which is no significant decline in breeding population size. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the guillemot population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on guillemot. However, based on advice from NatureScot a displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.24.

Seasonal and annual population estimates of breeding adult guillemot of the Saltee Islands SPA at all OWFs included in the in-combination assessment are presented in Table A6.25.

Table A6.25: Seasonal and Annual Guillemot Population at Saltee Islands SPA Estimated to be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.16 in the 2024 NIS)

Project	Seasonal population at risk of displacement		
	Breeding bio-season	Non-breeding bio-season	Annual total
The proposed development (site-specific approach)	0	649	649
The proposed development (generic approach)	0	578	578
All other tier 1 projects	1,096	1,472	2,568
Total (proposed development site-specific approach)	1,096	2,084	3,180
Total (proposed development generic approach)	1,096	2,012	3,109

6.4.9.1.2 Annual Total

Throughout all bio-seasons, the in-combination number of guillemot at risk of displacement from all other screened in projects, , including the proposed development apportioned to the Saltee Islands SPA is 3,180 individuals. The total predicted displacement consequent mortality is 16 (15.5) breeding adults.

The predicted mortality of 16 breeding adults from the Saltee Islands SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.719% when considering the latest colony count of 35,420 individuals and a background mortality of 2,161 individuals.

Overall, the level of impact is less than 1% based on the Applicant approach but exceeds a 1% increase based on the NautreScot range and therefore, further consideration is given to these impacts through a PVA.

Table A6.26: In-Combination Range Based Displacement Mortalities During the Operational and Maintenance Phase for Guillemot at Saltee Islands Based on a Range of Displacement Impacts and the Latest NPWS Colony Count[9] (replaces Table 6.17 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum)			% increase in baseline mortality (recent count)		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Proposed development site-specific approach to bio-seasons							
Breeding	1,096	5.5	19.7	32.9	0.254	0.913	1.522
Non-breeding	2,012	10.1	12.1	36.2	0.466	0.559	1.677
Annual total	3,109	15.5	31.8	69.1	0.719	1.472	3.199
Proposed development generic approach to bio-seasons							
Breeding	1,096	5.5	19.7	32.9	0.254	0.913	1.522
Non-breeding	2,084	10.4	12.5	37.5	0.482	0.579	1.736
Annual total	3,180	15.9	32.2	70.4	0.736	1.492	3.258

[9] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Table A6.27 PVA Outputs for Breeding Adult Saltee Islands SPA Guillemot Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects.

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	50%, 1%	3.3	1.000	0.996	0.011%	0.401%
In-combination	50%, 1%	15.9	0.999	0.982	0.050%	1.819%
Proposed development alone	60%, 1% - 3%	3.9	1.000	0.995	0.014%	0.483%
In-combination	60%, 1% - 3%	32.2	0.999	0.964	0.102%	3.599%
Proposed development alone	60%, 3% - 5%	11.7	1.000	0.986	0.038%	1.369%
In-combination	60%, 3% - 5%	70.4	0.998	0.923	0.223%	7.710%
Proposed development generic approach to bio-seasons						
Proposed development alone	50%, 1%	2.9	1.000	0.997	0.009%	0.339%
In-combination	50%, 1%	15.5	1.000	0.982	0.049%	1.753%
Proposed development alone	60%, 1% - 3%	3.5	1.000	0.996	0.011%	0.405%
In-combination	60%, 1% - 3%	31.8	0.999	0.964	0.100%	3.553%
Proposed development alone	60%, 3% - 5%	10.4	1.000	0.988	0.033%	1.153%
In-combination	60%, 3% - 5%	69.1	0.998	0.924	0.218%	7.573%

Assuming an annual mortality of 16 (15.9) breeding adults from Saltee Islands SPA and 50% displacement and 1% mortality, the CGR and CPS are 0.999 and 0.982, respectively. This represents a median reduction of 0.050% in annual growth rate compared to the baseline scenario and a relative reduction in final population size of 1.919% relative to an unimpacted population over the 35-year period. See Table A6.27 for the results of the PVA as per the NatureScot and the generic approach to bio-seasons for the proposed development.

The guillemot colony at the Saltee Islands SPA appears stable and has increased at an average rate of 1.3% per year, from 21,436 individuals in 1999 to 25,851 in 2015 (between the Seabird 2000 count and the Seabirds Count 2015–2023). The colony then increased substantially, reaching 35,420 individuals in 2023.

Regardless of the population trend, the predicted in-combination impact is sufficiently small that it would have no material impact on the population trend. Even based on the worst-case scenario (generic approach to bio-seasons and NatureScot high displacement rates), the predicted impact only represents a <0.3% reduction in annual growth rate (i.e., under the 0.5% threshold), and is more realistically a 0.050% reduction in growth rate at maximum. This level of impact would not have any meaningful effect on the population growth over the long term.

6.4.9.1.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that displacement and disturbance during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Saltee Islands SPA, in view of the CO to maintain the favourable conservation condition of the guillemot QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute target of no significant decline.

6.4.10 Howth Head Coast SPA

6.4.10.1 Kittiwake

Kittiwake has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement and collision risk (see Table A5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of kittiwake (156.1+144.5km) (Woodward et al., 2019) from Howth Head Coast SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.10.1.1 Operation – Disturbance and displacement

The CO for the kittiwake feature of Howth Head Coast SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, kittiwake is not considered vulnerable to impacts from disturbance and displacement, though an assessment is provided using NatureScot (2022) advised rates of 30% displacement, and 1% to 3% mortality in Table A6.29.

Seasonal and annual population estimates of breeding adult kittiwake of the Howth Head Coast SPA at all OWFs included in the in-combination assessment are presented in Table A6.28.

Table A6.28 Seasonal and Annual Kittiwake Population at Howth Head Coast SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment

Project	Seasonal population at risk of displacement				
	Spring migration	Breeding	Autumn migration	Non-breeding total [10]	Annual total
The proposed development (site-specific approach)	3	33	4	7	40
The proposed development (generic approach)	2	50	2	4	54
All other tier 1 projects	82	425	43	125	550
Total (proposed development site-specific approach)	85	458	47	132	590
Total (proposed development generic approach)	85	475	45	130	605

6.4.10.1.2 Annual Total

Throughout all bio-seasons, the in-combination number of kittiwake at risk of displacement from all other screened in projects, including the proposed development, apportioned to Howth Head Coast SPA is 590 individuals. The total predicted displacement consequent mortality is two (1.8) to five (5.4) breeding adults. See Table A6.29 for a seasonal breakdown of impacts.

The predicted mortality of two to five breeding adults from Howth Head Coast SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.345%% to 1.036% when considering the latest colony count of 3,600 individuals and an annual background mortality of 526 adults. The proposed development alone contributes less than one (0.1 to 0.5) breeding adult mortality per annum which equates to a 0.031% to 0.093% increase in baseline mortality per annum.

Overall, the level of impact is greater than a 1% increase (based on NatureScot high rates only) and therefore requires further consideration through a PVA.

Table A6.29 In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phases for Kittiwake at Howth Head Coast SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count

Bio-season	Abundance of adults apportioned to SPA (array area plus 2km buffer)	Estimated mortality		% increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Proposed development site-specific approach to bio-seasons					
Autumn	45	0.1	0.4	0.026%	0.077%
Breeding	475	1.4	4.3	0.271%	0.814%
Spring	85	0.3	0.8	0.048%	0.145%
Annual total	605	1.8	5.4	0.345%	1.036%
Proposed development generic approach to bio-seasons					
Autumn	47	0.1	0.4	0.027%	0.080%

[10] Note the sum of the spring and autumn migration mortality estimates may not equal the non-breeding total as some projects in the in-combination assessment only provided a single non-breeding season mortality which is captured within this column.

Bio-season	Abundance of adults apportioned to SPA (array area plus 2km buffer)	Estimated mortality		% increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Breeding	458	1.4	4.1	0.262%	0.785%
Spring	85	0.3	0.8	0.049%	0.146%
Annual total	590	1.8	5.3	0.337%	1.010%

Table 6.30 Outputs for Breeding Adult Howth Head Coast SPA Kittiwake Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	30%, 1%	0.1	1.000	0.999	0.007%	0.142%
In-combination	30%, 1%	1.8	0.999	0.980	0.055%	2.014%
Proposed development alone	30%, 3%	0.4	1.000	0.997	0.011%	0.328%
In-combination	30%, 3%	5.4	0.998	0.941	0.169%	5.889%
Proposed development generic approach to bio-seasons						
Proposed development alone	30%, 1%	0.2	1.000	0.999	0.002%	0.121%
In-combination	30%, 1%	1.8	0.999	0.979	0.058%	2.110%
Proposed development alone	30%, 3%	0.5	1.000	0.995	0.012%	0.508%
In-combination	30%, 3%	5.3	0.998	0.937	0.182%	6.339%

Assuming an annual mortality of two to five breeding adults from Howth Head Coast SPA the CGR and CPS are 0.999 to 0.998 and 0.980 to 0.941, respectively. This represents a 0.055% to 0.169% reduction in growth rate and a reduction in final population size of 2.014% to 5.889% relative to an unimpacted population over the 35-year period.

The kittiwake colony at Howth Head Coast SPA has shown a slight decrease, with the 2015 population count of 3,546 representing a 23.9% decline since the Seabird 2000 count of 4,658 individuals. This corresponds to an annual decline of 1.69%. However, the most recent population data shows that this colony is currently stable at 3,600 individuals in 2025.

Regardless of the population trend, the predicted in-combination impact is sufficiently small that it would have no material impact on colony trends. Even based on the worst-case scenario (considering the generic approach to bio-seasons and NatureScot high displacement rates), the predicted impact only represents a 0.182% reduction in annual growth rate. This level of predicted impact would not have any meaningful effect on the population growth rate over the long term.

6.4.10.1.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that displacement and disturbance during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Howth Head Coast SPA, in view of the CO to restore the favourable conservation condition of the kittiwake QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.10.1.4 Operation- Collision Risk

The CO for the kittiwake feature of Howth Head Coast SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for population size, the target for which is no significant decline in population size. The breeding population size is the only attribute of the CO that is relevant to collision risk and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult kittiwake of the Howth Head Coast SPA at all OWFs included in the in-combination assessment are presented in Table A6.31.

Table A6.31 Seasonal and Annual Kittiwake Collision Mortalities at Howth Head Coast SPA for the Proposed Development Alone and All OWFs Considered in the In combination Assessment (replaces Table 6.20 in the 2024 NIS).

Project	Seasonal Mortality attributed to SPA				
	Pre-breeding migration	Migration-free breeding	Post-breeding migration	Non-breeding total	Annual total
The proposed development (site-specific approach)	0.0	0.3	0.0	0.1	0.3
The proposed development (generic approach)	0.0	0.5	0.0	0.0	0.6
All other tier 1 projects	0.6	7.5	0.6	1.5	9.0
Total (proposed development site-specific approach)	0.7	7.7	0.7	1.6	9.3
Total (proposed development generic approach)	0.7	8.0	0.7	1.6	9.6

6.4.10.1.5 Annual Total

Throughout all bio-seasons assessed, the combined predicted collision-related mortality of kittiwake from all other screened in projects, including the proposed development, apportioned to the Howth Head and Coast SPA, is nine (9.3) breeding adults. Impacts based on the generic approach are provided in Table A6.32 alongside a seasonal breakdown of impacts.

The predicted mortality of nine breeding adults from Howth Head and Coast SPA per annum across all bio-seasons represents an increase in baseline mortality of 1.775% based on the latest colony count of 3,600 individuals and a background mortality of 526 individuals.

Table A6.32 In-combination Collision Mortalities during the Operation and Maintenance Phase for Kittiwake at Howth Head Coast SPA Based on the Latest NPWS Colony Count.

Bio-season	Estimated mortality		% increase in baseline mortality	
	Proposed Development site-specific approach	Proposed Development generic approach	Proposed Development site-specific approach	Proposed Development generic approach
Autumn	0.7	0.7	0.128%	0.126%
Breeding	7.7	8.0	1.474%	1.524%
Spring	0.7	0.7	0.128%	0.126%
Annual total	9.3	9.6	1.775%	1.821%

Overall, the level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts below through a PVA.

Table A6.33: Seasonal and Annual Kittiwake Collision Mortalities at Howth Head Coast SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.21 in the 2024 NIS).

Scenario	Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons					
Proposed development alone	0.3	1.000	0.996	0.011%	0.362%
In-combination	9.3	0.997	0.897	0.301%	10.302%
Proposed development generic approach to bio-seasons					
Proposed development alone	0.6	1.000	0.994	0.019%	0.633%
In-combination	9.6	0.997	0.894	0.310%	10.580%

Assuming an annual mortality of nine breeding adults from Howth Head Coast SPA the CGR and CPS are 0.997 and 0.897, respectively. This represents a 0.301% reduction in growth rate and a reduction in final population size of 10.302% over the 35-year period.

As described in Section 6.4.10.1.2 kittiwake at Howth Head SPA have an annual decline of 1.69%, with a stable population between 2015 to 2025. Despite the slight long term population decline, this level of predicted impact would not have any meaningful effect on the population growth rate over the long term, with the predicted impact representing only a 0.301% reduction in population growth rate. Furthermore, the predicted collision impacts (both from the proposed development and other projects) are considered to be overestimates based on several layers of precaution built into both the assessment and PVA.

One of these elements of precaution is in CRM parameters. Avoidance rates applied in the assessment are based on the UK joint SNCB guidance (SNCBs, 2024), which draws on the work of Özsanlav-Harris *et al.* (2023). This guidance recommends the use of generic avoidance rates for gulls, with a single rate applied across all gull species. However, the underlying study also derives species-specific avoidance rates and identifies these as more appropriate for assessment purposes, as they are expected to provide more representative collision risk model outputs than rates applied generically across broad taxonomic groups. Despite this, the use of species-specific avoidance rates is not currently advocated within the latest UK SNCB guidance. However, by using the species-specific avoidance rate for kittiwake (0.9979) as opposed to the all gulls rate (0.9929), the in-combination collision mortalities would be reduced by 70.4%. This represents just one element of precaution in the assessment. For example, the flight speed applied within the collision risk modelling (13.1 m/s) is higher than values reported in the available literature. Skov *et al*. (2019) recorded a mean flight speed of 8.7 m/s, based on data collected at the Thanet offshore wind farm.

Application of this lower, empirically derived flight speed would be expected to further reduce predicted collision estimates, as it would decrease the flux of birds passing through the proposed development area.

Additionally, PVA modelling has not accounted for density dependent regulation which makes the outcomes highly precautionary. The Ireland's Eye SPA population has been modelled as a closed population (i.e., not accounting for factors such as competition or food availability being a reduced constraint on population resources when population numbers are reduced. Therefore in reality, the predicted reduction in population growth rate will be considerably lower.

6.4.10.1.6 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects, would not result in an AEoI on the Howth Head Coast SPA, in view of the CO to restore the favourable conservation condition of the kittiwake QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.11 Lambay Island SPA

6.4.11.1 Guillemot

Guillemot has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of guillemot (73.2+80.5km) (Woodward et al., 2019) from Lambay Island SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.11.1.1 Operation - Disturbance and Displacement

The CO for the guillemot feature of Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the guillemot population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix 17: Offshore and Intertidal Displacement Analysis, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on guillemot. However, based on advice from NatureScot a displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.35.

Seasonal and annual population estimates of breeding adult guillemot of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.34.

Table A6.34: Seasonal and Annual Guillemot Population at Lambay Island SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.22 in the 2024 NIS).

Project	Seasonal population at risk of displacement		
	Breeding bio-season	Non-breeding bio-season	Annual total
The proposed development (site-specific approach)	454	2,226	2,680
The proposed development (generic approach)	7,500	1,982	9,483
All other tier 1 projects	11,989	4,657	16,496
Total (proposed development site-specific approach)	12,443	6,883	19,326
Total (proposed development generic approach)	19,489	6,640	26,129

6.4.11.1.2 Annual Total

Throughout all bio-seasons, the in-combination number of guillemot at risk of displacement from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is 19,326 individuals. The total predicted displacement consequent mortality is 97 (96.6) breeding adults. See Table A6.35 for the in-combination displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023) (60% displacement, 3 to 5% mortality), alongside a seasonal breakdown of impacts.

The predicted mortality 97 of breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 2.657% when considering the latest colony count of 59,610 individuals and a background mortality of 3,636 individuals.

This level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts below through a PVA.

Table A6.35: In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phases for Guillemot at Lambay Island SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count[11] (replaces Table 6.23 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum)			% increase in baseline mortality (recent count)		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Proposed development site-specific approach to bio-seasons							
Breeding	12,443	62.2	224.0	373.3	1.711%	6.159%	10.266%
Non-breeding	6,883	34.4	41.3	123.9	0.947%	1.136%	3.407%
Annual total	19,326	96.6	265.3	497.2	2.657%	7.295%	13.673%
Proposed development generic approach to bio-seasons							
Breeding	19,489	97.4	350.8	584.7	2.680%	9.648%	16.079%
Non-breeding	6,640	33.2	39.8	119.5	0.913%	1.096%	3.287%
Annual total	26,129	130.6	390.6	704.2	3.593%	10.743%	19.366%

[11] *Note bio-season totals may not equal the annual total exactly in the table due to rounding*

Table A6.36: PVA Outputs for Breeding Adult Lambay Island SPA Guillemot Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects (replaces Table 6.24 in the 2024 NIS).

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	50%, 1%	13.4	1.000	0.991	0.025%	0.898%
In-combination	50%, 1%	96.6	0.998	0.937	0.181%	6.321%
Proposed development alone	60%, 1% - 3%	21.5	1.000	0.986	0.040%	1.435%
In-combination	60%, 1% - 3%	265.3	0.995	0.836	0.498%	16.433%
Proposed development alone	60%, 3% - 5%	53.7	0.999	0.964	0.101%	3.557%
In-combination	60%, 3% - 5%	497.2	0.991	0.714	0.933%	28.638%
Proposed development generic approach to bio-seasons						
Proposed development alone	50%, 1%	47.4	0.999	0.968	0.090%	3.170%
In-combination	50%, 1%	130.6	0.998	0.915	0.246%	8.467%
Proposed development alone	60%, 1% - 3%	146.9	0.997	0.905	0.276%	9.462%
In-combination	60%, 1% - 3%	390.6	0.993	0.767	0.733%	23.265%
Proposed development alone	60%, 3% - 5%	260.7	0.995	0.838	0.489%	16.185%
In-combination	60%, 3% - 5%	704.2	0.987	0.620	1.321%	38.048%

Assuming an annual mortality of 97 breeding adults from Lambay Island SPA, as predicted using the Applicant's approach, the resulting CGR is 0.998 and the CPS is 0.937. This represents a 0.181% reduction in growth rate and a reduction in final population size of 6.321% relative to an unimpacted population over the 35-year period. See the Appendix 20: Offshore and Intertidal Population Viability Analysis, for the results of the PVA as per the range 50% displacement to 60% displacement, 1 to 5% mortality. It is important to emphasise that this does not imply a reduction in population size. Rather, assuming no density-dependent processes operate, the impacted population is projected to be 6.3% smaller than the unimpacted population after 35 years.

The guillemot colony at Lambay Island SPA appears to be relatively stable with the latest colony estimate being 59,983 individuals in 2015, only a 1.3% reduction since the Seabird 2000 count in 1999 (60,754 individuals). This trend represents an annual reduction in the population of 0.08%. The colony has since remained stable, with the most recent count in 2024 being 59,610 individuals.

The in-combination impact based on 50% displacement and 1% mortality represents an annual reduction in population growth of 0.181% relative to an unimpacted population which is sufficiently small that it would have no meaningful effect on the population growth rate over the long term. The same conclusion is also drawn when considering the NatureScot Low advised rates, with the site-specific annual reduction in population growth of 0.498%. Under the NatureScot high rates, the predicted relative reduction in growth rate is 0.933%. Although this level of effect is highly unlikely to cause a reduction in the population size over the long term, this scenario is not considered appropriate for informing the assessment conclusions, as it reflects an overly precautionary application of mortality across both breeding and non-breeding seasons, without supporting evidence (see Appendix A21: Additional Guillemot Ecological Evidence Note).

In addition, the projected reductions in population growth rate are highly precautionary and likely overestimate what would occur under natural conditions, because the models did not incorporate density dependence. The population was treated as closed, yet there is strong evidence that seabird populations of this size are subject to compensatory density-dependent processes (Horswill and Robinson, 2015). If density dependence were included, the predicted change in population growth rate would be substantially smaller, because losses arising from displacement would be at least partly buffered through density-dependent processes - for example, by recruitment of non-breeders and/or immigrants from the wider region into the Lambay Island breeding population, replacing the small number of mortalities predicted from displacement impacts.

6.4.11.1.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase of the proposed development, in-combination with other plans and projects, would not result in an AEoI on the Lambay Island SPA, in view of the CO to maintain the favourable conservation condition of the guillemot QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.11.2 Razorbill

Razorbill has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of razorbill (88.7+75.9km) (Woodward et al., 2019) from Lambay Island SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.11.2.1 Operation - Disturbance and Displacement

The CO for the razorbill feature of Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2) In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the razorbill population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Section 5.4.1, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on razorbill. However, based on advice from NatureScot a displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.38.

Seasonal and annual population estimates of breeding adult razorbill of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.37.

Table A6.37: Seasonal and Annual Razorbill Population at Lambay Island SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.25 in the 2024 NIS).

Project	Seasonal mortality attributed to SPA					
	Pre-breeding migration	Migration-free breeding	Post-breeding migration	Migration-free winter	Non-breeding total	Annual total
The proposed development (site-specific approach)	11	75	57	25	92	167
The proposed development (Furness approach)	11	478	57	25	92	570
All other tier 1 projects	107	623	173	132	1,084	1,707
Total (proposed development site-specific approach)	117	698	230	157	1,176	1,874
Total (proposed development Furness approach)	117	1,101	230	157	1,176	2,276

6.4.11.2.2 Annual Total

Throughout all bio-seasons, the in-combination number of razorbill at risk of displacement from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is 1,874 individuals. The total predicted displacement consequent mortality is nine (9.4) breeding adults. See Table A6.38 for the in-combination displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023) (60% displacement, 3 to 5% mortality), alongside a seasonal breakdown of impacts.

The predicted mortality of nine breeding adults from Ireland's Eye SPA per annum across all bio-seasons represents an increase in baseline mortality of 1.402% when considering the latest colony count of 6,366 individuals and an annual background mortality of 668 adults. The proposed development alone contributes less than one (0.8) breeding adult mortality per annum which equates to a 0.125% increase in baseline mortality per annum.

Table A6.38: In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phase for Razorbill at Lambay Island SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count[12] (replaces Table 6.26 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum)			% increase in baseline mortality (recent count)		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Proposed development site-specific approach to bio-seasons							
Autumn	230	1.1	1.4	4.1	0.172%	0.206%	0.618%
Breeding	698	3.5	12.6	20.9	0.522%	1.880%	3.134%
Winter	157	0.8	0.9	2.8	0.117%	0.141%	0.422%
Spring	117	0.6	0.7	2.1	0.088%	0.105%	0.316%
Annual total	1,874	9.4	19.6	42.1	1.402%	2.936%	6.300%
Proposed development generic approach to bio-seasons							
Autumn	230	1.1	1.4	4.1	0.172%	0.206%	0.618%
Breeding	1,101	5.5	19.8	33.0	0.823%	2.964%	4.940%
Winter	157	0.8	0.9	2.8	0.117%	0.141%	0.422%
Spring	117	0.6	0.7	2.1	0.088%	0.105%	0.316%
Annual total	2,276	11.4	26.9	54.2	1.703%	4.019%	8.106%

[12] *Note bio-season totals may not equal the annual total exactly in the table due to rounding.*

Overall, the level of impact is greater than a 1% increase (based on the proposed development generic approach to bio-seasons only) and therefore requires further consideration through a PVA.

Table A6.39 PVA Outputs for Breeding Adult Lambay Island SPA Razorbill Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects.

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific if y						
Proposed development alone	50%, 1%	0.8	1.000	0.994	0.017%	0.609%
In-combination	50%, 1%	9.4	0.998	0.941	0.170%	5.918%
Proposed development alone	60%, 1% - 3%	1.9	1.000	0.987	0.036%	1.299%
In-combination	60%, 1% - 3%	19.6	0.996	0.881	0.353%	11.940%
Proposed development alone	60%, 3% - 5%	3.9	0.999	0.975	0.071%	2.525%
In-combination	60%, 3% - 5%	42.1	0.992	0.761	0.756%	23.940%
Proposed development generic approach to bio-seasons						
Proposed development alone	50%, 1%	2.9	1.000	0.982	0.049%	1.775%
In-combination	50%, 1%	11.4	0.998	0.929	0.206%	7.108%
Proposed development alone	60%, 1% - 3%	9.2	0.998	0.943	0.166%	5.704%
In-combination	60%, 1% - 3%	26.9	0.995	0.840	0.481%	16.015%
Proposed development alone	60%, 3% - 5%	16.0	0.997	0.902	0.288%	9.841%
In-combination	60%, 3% - 5%	54.2	0.990	0.704	0.969%	29.645%

Assuming an annual mortality of 9.4 breeding adults from Lambay Island SPA, as predicted using the Applicant's approach, the resulting CGR and CPS is 0.998 and 0.941, respectively. This represents a 0.170% reduction in growth rate relative to an unimpacted population and a reduction in final population size of 5.918% over the 35-year period.

The razorbill colony at Lambay Island SPA appears to be increasing, with the population increasing by an average of 3.4% between Seabirds Count 2000 and Seabirds Count (2015-2023) from 4,337 individuals to 7,353 individuals. The population has since slightly decreased to 6,366 individuals at the most recent count in 2024.

The in-combination impact based on 50% displacement and 1% mortality represents an annual reduction in population growth of 0.170% which is sufficiently small that it would cause no meaningful change to the long-term population growth rate. The same conclusion is also true when considering the NatureScot Low displacement rates. Even considering the unrealistically high impacts predicted using NatureScot high rates the relative reduction in growth rate is <1% which would still not cause the population trend to reverse given the baseline annual growth rate of approximately 3.4%.

In addition, the projected reductions in population growth rate are highly precautionary and likely overestimate what would occur under natural conditions, because the models did not incorporate density dependence. The population was treated as closed, yet there is strong evidence that seabird populations of this size are subject to compensatory density-dependent processes (Horswill and Robinson, 2015). If density dependence were included, the predicted change in population growth rate would be substantially smaller, because losses arising from displacement would be at least partly buffered through density-dependent processes - for example, by recruitment of non-breeders and/or immigrants from the wider region into the Lambay Island breeding population, replacing the small number of mortalities predicted from displacement impacts.

6.4.11.2.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that the proposed development, in-combination, would not adversely affect the integrity of the Lambay Island Coast SPA in view of the conservation objective to maintain the favourable conservation condition of razorbill, with specific regard to the population size attribute.

6.4.11.3 Puffin

Puffin has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of razorbill (137.1+128.3) (Woodward et al., 2019) from Lambay Island SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.11.3.1 Operation - Disturbance and Displacement

The CO for the puffin feature of Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which is that the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the puffin population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Section 5.4.1, a displacement rate of 50% and a mortality rate of 1% were applied for the assessment of in-combination effects on puffin. However, based on advice from NatureScot a displacement rate of 60% and a mortality range of 3% to 5% (breeding) and 1% to 3% (non-breeding) is also presented in Table A6.38.

Seasonal and annual population estimates of breeding adult puffin of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.40.

Table A6.40: Seasonal and Annual Puffin Population at Lambay Island SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.25 in the 2024 NIS).

Project	Seasonal mortality attributed to SPA		
	Breeding	Non-breeding	Annual total
The proposed development (Furness approach)	7	0	7
All other tier 1 projects	5	0	1
Total (proposed development Furness approach)	11	0	11

6.4.11.3.2 Annual Total

Throughout all bio-seasons, the in-combination number of puffin at risk of displacement from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is 11 individuals. The total predicted displacement consequent mortality is less than one (0.1) breeding adult. See Table A6.41 for the in-combination displacement consequent mortalities as per the range recommended within the NatureScot guidance (NatureScot, 2023) (60% displacement, 3 to 5% mortality), alongside a seasonal breakdown of impacts.

The predicted mortality of less than one breeding adult from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.373% when considering the latest colony count of 144 individuals and an annual background mortality of 15 adults. The proposed development alone contributes less than one (0.0) breeding adult mortality per annum which equates to a 0.218% increase in baseline mortality per annum.

Table A6.41: In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phase for Puffin at Lambay Island SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count[13] (replaces Table 6.26 in the 2024 NIS).

Bio-season	Abundance of adults apportioned to SPA (plus 2km buffer)	Estimated increase in mortality (breeding adults per annum)			% increase in baseline mortality (recent count)		
		Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)	Applicant (50%, 1%)	Guidance (60%, 1% and 3%)	Guidance (60%, 3% and 5%)
Breeding	11	0.1	0.2	0.3	0.370%	1.333%	2.222%
Non-breeding	0	0.0	0.0	0.0	0.002%	0.003%	0.008%
Annual total	11	0.1	0.2	0.3	0.373%	1.336%	2.230%

[13] *Note bio-season totals may not equal the annual total exactly in the table due to rounding.*

Overall, the level of impact is greater than a 1% increase (based on the proposed development generic approach to bio-seasons only) and therefore requires further consideration through a PVA.

Table A6.42 PVA Outputs for Breeding Adult Lambay Island SPA Puffin Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects.

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development alone	50%, 1%	0.0	1.000	1.000	0.015%	0.000%
In-combination	50%, 1%	0.1	1.000	1.000	0.029%	0.000%
Proposed development alone	60%, 1% - 3%	0.1	0.999	1.000	0.075%	0.000%
In-combination	60%, 1% - 3%	0.2	0.998	0.944	0.182%	5.556%
Proposed development alone	60%, 3% - 5%	0.2	0.998	0.944	0.166%	5.556%
In-combination	60%, 3% - 5%	0.3	0.997	0.913	0.275%	8.696%

Assuming an annual mortality of less than one (0.1) breeding adults from Lambay Island SPA, as predicted using the Applicant's approach, the resulting CGR and CPS is 1.000 and 1.000, respectively. This represents a 0.029% reduction in growth rate relative to an unimpacted population and a reduction in final population size of 0.000% over the 35-year period.

The puffin colony at Lambay Island SPA has decreased, with the population decreasing by approximately 50% between Seabirds Count 2000 and Seabirds Count (2015-2023) from 289 individuals to 144 individuals.

The in-combination impact based on 50% displacement and 1% mortality represents an annual reduction in population growth of 0.029% which is sufficiently small that it would cause no meaningful change to the long-term population growth rate. The same conclusion is also true when considering the NatureScot Low displacement rates.

Regardless of the population trend, the predicted in-combination impact is sufficiently small that it would not have any meaningful effect on the population growth rate over the long term. Even based on the worst-case scenario NatureScot high displacement rates), the predicted impact only represents a <0.3% reduction in annual growth rate.

In addition, the projected reductions in population growth rate are highly precautionary and likely overestimate what would occur under natural conditions, because the models did not incorporate density dependence. The population was treated as closed, yet there is strong evidence that seabird populations of this size are subject to compensatory density-dependent processes (Horswill and Robinson, 2015). If density dependence were included, the predicted change in population growth rate would be substantially smaller, because losses arising from displacement would be at least partly buffered through density-dependent processes - for example, by recruitment of non-breeders and/or immigrants from the wider region into the Lambay Island breeding population, replacing the small number of mortalities predicted from displacement impacts.

6.4.11.3.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that the proposed development, in-combination, would not adversely affect the integrity of the Lambay Island Coast SPA in view of the conservation objective to maintain the favourable conservation condition of puffin, with specific regard to the population size attribute.

6.4.11.4 Kittiwake

Kittiwake has been screened in for the operational phase to assess the potential for an AEoI from disturbance and displacement and collision risk (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species (Table A5-72). Based on the MMF+1SD of kittiwake (156.1+144.5km) (Woodward et al., 2019) from Lambay Island SPA, several OWFs are within foraging range.

Seasons are based on Furness (2015), though for an additional scenario using seasons refined based on site-specific data is also provided, hereafter referred to as the "site-specific approach" (with the standard Furness (2015) seasons referred to as the "generic approach") See Appendix A14: Offshore and Intertidal Ornithology Technical Baseline for a full description of the ornithological baseline and definitions of bio-seasons.

6.4.11.4.1 Operation – Disturbance and displacement

The CO for the kittiwake feature of Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from disturbance and displacement this section assesses impacts against the attribute for breeding population size, the target for which the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to displacement and disturbance and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of disturbance and displacement.

As per evidence presented in Appendix A17: Offshore and Intertidal Ornithology Displacement Analysis, kittiwake is not considered vulnerable to impacts from disturbance and displacement, though an assessment is provided using NatureScot (2023) advised rates of 30% displacement, and 1% to 3% mortality in Table A6.44.

Seasonal and annual population estimates of breeding adult kittiwake of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.43

Table A6.43 Seasonal and Annual Kittiwake Population at Lambay Island SPA Estimated to Be at Risk of Displacement for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment

Project	Seasonal population at risk of displacement				
	Spring migration	Breeding	Autumn migration	Non-breeding total [14]	Annual total
The proposed development (site-specific approach)	6	173	7	12	186
The proposed development (generic approach)	5	264	3	8	272
All other tier 1 projects	111	616	63	175	791
Total (proposed development site-specific approach)	117	790	70	187	976
Total (proposed development generic approach)	116	880	67	183	1,063

[14] Note the sum of the spring and autumn migration mortality estimates may not equal the non-breeding total as some projects in the in-combination assessment only provided a single non-breeding season mortality which is captured within this column.

6.4.11.4.2 Annual Total

Throughout all bio-seasons, the in-combination number of kittiwake at risk of displacement from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is 976 individuals. The total predicted displacement consequent mortality is three (2.9) to nine (8.8) breeding adults. See Table A6.44 for a seasonal breakdown of impacts.

The predicted mortality of three to nine breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.451%% to 1.354% when considering the latest colony count of 4,446 individuals and an annual background mortality of 649 adults. The proposed development alone contributes one (0.6) to two (1.7) breeding adult mortalities per annum which equates to a 0.086% to a 0.257% increase in baseline mortality per annum.

Overall, the level of impact is greater than a 1% increase (based on NatureScot high only) and therefore requires further consideration through a PVA.

Table A6.44 In-Combination Range-Based Displacement Mortalities during the Operation and Maintenance Phase for Kittiwake at Lambay Island SPA Based on a Range of Displacement Impacts and the Latest NPWS Colony Count

Bio-season	Abundance of adults apportioned to SPA (array area plus 2km buffer)	Estimated mortality		% increase in baseline mortality	
		Guidance (30%, 1%)	Guidance (30%, 3%)	Guidance (30%, 1%)	Guidance (30%, 3%)
Proposed development site-specific approach to bio-seasons					
Autumn	70	0.2	0.6	0.032%	0.097%
Breeding	790	2.4	7.1	0.365%	1.095%
Spring	117	0.4	1.1	0.054%	0.162%
Annual total	976	2.9	8.8	0.451%	1.354%
Proposed development generic approach to bio-seasons					
Autumn	67	0.2	0.6	0.031%	0.092%
Breeding	880	2.6	7.9	0.407%	1.220%
Spring	116	0.3	1.0	0.054%	0.161%
Annual total	1063	3.2	9.6	0.491%	1.473%

Table A6.45 PVA Outputs for Breeding Adult Lambay Island SPA Kittiwake Incorporating Mean Displacement Impacts of the Proposed Development Alone and In-Combination with Other Projects

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons						
Proposed development alone	30%, 1%	0.6	1.000	0.995	0.013%	0.480%
In-combination	30%, 1%	2.9	0.999	0.972	0.079%	2.753%
Proposed development alone	30%, 3%	1.7	1.000	0.985	0.044%	1.509%
In-combination	30%, 3%	8.8	0.998	0.920	0.235%	7.999%
Proposed development generic approach to bio-seasons						
Proposed development alone	30%, 1%	0.8	1.000	0.993	0.021%	0.691%

Scenario		Mortalities	CGR	CPS	Difference in GR	Difference in PS
In-combination	30%, 1%	3.2	0.999	0.971	0.084%	2.899%
Proposed development alone	30%, 3%	2.4	0.999	0.978	0.061%	2.228%
In-combination	30%, 3%	9.6	0.997	0.913	0.253%	8.681%

Assuming an annual mortality of three 2.9 breeding adults from Lambay Island SPA the CGR and CPS are 0.999 and 0.972, respectively. This represents a 0.079% reduction in growth rate and a reduction in final population size of 2.753% over the 35-year period.

The kittiwake colony at Lambay Island SPA has shown a slight decrease, with the population declining by an average of 1.3% per annum from 8,182 individuals to 6,640 individuals between Seabird 2000 Count and the Seabirds Count (2015-2023). More recently the population has further decreased, falling to 4,446 individuals in 2024.

Regardless of the population trend, the predicted in-combination impact is sufficiently small that it would not have any meaningful effect on the population growth rate over the long term. Even based on the worst-case scenario (considering the generic approach to bio-seasons and NatureScot high displacement rates), the predicted impact only represents a <0.3% reduction in annual growth rate.

6.4.11.4.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that disturbance and displacement during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Lambay Island SPA, in view of the CO to restore the favourable conservation condition of the kittiwake QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.11.4.4 Operation - Collision Risk

The CO for the kittiwake feature of Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to collision risk and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the kittiwake population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult kittiwake of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.46.

Table A6.46: Seasonal and Annual Kittiwake Collision Mortalities at Lambay Island SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.27 in the 2024 NIS).

Project	Seasonal Mortality attributed to SPA				
	Spring migration	Breeding bio-season	Autumn migration	Non-breeding bio-season total	Annual total
The proposed development (site-specific approach)	0.1	1.4	0.0	0.1	1.5
The proposed development (generic approach)	0.0	2.8	0.0	0.1	2.9

Project	Seasonal Mortality attributed to SPA				
	Spring migration	Breeding bio-season	Autumn migration	Non-breeding bio-season total	Annual total
All other tier 1 projects	1.1	8.2	1.1	2.7	10.8
Total (proposed development site-specific approach)	1.1	9.6	1.2	2.8	12.4
Total (proposed development generic approach)	1.1	11.0	1.2	2.7	13.7

Annual Total

Throughout all bio-seasons, the in-combination predicted collision consequent mortalities of kittiwake from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is 12 (12.4) breeding adults. Impacts based on the generic approach are provided in Table A6.47 alongside a seasonal breakdown of impacts.

The predicted mortality of 12 breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 1.908% when considering the latest colony count of 4,446 individuals and a background mortality of 649 individuals. The proposed development alone contributes two (1.5) breeding adult mortalities per annum which equates to an increase in baseline mortality of 0.238%.

Table A6.47 In-combination Collision Mortalities during the Operation and Maintenance Phase for Kittiwake at Lambay Island SPA Based on the Latest NPWS Colony Count.

Bio-season	Estimated mortality		% increase in baseline mortality	
	Proposed Development site-specific approach	Proposed Development generic approach	Proposed Development site-specific approach	Proposed Development generic approach
Autumn	1.2	1.2	0.183%	0.180%
Breeding	9.6	11.0	1.480%	1.691%
Spring	1.1	1.1	0.175%	0.172%
Annual total	12.4	13.7	1.908%	2.114%

Overall, the level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts through a PVA.

Table A6.48: PVA Outputs for Breeding Adult Lambay Island SPA Kittiwake Incorporating Mean Collision Impacts of the Proposed Development Alone and In-Combination with Other Projects.

Scenario	Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development site-specific approach to bio-seasons					
Proposed development alone	1.5	1.000	0.984	0.042%	1.557%
In-combination	12.4	0.997	0.889	0.328%	11.081%
Proposed development generic approach to bio-seasons					
Proposed development alone	2.9	0.999	0.973	0.074%	2.696%
In-combination	13.7	0.996	0.876	0.365%	12.400%

Assuming an annual mortality of 12 breeding adults from Lambay Island SPA, the CGR and CPS are 0.997 and 0.889, respectively. This represents a 0.328% reduction in growth rate and a reduction in final population size of 11.081% relative to an unimpacted population over the 35-year period. For further details regarding the PVA presented here see the PVA Appendix A20: Offshore and Intertidal Ornithology Population Viability Analysis.

As described in Section 6.4.11.4.2, at Lambay Island SPA, the kittiwake population has a declining trend. Regardless of the population trend, the predicted impact of a 0.328% reduction in annual growth rate is sufficiently small that it would have no meaningful impact on long term population growth rates. Furthermore, the predicted collision impacts (both from the proposed development and other projects) are considered to be overestimates based on several layers of precaution built into both the assessment and PVA.

One of these elements of precaution is in CRM parameters. Avoidance rates applied in the assessment are based on the UK joint SNCB guidance (SNCBs, 2024), which draws on the work of Özsanlav-Harris et al. (2023). This guidance recommends the use of generic avoidance rates for gulls, with a single rate applied across all gull species. However, the underlying study also derives species-specific avoidance rates and identifies these as more appropriate for assessment purposes, as they are expected to provide more representative collision risk model outputs than rates applied generically across broad taxonomic groups. Despite this, the use of species-specific avoidance rates is not currently advocated within the latest UK SNCB guidance. However, by using the species-specific avoidance rate for kittiwake (0.9979) as opposed to the all gulls rate (0.9929), the in-combination collision mortalities would be reduced by 70.4%. This represents just one element of precaution in the assessment. For example, the flight speed applied within the collision risk modelling (13.1 m/s) is higher than values reported in the available literature. Skov et al. (2019) recorded a mean flight speed of 8.7 m/s, based on data collected at the Thanet offshore wind farm. Application of this lower, empirically derived flight speed would be expected to further reduce predicted collision estimates, as it would decrease the flux of birds passing through the proposed development area.

Additionally, PVA modelling has not accounted for density dependent regulation which makes the outcomes highly precautionary. The Lambay Island SPA population has been modelled as a closed population (i.e., not accounting for factors such as competition or food availability being a reduced constraint on population resources when population numbers are reduced. Therefore in reality, the predicted reduction in population growth rate will be considerably lower.

6.4.11.4.5 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects , would not result in an AEoI on the Lambay Island SPA, in view of the CO to restore the favourable conservation condition of the kittiwake QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.11.5 Herring gull

Herring gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species. Based on the MMF+1SD of herring gull (58.8+26.8km) (Woodward et al., 2019) from Lambay Island SPA, several OWFs are within foraging range.

6.4.11.5.1 Operation - Collision Risk

The CO for the herring gull feature of Lambay Island SPA is to restore favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to collision risk and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the herring gull population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult herring gull of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.49.

Table A6.49: Seasonal and Annual Herring Gull Collision Mortalities at Lambay Island SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.29 in the 2024 NIS).

Project	Seasonal Mortality attributed to SPA		
	Breeding	Non-breeding total	Annual total
The proposed development	0.8	0.3	1.0
All other tier 1 projects	2.8	0.4	3.5
Total	3.6	0.7	4.5

Annual Total

Throughout all bio-seasons, the in-combination predicted collision consequent mortalities of herring gull from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is five (4.5) breeding adults.

The predicted mortality of five breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 0.658% when considering the latest colony count of 4,160 individuals and a background mortality of 691 individuals. The proposed development alone contributes one (1.0) breeding adult mortality per annum which equates to an increase in baseline mortality of 0.150% per annum. This in-combination impact of five breeding adults would be indistinguishable from natural fluctuations in the population.

6.4.11.5.2 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects, would not result in an AEoI on the Lambay Island SPA, in view of the CO to restore the favourable conservation condition of the herring gull QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.4.11.6 Lesser black-backed gull

Lesser black-backed gull has been screened in for the operational phase to assess the potential for an AEoI from collision risk (see Table A 5-9) from the proposed development in-combination with other OWFs in relation to the COs for this species as a designated QI of Lambay Island SPA. Based on the MMF+1SD of lesser black-backed gull (127+109km) (Woodward et al., 2019), several OWFs are within foraging range.

6.4.11.6.1 Operation - Collision Risk

The CO for the lesser black-backed gull feature of Lambay Island SPA is to maintain favourable conservation condition. Favourable conservation condition is defined by a number of attributes and targets (see Section 5.4.1.1.2). In terms of assessing potential in-combination impacts from collision risk this section assesses impacts against the attribute for breeding population size, the target for which the long term SPA population trend is stable or increasing. The breeding population size is the only attribute of the CO that is relevant to collision risk and as such this is the only attribute considered when concluding no AEoI. The Developer has therefore undertaken an assessment of potential impacts on the lesser black-backed gull population size of the NWIS as a result of collision risk.

Seasonal and annual mortality estimates of breeding adult herring gull of the Lambay Island SPA at all OWFs included in the in-combination assessment are presented in Table A6.50.

Table A6.50 Seasonal and Annual Lesser Black-backed Gull Collision Mortalities at Lambay Island SPA for the Proposed Development Alone and All Projects Considered in the In-Combination Assessment (replaces Table 6.29 in the 2024 NIS).

Project	Seasonal Mortality attributed to SPA				
	Spring migration	Breeding	Autumn migration	Migration-free winter	Annual total
The proposed development	0.2	0.0	0.0	0.0	0.2
All other tier 1 projects	0.2	3.3	0.3	0.4	4.1
Total	0.3	3.3	0.3	0.4	4.3

6.4.11.6.2 Annual Total

Throughout all bio-seasons, the in-combination predicted collision consequent mortalities of lesser black-backed gull from all other screened in projects, including the proposed development, apportioned to Lambay Island SPA is four (4.3) breeding adults.

The predicted mortality of four breeding adults from Lambay Island SPA per annum across all bio-seasons represents an increase in baseline mortality of 3.237% when considering the latest count of 1,158 individuals and a background mortality of 133 individuals.

Overall, the level of impact is greater than a 1% increase and therefore, further consideration is given to these impacts through a PVA.

Table A6.51 PVA Outputs for Breeding Adult Lambay Island SPA Lesser black-backed gull Incorporating Mean Collision Impacts of the Proposed Development Alone and In-Combination with Other Projects

Scenario	Mortalities	CGR	CPS	Difference in GR	Difference in PS
Proposed development alone	0.2	1.000	0.992	0.018%	0.775%
In-combination	4.3	0.996	0.858	0.425%	14.236%

Assuming an annual mortality of four breeding adults from Lambay Island SPA, the CGR and CPS are 0.996 and 0.858, respectively. This represents a 0.425% reduction in growth rate and a reduction in final population size of 14.236% relative to an unimpacted population over the 35-year period. For further details regarding the PVA presented here see the PVA Appendix A20: Offshore and Intertidal Ornithology Population Viability Analysis.

The lesser black-backed gull colony at Lambay Island SPA appears to be increasing, with the recent 2024 count of 1,158 individuals, almost double the Seabird 2000 count of 618 in 1999. This corresponds to an annual increase average of 2.5% increase per annum. Based on the 2024 count, the CGR value of 0.996 is sufficiently small that it would cause no meaningful change to the long-term population growth rate.

Additionally, the contribution of the proposed development to the in-combination impact is very small, contributing only 0.2 mortalities which makes up only 4.1% of the in-combination total. The impact from the proposed development only represents a 0.018% reduction in relative growth rate.

6.4.11.6.3 Conclusion of AEoI

It is therefore concluded beyond reasonable scientific doubt that collision risk during the operational phase of the proposed development, in-combination with other plans and projects, would not result in an AEoI on the Lambay Island SPA, in view of the CO to maintain the favourable conservation condition of the lesser black-backed gull QI for either Project Option 1 and Project Option 2, with specific regard to the population size attribute.

6.5 Stage 2 Appropriate Assessment In-combination Conclusion

This section has been revisited in the light of amendments to Section 6.4. The overall conclusion remains the same as for the 2024 NIS and the paragraph repeated below for clarity.

It was concluded for all sites considered within this assessment that there is no AEoI of the sites or their COs resulting from in-combination interactions with the proposed development. These conclusions are listed in Table A8.1 below for each site considered.

7. Transboundary Statement

There are no changes to this section. Refer to Section 7 of the 2024 NIS.

7.1 Marine Mammals

There are no changes to this section. Refer to Section 7.1 of the 2024 NIS.

7.2 Ornithology

There are no changes to this section. Refer to Section 7.2 of the 2024 NIS.

8. Appropriate Assessment Conclusion

There is no change to the summary text in this section. For ease of reference this is repeated below.

This NIS presents the information required for a Stage 2 AA to be carried out by the competent authority to determine whether or not the proposed development, either alone or in-combination, in view of best scientific knowledge, will adversely affect the integrity of European Sites.

The potential impacts have been considered collectively with each other across receptor groups and based on the assessment of the proposed development alone and in-combination, it is concluded that there is no potential for AEoI of the QIs of any European site.

Table 8.1 of the 2024 NIS has been updated and is therefore replaced by Table A8.1 below, which presents the conclusions of the assessment for AEoI for all receptor groups. New and updated information is shown by grey shading. Changes to this table consist of:

- **Updates have been made to correct minor grammatical updates.**
- **The impact pathways under the migratory fish assessment have been revised to be clearer on the impact pathway assessed and to introduce the UWN generated by operational WTGs (as a result of RFI Section 11 (g)).**
- **For the marine mammal receptor group operational impact pathways have been updated to include 'Operational WTG noise' as a result of RFI Section (10h).**
- **The addition of harbour porpoise under the Hook Head SAC QI list to clarify that this QI has been assessed for this site – amending a minor erratum of the 2024 NIS.**

For the ornithology receptor group, onshore and offshore impact pathways have been separated for clarity. Text has been added to indicate where the impact refers to the Onshore development area, Offshore development area only or array area only.

Table A8.1: Conclusions of the Assessment for AEoI for All Coastal and Offshore Receptor Groups

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Coastal and Marine Habitats					
Malahide Estuary SAC	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore and offshore suspended sediment / deposition; Onshore and offshore accidental pollution; Marine INNS; and Onshore dust deposition.	Offshore suspended sediment / deposition; Offshore accidental pollution; Marine INNS; and Offshore changes to physical processes.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rogerstown Estuary SAC	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore and offshore suspended sediment / deposition; Onshore and offshore accidental pollution; Marine INNS; and Onshore dust deposition	Offshore suspended sediment / deposition; Offshore accidental pollution; Marine INNS; and Offshore changes to physical processes;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Baldoyle Bay SAC	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Onshore and offshore suspended sediment / deposition; and Onshore and offshore accidental pollution.	None	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rockabill to Dalkey Island SAC	Annex I habitats: Reefs.	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Offshore changes to physical processes; and Marine INNS.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Boyne Coast and Estuary SAC	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; and Atlantic salt meadows	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Marine INNS; and Offshore changes to physical processes.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Lambay Island SAC	Annex I habitats: Reefs.	Offshore suspended sediment / deposition; Offshore accidental pollution; and Marine INNS.	Offshore suspended sediment / deposition; Offshore accidental pollution; Marine INNS; and Offshore changes to physical processes.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Migratory Fish					
River Boyne and River Blackwater SAC	Annex II species: River lamprey; and Atlantic salmon.	Underwater noise from UXO clearance and other noise sources; Offshore suspended sediment /deposition; and Offshore accidental pollution.	Offshore suspended sediment/deposition; Offshore accidental pollution; Electro-magnetic fields (EMF); and Underwater Noise Generated by Wind Turbines.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Marine Mammals					
Rockabill to Dalkey Island SAC	Annex II species: Harbour porpoise.	Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Lambay Island SAC	Annex II species: Harbour porpoise; Grey seal; and Harbour seal.	Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Hook Head SAC	Annex II species: Harbour porpoise Bottlenose dolphin	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Codling Fault Zone SAC	Annex II species: Harbour porpoise	Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution	Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
North Anglesey Marine/ Gogledd Môn Forol SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision;	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
		Changes to prey; and Accidental pollution	Operational WTG noise; and Accidental pollution.		
Murlough SAC	Annex II species: Harbour seal.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
North Channel SAC	Annex II species Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Glannau Ynys Gybi/ Holy Island Coast SAC	Annex II species: Grey seal	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Operational WTG noise; and Accidental pollution.		
West Wales Marine/ Gorllewin Cymru Forol SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC	Annex II species: Bottlenose dolphin.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Blackwater Bank SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Accidental pollution.		
Carnsore Point SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Cardigan Bay/ Bae Ceredigion SAC	Annex II species: Bottlenose dolphin.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Roaringwater Bay and Islands SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Blasket Islands SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Kenmare River SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC	Annex II species: Harbour porpoise.	Offshore development area only	Offshore development area only	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
		Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution	Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution		
Nord Bretagne DH SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
West Connacht Coast SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Mers Celtiques – Talus du golfe de Gascogne SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance;	Offshore development area only Vessel disturbance; Vessel collision;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
		Vessel collision; Changes to prey; and Accidental pollution.	Changes to prey; Operational WTG noise; and Accidental pollution		
Récifs et landes de la Hague SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Anse de Vauville SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Banc et récifs de Surtainville SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision;	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
		Changes to prey; and Accidental pollution.	Operational WTG noise; and Accidental pollution		
Tregor Goëlo SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Belgica Mound SAC	Annex II species: Harbour porpoise	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Baie de Morlaix SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Operational WTG noise; and Accidental pollution		
Abers - Côtes des légendes SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Ouessant-Molène SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Chausey SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Operational WTG noise; and Accidental pollution		
Baie de Saint-Brieuc – Est SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Côtes de Crozon SAC,	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Operational WTG noise; and Accidental pollution		
Baie du Mont Saint-Michel SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Kilkieran Bay and Islands SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Chaussée de Sein SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Operational WTG noise; and Accidental pollution		
Inishmore Island SAC	Annex II species: Harbour porpoise.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; Operational WTG noise; and Accidental pollution	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Ornithology (Onshore Pathways)					
North-West Irish Sea cSPA	Common scoter; Red-throated diver; Great northern diver, Kittiwake; Lesser black-backed gull; Black-headed gull; Common gull; Herring gull; Guillemot; Razorbill; Shag; and Cormorant.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Malahide Estuary SPA	Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser; Redshank; Shelduck; and Wetlands and waterbirds.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rogerstown Estuary SPA	Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover;	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Shelduck; Shoveler; and Wetlands and waterbirds.				
Baldoyle Bay SPA	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; Shelduck; and Wetlands and waterbirds.	Onshore development area: Onshore disturbance and displacement; Onshore dust deposition; Onshore suspended sediment; and Onshore accidental pollution.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
North Bull Island SPA	Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler;	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Teal; Turnstone; and Black-headed gull.				
River Nanny Estuary and Shore SPA	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
South Dublin Bay and River Tolka Estuary SPA	Black-headed gull; Bar-tailed godwit; Dunlin; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; and Sanderling.	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Skerries Islands SPA	Cormorant; Shag; Light-bellied Brent Goose; Purple Sandpiper;	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

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	Turnstone; and Herring Gull				
Rockabill SPA	Purple sandpiper.	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Lambay Island SPA	Cormorant; Shag; Lesser Black-backed Gull; Herring Gull; Kittiwake; Guillemot; and Razorbill.	Onshore development area: Onshore disturbance and displacement.	-	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Boyne Estuary SPA	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	Onshore development area: Onshore disturbance and displacement.		No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Ornithology (Offshore Pathways)					
North West Irish Sea cSPA	Common scoter; Red-throated diver; and Great northern diver.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; Migratory collision risk; and Barrier effects.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Kittiwake; and Manx shearwater.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Offshore development area: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; Collision risk; and Barrier effects.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Lesser black-backed gull; Herring Gull; Great black-back gull; Black-headed gull; Common gull;	Array area only: Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Array area only: Indirect effects via impacts on prey; Spatial distribution and disturbance;	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Roseate tern; Common tern; Arctic tern; and Fulmar.		Collision risk; and Barrier effects.		
	Razorbill; Guillemot; and Puffin.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Spatial distribution and disturbance.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; Spatial distribution and disturbance; and Barrier effects.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rockabill SPA	Common tern; Roseate tern; and Arctic tern.	Array area only: Indirect effects via impacts on prey.	Array area only: Indirect effects via impacts on prey; Collision risk; and Barrier effects.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Purple sandpiper.	Offshore development area: Offshore disturbance and displacement;	Offshore development area: Offshore disturbance and displacement; and Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Skerries Islands SPA	Herring gull.	Array area only: Indirect effects via impacts on prey.	Array area only: Indirect effects via impacts on prey; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Light-bellied Brent Goose; Purple Sandpiper; and Turnstone.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Lambay Island SPA	Guillemot; Puffin; and Razorbill.	Array area only: Offshore disturbance and displacement; and Indirect effects via impacts on prey.	Array area only: Offshore disturbance and displacement; and Indirect effects via impacts on prey.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Kittiwake;	Array area only: Offshore & onshore disturbance and displacement; and Indirect effects via impacts on prey.	Array area only: Offshore disturbance and displacement; Indirect effects via impacts on prey; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Herring gull; Lesser black-backed gull; and Fulmar.	Array area only: Indirect effects via impacts on prey	Array area only: Indirect effects via impacts on prey; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Greylag goose.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rogerstown Estuary SPA	Black-tailed godwit; Dunlin; Grey plover; Greylag goose;	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; and Shoveler.				
Boyne Estuary SPA	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
River Nanny Estuary and Shore SPA	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Malahide Estuary SPA	Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser; Redshank; and Shelduck.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Ireland's Eye SPA	Guillemot; and Razorbill.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Herring gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Baldoyle Bay SPA	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; and Shelduck.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Howth Head Coast SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Poulaphouca Reservoir SPA	Greylag goose.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Wicklow Head SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Morecambe Bay & Duddon Estuary SPA	Lesser black-backed gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Rathlin Island SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only:	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
			Offshore disturbance and displacement; and Collision risk.		
	Lesser black-backed gull.	-	Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Saltee Islands SPA	Guillemot.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Gannet; and Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Lesser black-backed gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Razorbill.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Ailsa Craig SPA	Gannet; and Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
	Lesser black-backed gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Ribble & Alt Estuaries SPA	Lesser black-backed gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Horn Head to Fanad Head SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Blackwater Callows SPA	Whooper swan; Wigeon; Teal; and Black-tailed godwit.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Helvick Head to Ballyquin SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Skomer, Skokholm & the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
	Lesser black-backed gull.	-	Array area only: Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
Grassholm SPA	Gannet.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Cork Harbour SPA	To maintain the favourable conservation condition of the following species: Shelduck; Wigeon; Teal; Pintail; Shoveler; Red-breasted merganser; Little grebe; Great crested grebe; Grey heron; Oystercatcher; Black-tailed godwit; Bar-tailed godwit; Redshank; Golden plover; Grey plover; Lapwing; Dunlin; and Curlew.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

European site name	Qualifying interest assessed in the NIS	Impacts screened in for construction and decommissioning	Impacts screened in for operation and maintenance	Conclusion on Adverse Effect – Project Option 1 Construction /Operation /Decommissioning	Conclusion on Adverse Effect - Project Option 2 Construction/ Operation /Decommissioning
North Colonsay & Western Cliffs SPA	Kittiwake.	Array area only: Offshore disturbance and displacement.	Array area only: Offshore disturbance and displacement; and Collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Courtmacsherry Bay SPA	Shelduck; Wigeon; Red-breasted merganser; Black-tailed godwit; Bar-tailed godwit; Golden plover; Lapwing; Dunlin; Curlew; and Great northern diver.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination
Clonakilty SPA	Shelduck; Black-tailed godwit; Curlew; and Dunlin.	-	Array area only: Migratory collision risk.	No potential for AEoI alone or in-combination	No potential for AEoI alone or in-combination

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There are no other changes to this section. Refer to Section 9 in the 2024 NIS.