Addendum to the Environmental Impact Assessment Report

NISA

North Irish Sea Array

Volume 9 - Offshore Appendices

Appendix A13.1
Fish and Shellfish Ecology Baseline Characterisation

Statkraft

CIP Copenhagen Infrastructure Partners

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North Irish Sea Array Offshore Wind Farm Ltd

Appendix A13.1: Fish and Shellfish Ecology Baseline Characterisation

North Irish Sea Array Offshore Wind Farm

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1.0	2026	Draft 1 Issue to Client	SP/AL	AL	CC
2.0	2026	Final Issue to Client	SP	AL	CC
3.0	2026	For submission	SP	AL	CC

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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 as well as the third-party submissions received following public consultation. At An Bord Pleanála's behest, the Developer has also continued to consult with stakeholders in respect of the 2024 planning application throughout 2024-2026. On foot of the submissions, this continued public consultation and the RFI, clarifications and amendments are required to Appendix 13.1 Fish and Shellfish Ecology Baseline Characterisation of the 2024 Environmental Impact Assessment Report (EIAR). Full details of consultation undertaken can be found in Appendix A1.2 Consultation Report.

This relates to Sections 11 (a), 11 (b), 11 (c), 11 (e) and 11 (f) and 18 of the RFI, which refer to fish and shellfish ecology baseline data, herring spawning grounds, and potential transboundary impacts on designated Manx Marine Nature Reserves. Additionally, the timeframes associated with the RFI have required a review of the datasets used in the 2024 EIAR to ensure that any necessary updates to the baseline environment are captured, in accordance with RFI Section 1 (b).

Any cross reference to a chapter, section, table, image, figure or appendix within this document is to another location within the Addendum to the EIAR unless explicitly stated otherwise. Any cross reference to anything included in the 2024 EIAR 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 EIAR which is deleted, or quotations from other documents (as explicitly stated). Replacement text is in normal font.

Only tables and figures which have been updated from the 2024 EIAR, or entirely new tables and figures, have been included in the Addendum to the EIAR. 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 EIAR, are indicated by grey shading in the relevant cell, column or row, as necessary.

The sections relevant to Appendix A13.1 in the RFI are included below.

RFI Section	RFI	Relevance to Appendix
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 previously used in the 2024 EIAR to ensure any necessary updates to the baseline environment are captured. These are reflected in this document.
8 (c) viiic	The applicant is requested to fully assess the potential impacts on Atlantic herring *Clupea harengus* potential	Impacts on potential spawning habitat of Atlantic herring have been assessed and further information on the Mourne and

	spawning habitat. The applicant is requested to review the application in this regard and clarify potential effects on seabird prey populations.	Dundalk Bay herring spawning grounds have been included in this document.
11 (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 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 1µPa^2 / 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.	Reference to both the Mourne and Dundalk Bay herring spawning grounds have now been incorporated in this document.
11 (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	Additional site specific and regional survey data pertaining to potential herring spawning grounds have been considered further in this document.

	(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.	
11 (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.	Potential herring and sandeel spawning substrates and active spawning areas have now been further investigated through the overlap of data layers deemed to be indicative of spawning habitats and activity have been considered further in this document
11 (e)	Given the concerns raised in observations regarding potential impacts to Norway lobster (*Nephrops norvegicus*) fisheries, the applicant is requested to present a figure / figures 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.	Figure 3.22 in Appendix 13.1 of the 2024 EIAR has been updated to show inshore and offshore *Nephrops* fishing grounds across the northern and central Irish Sea. Figure 3.22 in Appendix 13.1 of the 2024 EIAR shall therefore be deleted and replaced with Figure A3.8 shown in this document.
18	The Board notes that the observation received by the Territorial Sea Committee on behalf of the Isle of Man, raises, inter alia, concerns in relation to the lack of consideration of designated Manx sites, with potential for transboundary impacts in particular	Additional information regarding the Isle of Man Marine Nature Reserves has now been included in this document.

	in relation to birds, fish/shellfish, and marine mammals. The applicant is requested to address the Isle of Man observation.	

1.1 Project Background

There are no changes to this section. Refer to Section 1.1 of Appendix 13.1 in the 2024 EIAR.

1.2 Report Aim

There are no changes to this section. Refer to Section 1.2 of Appendix 13.1 in the 2024 EIAR.

1.3 Report Structure

There are no changes to this section. Refer to Section 1.3 of Appendix 13.1 in the 2024 EIAR.

2 Methodology

2.1 Approach

There are no changes to this section. Refer to Section 2.1 of Appendix 13.1 in the 2024 EIAR.

2.2 Fish and Shellfish Study Area

Whilst there are amendments to the project design (see Chapter 6 Description of the Proposed Development Offshore and Chapter 8 Construction Strategy – Offshore of the EIAR), the defined fish and shellfish ecology study area still encapsulates the greatest extent of any potential direct and indirect effects on fish and shellfish receptors. Therefore, there are no changes to this section. Refer to Section 2.2 of Appendix 13.1 in the 2024 EIAR.

2.3 Data Sources

Baseline Data Review

Table A2.1 lists the additional data sources considered in this document that have become available since submission of the 2024 EIAR. New and updated data sources considered in this document are indicated by the grey shading. The new information has been reviewed and included to ensure the baseline is informed by the most current and up-to-date data, satisfying RFI Section 11 (b). There are no other changes required to this section. Refer to Section 2.3 of Appendix 13.1 in the 2024 EIAR.

Table A2.1: Data sources used to inform the fish and shellfish baseline (Replaces Table 2-1 in Appendix 13.1 of the 2024 EIAR).

Data Source	Type of Data	Temporal and Spatial Coverage
Site- Specific Surveys		
Natural Power, 2023. NISA Benthic Ecology Baseline: Cable Route Benthic Survey Report.	Grab samples collected 28th September to 1st October 2022 at 30 stations using a 0.1m^2 Day grab. All samples were subject to faunal and Particle Size Analysis (PSA). Drop Down Video (DDV) transects were conducted at 30 stations with samples subject to both still and video analysis.	Coverage of the proposed development ECC.
Natural Power, 2022. NISA Benthic Ecology Baseline: Array Area Survey Report.	Grab samples collected 1st to 4th May 2022 at 40 stations using a 0.1m^2 Day grab. All samples were subject to faunal and PSA. DDV transects were conducted at 20 stations with samples subject to both stills and video analysis.	Coverage of the proposed development array area.
AQUAFACT, 2025. NISA, Benthic Ecology Survey Report.	Benthic subtidal ecology survey conducted in October 2025 to validate data assumptions presented in the EIAR. DDV data were collected at 23 stations and grab samples for faunal analyses and PSA were taken at 22 stations. Sites were selected with reference to the 2022 site-specific	Coverage of the proposed development array area and ECC.

Data Source	Type of Data	Temporal and Spatial Coverage
	surveys and existing geophysical data to ensure that all habitats present within the survey area were represented.	
Existing data sources		
Coull et al., 1998. Fisheries Sensitivity Maps in British Waters.	Spawning and nursery ground data of commercially important fish species.	Spawning seasonality presented, 1991-1996. Covers UK and Irish waters.
Ellis et al., 2010. Mapping spawning and nursery areas of species considered in Marine Protected Areas (MPAs).	Spawning and nursery ground data of selected fish and elasmobranch species.	Spawning seasonality presented, 1998-2008. Covers UK and Irish waters.
Ellis et al., 2012. Spawning and nursery grounds of selected fish species in UK waters.	Spawning and nursery ground data of selected fish and elasmobranch species.	Spawning seasonality presented, 1998-2008. Covers UK and Irish waters.
Marine Institute, 2016. Species spawning and nursery areas - Ireland's Marine Atlas.	Data layers for spawning and nursery grounds of common commercially important fish species in the area.	Covers the entire study area.
Agri-Food and Biosciences Institute (AFBI), 2024. Northern Irish Northeastern Larvae Survey (NINEL) data (2016-2023).	Annual larvae survey undertaken in November each year by the Agri-Food and Biosciences Institute (AFBI) to monitor the distribution of herring larvae in the Northern Irish Sea. Data are summarised annually by ICES's Working Group on Surveys on Ichthyoplankton in the North Sea and Adjacent Seas (WGSINS). Used to indicate the distribution of herring spawning grounds within the fish and shellfish study area.	Covers the northern Irish Sea.
Marine Institute, 2009. Irish Sea Marine Assessment (ISMA) (2009) Survey CV0926.	Integrated seabed and sub-seabed mapping of the Irish Sea, with specific focus on the Codling Deep, Lambay Area, Rockabill Area and the Northern Mud Belt.	2009. Covers the Northern Mudbelt, and Rockabill Areas, which overlap with the study area.
Integrated Mapping for the Sustainable Development of Ireland's Marine Resources (INFOMAR), 2023. PSA data.	A joint project between the Marine Institute and Geological Survey of Ireland creating integrated seabed mapping products using multibeam echosounder and seabed survey data. PSA dataset used to determine the	Broadscale habitat data collected across the Irish Sea from 2006 onwards.

Data Source	Type of Data	Temporal and Spatial Coverage
	presence of suitable spawning substrates for herring and sandeel.	
EUSeaMap, 2021. European Marine Observation and Data Network (EMODnet) Broad-scale seabed habitat map of Europe.	Predictive seabed habitat map used to describe seabed substratum types and benthic habitats present in the study area.	Latest data from 2021. Coverage of the entire study area.
Cefas, 2000. Irish Sea Annual Egg Production Method (AEPM) Plankton Survey.	Abundance and distribution data of fish eggs, larvae and zooplankton.	Data collected in 2000 during the spawning seasons of target species across the Irish Sea.
ICES, 2025a. Northern Irish Ground Fish Survey (NIGFS) (2014-2024).	Annual otter trawl surveys undertaken from 1992 onwards to monitor the distribution of ground fish in the Irish Sea.	2014-2024. ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4.
ICES, 2025b. Offshore Beam Trawl Survey (BTS) (2014-2024).	Annual beam trawl surveys to monitor the distribution of commercially important flatfish in the Irish Sea	2014-2024. ICES statistical rectangles 36E3, 36E4, 35E3, 35E4, 37E3, and 37E4.
Marine Institute, 2023. The Stock Book 2023: Annual Review of Fish Stocks in 2023 with Management Advice for 2024.	An assessment of commercially exploited fish stocks of interest to Ireland.	2023. Irish Waters.
Marine Institute, 2024. The Stock Book 2024: Annual Review of Fish Stocks in 2024 with Management Advice for 2025.	An assessment of commercially exploited fish stocks of interest to Ireland.	2024. Irish Waters.
Marine Institute, 2025. The Stock Book 2025: Annual Review of Fish Stocks in 2025 with Management Advice for 2026.	An assessment of commercially exploited fish stocks of interest to Ireland.	2025. Irish Waters.
Marine Institute and Bord Iascaigh Mhara, 2023 and 2024. Shellfish Stocks and Fisheries Review 2023 and 2024.	An assessment of selected shellfish stocks within the Irish Sea.	2023 and 2024. Irish waters.
Gerritsen, 2024. Atlas of Commercial Fisheries around Ireland.	The atlas reviews the fishing activity of commercial fish stocks of relevance to Ireland.	Published 2024. Irish waters.
Tully, 2017. Atlas of Commercial Fisheries for Shellfish around Ireland.	The atlas reviews the shellfish fishing activity within Irish inshore and territorial waters.	Published 2017. Irish waters.
Celtic Sea Trout Project (CSTP), 2016.	Status, distribution and ecology of sea trout populations in the Irish Sea.	2010-2012. Waters around Ireland and

Data Source	Type of Data	Temporal and Spatial Coverage
		western Britain within Irish Sea.
O'Sullivan et al., 2013. An Inventory of Irish Spawning Herring Grounds.	An inventory of key herring spawning and fishing grounds around the coast of Ireland.	2013. Irish waters.
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.	2011. Coverage of the entire study area.
Clarke et al., 2016. Ireland Red List No. 11: Cartilaginous fish (sharks, skates, rays and chimaeras).	Details most up-to-date list of cartilaginous fish native and non-native to Ireland, listed from least concern to extinct.	2016. Coverage of the entire study area.
Inland Fisheries Ireland (IFI) publications on the status of migrating fish populations, 2018-2025.	Findings of monitoring programmes designed to assess the status of fish populations in river catchments throughout Ireland. Used to establish the baseline for migrating fish species.	2018-2024. Coverage of Irish rivers, some of which flow into the study area.
Marine Institute, 2013. Article 6 Assessment of Fisheries, including a Fishery Natura Plan for Seed Mussel (2013-2017), in the Irish Sea.	Assessment of the potential ecological impact of fishing activity on Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the Irish Sea.	2013-2017. Includes SACs located near to the proposed development study area.
ICES, 2024. ICES Ecosystem Overviews. Celtic Seas ecoregion - Ecosystem Overview.	Overview of the state of the ecosystem in the Celtic Seas ecoregion.	2024. Irish waters.
ICES, 2025c. ICES Fisheries Overviews. Celtic Seas ecoregion - fisheries overview.	Overview of all common commercially important fish and shellfish in the region.	2025. Irish waters.
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.	2020, Dublin Bay
Saorgus Energy Limited, 2013. Dublin Array An Offshore Wind Farm on the Kish and Bray Banks. Environmental Impact Statement.	Environmental Impact Statement for the Dublin Array OWF including data on the fish and shellfish species recorded during site-specific trawl and dredge surveys at the Kish and Bray sandbanks.	2004 and 2008. Coverage of Kish and Bray sandbanks.
Department of Communications, Energy and Natural Resources (DCENR), 2010. Strategic Environmental Assessment (SEA) of the Offshore Renewable Energy Development Plan (OREDP) in the Republic of Ireland: Environmental Report Volume 2: Main Report and Appendix F - Commercial Fisheries	Baseline of fish and shellfish across Irish waters with spawning and nursery grounds of key species.	Published 2010. All Irish waters.

Data Source	Type of Data	Temporal and Spatial Coverage
in Environmental Report Volume 4: Appendices.		
Department of the Environment, Climate and Communications, 2023. Draft OREDP II: Draft SEA Report and Appendix 3 - Updated Baseline Summary Report.	Baseline of fish and shellfish across Irish waters with spawning and nursery grounds of key species.	Draft published 2023. All Irish waters.

Regional and local datasets

The key change for this section is the inclusion of reference to the most recent data collected during International Bottom Trawl Surveys (IBTS). Furthermore, a typographical error has been addressed, with ICES rectangle 35E5 as listed when referring to the BTS survey data, amended to 35E3. The following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Regional IBTS datasets used to inform the baseline were:

- ***Northern Ireland Groundfish Survey (NIGFS) data:*** *To identify common fish and elasmobranch species within the wider western Irish Sea region, data collected during the NIGFS were sourced from the DATRAS (Database of Trawl Surveys) data portal (ICES, 2023a). The NIGFS is part of the IBTS programme coordinated by ICES, which aims to collect data on the size, abundance, and distribution of juvenile and adult ground fish. Surveys in the Irish Sea have been carried out bi-annually since 1992 using a Rock Hopper otter trawl (ICES, 2017). Sampling stations are stratified by water depth and seabed type. Data were obtained for the years 2012-2022 covering ICES statistical rectangles 36E3 and 36E4 to characterise assemblages within the array area, ECC and adjacent areas of the ZoIs as well as ICES rectangles 35E3, 35E4, 37E3 and 37E4 to obtain data for fish assemblages for the outer sections of the ZoIs (Figure 2-2); and*
- ***Beam Trawl Survey (BTS) data****: Offshore beam trawl surveys are carried out annually in the Irish Sea as part of the IBTS programme to provide time-series data for the monitoring of commercial flatfish species (de Boois et al., 2023). Samples are collected in September of each year using a 4 m commercial beam trawl. Sampling follows a fixed station design with positions primarily chosen in areas fished for European plaice (Pleuronectes platessa) and various species of sole (Soleidae) (de Boois et al., 2023). As for the NIGFS data, survey data were downloaded for ICES rectangles 36E3, 36E4, 35E5, 35E4, 37E3 and 37E4 covering the years 2012-2022 (ICES, 2023b; Figure 2-2).*

And be replaced with:

Regional IBTS datasets used to inform the baseline were:

- **Northern Ireland Groundfish Survey (NIGFS) data:** To identify common fish and elasmobranch species within the wider western Irish Sea region, data collected during the NIGFS were sourced from the DATRAS (Database of Trawl Surveys) data portal (ICES, 2025a). The NIGFS is part of the IBTS programme coordinated by ICES, which aims to collect data on the size, abundance, and distribution of juvenile and adult ground fish. Surveys in the Irish Sea have been carried out bi-annually since 1992 using a Rock Hopper otter trawl (ICES, 2017). Sampling stations are stratified by water depth and seabed type. Data were obtained for the years 2014-2024 covering ICES statistical rectangles 36E3 and 36E4 to characterise assemblages within the array area, ECC and adjacent areas of the ZoIs as well as ICES rectangles 35E3, 35E4, 37E3 and 37E4 to obtain data for fish assemblages for the outer sections of the ZoIs (Figure 2 2); and

- **Beam Trawl Survey (BTS) data:** Offshore beam trawl surveys are carried out annually in the Irish Sea as part of the IBTS programme to provide time-series data for the monitoring of commercial flatfish species (de Boois et al., 2023). Samples are collected in September of each year using a 4 m commercial beam trawl. Sampling follows a fixed station design with positions primarily chosen in areas fished for European plaice (*Pleuronectes platessa*) and various species of sole (Soleidae) (de Boois et al., 2023). As for the NIGFS data, survey data were downloaded for ICES rectangles 36E3, 36E4, 35E3, 35E4, 37E3 and 37E4 covering the years 2014-2024 (Figure 2-2).

There are no further changes to this section. Refer to Paragraph 2.3.5 of Appendix 13.1 in the 2024 EIAR.

Site-specific surveys

The key change for this section is the inclusion of reference to the benthic ecology survey conducted in 2025 (AQUAFACT, 2025). The following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Site-specific benthic ecology characterisation surveys were conducted across the array area in May 2022 (Natural Power, 2022) and within the ECC in September and October 2022 (Natural Power, 2023). These surveys were carried out to characterise the benthic subtidal environment within the offshore development area, and to identify the occurrence and distribution of any benthic habitats or species of conservation importance. The surveys included the collection of DDVs to characterise epibenthic assemblages and benthic grabs to describe the infaunal communities and to analyse the physical nature of the seafloor. Records of fish and shellfish obtained during these surveys were used to complement the fish and shellfish baseline characterisation. Particle Size Analysis (PSA) data collected during the grab surveys were used to identify seabed areas with the potential to support sandeel Ammodytes spp. and herring Clupea harengus spawning.

And be replaced with:

Site-specific benthic ecology characterisation surveys were conducted across the array area in May 2022 (Natural Power, 2022) and within the ECC in September and October 2022 (Natural Power, 2023). These surveys were carried out to characterise the benthic subtidal environment within the offshore development area, and to identify the occurrence and distribution of any benthic habitats or species of conservation importance. The surveys included the collection of DDVs to characterise epibenthic assemblages and benthic grabs to describe the infaunal communities and to analyse the physical nature of the seafloor. Records of fish and shellfish obtained during these surveys were used to complement the fish and shellfish baseline characterisation. Particle Size Analysis (PSA) data collected during the grab surveys were used to identify seabed areas with the potential to support sandeel *Ammodytes* spp. and herring *Clupea harengus* spawning. An additional benthic ecology survey covering the array area and the ECC was also conducted in October 2025 (AQUAFACT, 2025) to validate the data assumptions presented in the EIAR. The additional granulometric data obtained from this survey were used to complement the characterisation of sandeel and herring spawning habitats.

Spawning and nursery grounds data analysis

There are no changes to this section. Refer to Paragraph 2.3.7 of Appendix 13.1 in the 2024 EIAR.

Spawning and nursery ground data analysis

There are no changes to this section. Refer to Paragraphs 2.3.8 to 2.3.10 of Appendix 13.1 in the 2024 EIAR.

Larval data analysis

This section has been expanded upon to describe the processing and analysis of the Northern Irish Herring Larvae Survey (NINEL) data, which have been used to provide further information on the distribution of active herring spawning grounds in the Irish Sea. The NINEL data were made publicly available through the ICES Eggs and Larvae database after the drafting of the 2024 EIAR and have therefore been incorporated into this document to ensure the baseline is informed by the most current and up-to-date data, satisfying RFI Section 11 (b). The following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

AEPM data were downloaded from the Cefas Data Hub (Cefas, 2000) to provide the most recent available description of larval distribution for Atlantic cod Gadus morhua, whiting Merlangius merlangus and plaice in the Irish Sea. Point data for larval and egg counts were extracted for each species and used to create heat maps using Geographic Information Systems (GIS), following methodologies as described by Boyle and New (2018). A radius of approximately 10 km was used to amalgamate the point data and to allow sufficient overlap between the points, allowing the extrapolation of the data to provide heat maps covering the full AEPM survey area. The heat maps show spawning 'hot spots' for cod, whiting and plaice across the study area, thereby providing a data set to support the identification of active spawning grounds for these species. The heat map data are presented alongside the Coull et al. (1998) and Ellis et al. (2010, 2012) maps in Section 3.2.

And be replaced with:

AEPM data were downloaded from the Cefas Data Hub (Cefas, 2000) to provide the most recent available description of larval distribution for Atlantic cod *Gadus morhua*, whiting *Merlangius merlangus* and plaice in the Irish Sea. NINEL data were also downloaded from the ICES Eggs and Larvae database (AFBI, 2024) to inform the distribution of herring larvae across the northern Irish Sea. These data are used as a proxy to determine the distribution of active spawning grounds. Point data for larval and egg counts were extracted for each species and used to create heat maps using Geographic Information Systems (GIS), following methodologies as described by Boyle and New (2018). A radius of approximately 10 km was used to amalgamate the point data and to allow sufficient overlap between the points, allowing the extrapolation of the data to provide heat maps covering the full AEPM and NINEL survey areas. The heat maps show spawning 'hot spots' for cod, whiting, plaice and herring relative to the study area, thereby providing a data set to support the identification of active spawning grounds for these species. The heat map data for cod, whiting and plaice are presented alongside the Coull et al. (1998) and Ellis et al. (2010, 2012) data in Section 3.2 of Appendix 13.1 in the 2024 EIAR. The heat maps for herring, as informed by the most recent NINEL data, are described and provided below in Section 3.2.

Identification of potential sandeel and herring spawning areas

This section has been updated to include reference to the benthic ecology surveys conducted in 2025 (AQUAFACT, 2025) in order to satisfy RFI Sections 11 (b) and 11 (c). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Site-specific PSA data collected within the array area and ECC during the benthic baseline characterisation surveys (Natural Power, 2022, 2023) were analysed to identify seabed substrates suitable to support sandeel and herring spawning. Additional PSA data collected across the ZoIs were sourced from Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR, 2023) to provide a more comprehensive cover of the fish and shellfish study area. The PSA data were processed in accordance with the methodologies described by Reach et al. (2013) and Latto et al. (2013). Both methodologies are widely accepted by the offshore industry sector and are now routinely used as an approved approach to support EIAs for offshore wind developments in UK waters.

And be replaced with:

Site-specific PSA data collected within the array area and ECC during the benthic baseline characterisation surveys (Natural Power, 2022, 2023 and AQUAFACT, 2025) were analysed to identify seabed substrates suitable to support sandeel and herring spawning. Additional PSA data collected across the ZoIs were sourced from Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR, 2023) to provide a more comprehensive cover of the fish and shellfish study area. The PSA data were processed in accordance with the classifications described by Reach et al. (2013) and Latto et al. (2013). Both methodologies are widely accepted by the offshore industry sector and are now routinely used as an approved approach to support EIAs for offshore wind developments in UK waters.

As requested under Section 11 (c) of the RFI, to reflect the inclusion of the revised heatmapping methodologies (Kyle-Henney et al., 2024; Reach et al., 2024) which were made publicly available after the 2024 EIAR, the following text has been added to this section, after Table 2-3 of Appendix 13.1. This text is additional and does not replace any text in Appendix 13.1.

Following the Kyle-Henney et al. (2024) and the Reach et al. (2024) methodologies, potential herring and sandeel spawning substrates and active spawning areas have been further investigated through the overlap of data layers deemed to be indicative of spawning habitats and activity. Where a greater number of data sources overlap, a higher 'heat' has been applied, which represents a higher confidence that the seabed may be suitable for spawning. The data utilised to construct the heat map are summarised in Table A2.2 and Table A2.3 for herring and sandeel respectively, alongside their representative confidence scores (based on a confidence assessment of the data)

Table A2.2 Herring Heat Mapping Layers and Confidence Scores

Data Source	Confidence Score	Justification for the confidence score
EMODnet (preferred sediments)	0.5	Herring are known to prefer Gravel and sandy Gravel substrates for spawning and also have a marginal habitat sediment class of gravelly Sand. The Folk sediment classification therefore provides a spatially variable indicator to spawning and hence the level of confidence is also variable.
EMODnet (marginal sediments)	0.75	
NINEL data	0.1	Highest (normalised) confidence score assigned as it is a direct indicator of presence/absence of larvae at the surface of the spawning habitat.
Identified historic spawning grounds (Coull et al., 1998)	0.75	Whilst the Coull et al. (1998) layer has specifically been developed to show spawning grounds, the methods reported do not detail what types of data were used, lowering the normalised confidence score assigned. In addition, this is a relatively old dataset.
Vessel Monitoring System (VMS) data (pelagic gear types)	0.75	VMS data can only distinguish fishing activity by gear type, and it is therefore the gear types that have been used to indicate potential spawning grounds. Since each gear type targets multiple species rather than Atlantic herring alone, the likelihood of this providing a reliable indication of spawning grounds is limited. Nonetheless, pelagic gear usage may serve as a useful indicator of Atlantic herring spawning populations and, by extension, the possible presence of spawning grounds.

Table A2.3 Sandeel Heat Mapping Layers and Confidence Scores

Data Source	Confidence Score	Justification for the confidence score
EMODnet (preferred sediments)	0.25	Sandeel are known to prefer Sand, slightly gravelly Sand, and gravelly Sand substrates for spawning; and also have a marginal habitat sediment class of sandy Gravel. The Folk sediment classification therefore provides a spatially variable indicator to spawning and hence the level of confidence applied to the EMODnet sediment data is also variable.
EMODnet (marginal sediments)	0.75	
Identified historic spawning grounds (Coull et al., 1998)	0.75 (omitted as Coull et al. (1998) do not provide a layer for sandeel spawning grounds within the Irish Sea)	Whilst the Coull et al. (1998) layer has specifically been developed to show spawning grounds, the methods reported do not detail what types of data were used, lowering the normalised confidence score assigned. In addition, this is a relatively old dataset.
VMS data (demersal gear types)	0.75 (omitted as no targeted sandeel fishery operates within the region and demersal fishing activity within the study area is mainly targeting Nephrops grounds, which are unsuitable for sandeel)	VMS data can only distinguish fishing activity by gear type, and it is therefore the gear types that have been used to indicate potential spawning grounds. Since each gear type targets multiple species rather than sandeel alone, the likelihood of this providing a reliable indication of spawning grounds is limited. Nonetheless, the use of demersal gear types may serve as a useful indicator of sandeel spawning populations and, by extension, the possible presence of spawning grounds.
OneBenthic sandeel presence layer	0.25	The OneBenthic (2023) Sandeel Presence data represent direct observations of sandeel occurrence, providing direct evidence of potential supporting habitat rather than inferred information. However, caution is required when interpreting apparent absences, as this dataset is likely to underrepresent true sandeel presence due to limitations in the sampling methodology and limited data for areas outside UK waters.
Wright et al. (2019) sandeel spawning grounds	0.5 (omitted as no spatial overlap with Wright et al. (2019) data layer)	Whilst the Wright et al. (2019) layer has specifically been developed to show potential supporting habitat for sandeel, the methods reported do not detail what types of data were used, lowering the confidence.
Eastern Sea Fisheries Joint Committee (ESFJC) (now the Eastern IFCA) sandeel fishery data	0.75 (omitted as no spatial overlap with ESFJC data layer)	The ESFJC dataset provides mapped boundaries of sandeel regions, along with associated information such as month and season of presence, fishing gear used, and the relative importance of each area to targeted or occasional fisheries (among other attributes). As these datasets are specific to sandeel, and adult distributions are considered a reasonable indicator of spawning areas, they are relevant for

Data Source	Confidence Score	Justification for the confidence score
		informing potential spawning grounds. However, the 'importance' field (targeted vs. occasional fisheries) reflects presence rather than confidence in presence (and therefore is unsuitable for confidence scoring), and no other parameters are suitable for this purpose. Consequently, a uniform confidence level is being applied.

The outputs of this heatmapping exercise are presented in Figure A3.6 and Figure A3.7 for sandeel and herring, respectively.

There are no further changes to this section.

Data Limitations

There are no changes to this section. Refer to paragraphs 2.3.18 to 2.3.22 of Appendix 13.1 in the 2024 EIAR.

2.4 Nature Conservation

There are no changes to this section. Refer to paragraphs 2.4.1 to 2.4.4 of Appendix 13.1 in the 2024 EIAR.

3 Baseline Environment

3.1 Fish and Shellfish Assemblages

There are no changes to this section. Refer to paragraphs 3.1.1 to 3.1.2 of Appendix 13.1 in the 2024 EIAR.

Regional context

NIGFS and BTS data

This section has been updated to include reference to the most recent data collected during the IBTS. Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

Data collected during the NIGFS (ICES, 2023a) and offshore BTS (ICES, 2023b) between 2012 and 2022 suggest that the ground fish assemblages within the study area are dominated by whiting, haddock Melanogrammus aeglefinus, common dab Limanda limanda, and plaice. Other species caught in higher numbers were Norway pout Trisopterus esmarkii, grey gurnard Eutrigla gurnardus, common dragonet Callionymus lyra, poor cod Trisopterus minutus, Witch flounder Glyptocephalus cynoglossus, American plaice Hippoglossoides platessoides, sand gobies Pomatoschistus, and scaldfish Arnoglossus laterna. Species that were typically caught during the trawl surveys albeit in lower numbers included Atlantic cod, spotted dragonet Callionymus maculatus, the white anglerfish Lophius piscatorius and various species of sole.

The distribution of these species within the study area is likely to vary in response to a range of environmental factors such as substratum type, water depth and temperature.

The most abundant pelagic fish species caught during the NIGFS were Atlantic herring and European sprat followed by Atlantic mackerel Scomber scombrus and Atlantic horse mackerel Trachurus trachurus. These species undertake long migrations between winter feeding and summer spawning grounds.

Among the elasmobranch species recorded within the study area, small-spotted catshark Scyliorhinus canicula was typically the most abundant. Other elasmobranch species regularly recorded in these surveys were nursehound Scyliorhinus stellaris, spiny dogfish Squalus acanthias, starry smooth-hound Mustelus asterias, thornback ray Raja clavata, spotted ray Raja montagui and the cuckoo ray Leucoraja naevus. Species caught infrequently included tope Galeorhinus galeus, broadnose skate Bathyraja brachyorops, and the small-eyed ray Raja microocellata. The blonde ray Raja brachyura was relatively common within ICES rectangle 35E4 overlapping the ZoI to the south of the offshore development area but was only occasionally recorded within the remaining sections of the study area.

Decapod crustaceans and epibenthic molluscs commonly recorded in ICES rectangles 36E3 and 36E4 during the BTS include common whelk Buccinum undatum, king scallop Pecten maxiumus, queen scallop Aequipecten opercularis, brown crab Cancer pagurus, velvet crab Necora puber, angular crab Goneplax rhomboides, swimming crabs Liocarcinus spp., and the Norway lobster Nephrops norvegicus (hereafter referred to as Nephrops). Less regular recorded species included the long-clawed porcelain crab Pisidia longicornis, hermit crabs Pagurus spp., spider crabs Inachus spp., and shrimp species including the brown shrimp Crangon crangon.

And be replaced with:

Data collected during the NIGFS (ICES, 2025a) and offshore BTS (ICES, 2025b) between 2014 and 2024 suggest that the ground fish assemblages within the study area are dominated by whiting, haddock *Melanogrammus aeglefinus*, common dab *Limanda limanda*, and plaice. Other species caught in higher abundances were Norway pout *Trisopterus esmarkii*, grey gurnard *Eutrigla gurnardus*, common dragonet *Callionymus lyra*, poor cod *Trisopterus minutus*, red gurnard *Chelidonichthys cuculus*, American plaice *Hippoglossoides platessoides*, and thickback sole *Microchirus variegatus*. Many other species were regularly caught during the trawl surveys albeit in lower numbers, such as Witch flounder *Glyptocephalus cynoglossus*, Atlantic cod, blue whiting *Micromesistius poutassou*, tub gurnard *Chelidonichthys lucerna*, spotted dragonet *Callionymus maculatus*, scaldfish *Arnoglossus laterna*, the white anglerfish *Lophius piscatorius*, and various flatfish species. The distribution of these species within the study area is likely to vary in response to a range of environmental factors such as substratum type, water depth and temperature.

The most abundant pelagic fish species caught during the NIGFS were Atlantic herring and European sprat followed by Atlantic mackerel *Scomber scombrus* and Atlantic horse mackerel *Trachurus trachurus*. These species undertake long migrations between winter feeding and summer spawning grounds.

Among the elasmobranch species recorded within the study area during the NIGFS, small-spotted catshark *Scyliorhinus canicula* was typically the most abundant. Other elasmobranch species regularly recorded in these surveys albeit in lower numbers were spotted ray *Raja montagui,* spiny dogfish *Squalus acanthias,* thornback ray *Raja clavata,* starry smooth-hound *Mustelus asterias,* nursehound *Scyliorhinus stellaris* and the cuckoo ray *Leucoraja naevus*. Species caught less frequently included tope *Galeorhinus galeus* and the blonde ray *Raja brachyura*

Larger decapod crustaceans and epibenthic molluscs recorded include Norway lobster *Nephrops norvegicus* (hereafter referred to as *Nephrops*), Queen scallop *Aequipecten opercularis,* King scallop *Pecten maximus,* velvet swimming crab *Necora puber, ,* pink shrimp *Pandalus montagui, harbour* crab *Polybius depurator,* hermit crabs *Pagurus* spp., brown crab *Cancer pagurus,* spider crabs *Inachus* spp., long-clawed porcelain crab *Pisidia longicornis* and shrimp species including the brown shrimp *Crangon crangon*. The NIGFS survey also recorded European squid *Alloteuthis subulata* and veined squid *Loligo forbesii* in high abundances. Locally large numbers of the auger shell *Turritellinella tricarinata* were recorded in 2023.

There are no further changes to this section.

Industry-specific surveys

There are no changes to this section. Refer to Paragraphs 3.1.8 to 3.1.10 of Appendix 13.1 in the 2024 EIAR.

Site-Specific Surveys

This section has been updated to include reference to the benthic ecology surveys conducted in 2025 (AQUAFACT, 2025). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Site-specific baseline benthic ecology characterisation surveys were conducted across the array area and the ECC in May 2022 (Natural Power, 2022) and September and October 2022 (Natural Power, 2023), respectively. Both surveys consisted of DDV to capture footage of the seafloor environment and associated epifaunal species as well as grab samples to analyse the sediment composition and help identify seabed areas suitable for sandeel and herring spawning (see Section 3.2 Spawning Grounds). Sampling stations were selected randomly from each of the substrate types predicted to occur within the survey areas. In addition, a series of video transects were run across the south-west corner of the array area to sample seabed areas predicted to contain coarser substrate (Natural Power, 2022).

And be replaced with:

Site-specific baseline benthic ecology characterisation surveys were conducted across the array area and the ECC in May 2022 (Natural Power, 2022), September and October 2022 (Natural Power, 2023) and October 2025 (AQUAFACT, 2025). All surveys consisted of DDV to capture footage of the seafloor environment and associated epifaunal species as well as grab samples to analyse the sediment composition and help identify seabed areas suitable for sandeel and herring spawning (see Section 3.2 Spawning Grounds). Sampling stations for the benthic characterisation surveys conducted in 2022 were selected randomly from each of the substrate types predicted to occur within the survey areas. In addition, a series of video transects were run across the south-west corner of the array area to sample seabed areas predicted to contain coarser substrate (Natural Power, 2022). The sampling stations for the 2025 surveys were based on a subset of the previous sampling points from the 2022 baseline surveys and the known sediment types (AQUAFACT, 2025).

There are no further changes to this section.

Array Area

This section has been updated to include reference to the benthic ecology surveys conducted in 2025 (AQUAFACT, 2025). Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

The analysis of the DDV footage and grab samples from the site-specific benthic ecology surveys indicate that the seabed across the array area is generally homogenous, being characterised by soft sediments, with finer muddy sediment classified as 'Subtidal Mud' to the north and increasing coarser material classified as 'Subtidal Mixed Sediment' to the south (Natural Power, 2022). Burrows of Nephrops were observed in the finer sediments across the northern portion of the array area.

Very low numbers of fish and shellfish were observed within the imagery collected over 'Subtidal Mud', with flatfish (Pleuronectiformes), dragonet (Callionymidae) and unidentified fish and decapod crustaceans being recorded. At the southern stations dragonet, cod fishes (Gadidae) and unidentified fish species were seen. At the stations sampled at the south-west corner of the array area, fish and shellfish were more abundant, with higher numbers of flatfish and dragonet recorded. Other species frequently seen were cod fishes including haddock, gurnards (Triglidae) and other (unidentified) fish species. Less frequently seen species were scallops (Pectinidae), hermit crabs (Paguridae), crabs (Brachyura) and unidentified elasmobranch species.

And be replaced with:

The analysis of the DDV footage and grab samples from the site-specific benthic ecology surveys undertaken in 2022, indicated a generally homogenous seabed across the array area, characterised by soft sediments, with finer muddy sediment classified as 'Subtidal Mud' to the north and increasing coarser material classified as 'Subtidal Sands' and 'Subtidal Mixed Sediment' to the south (Natural Power, 2022). Burrows of *Nephrops* were observed at most sites, particularly within the finer sediments across the northern portion of the array area (Natural Power, 2022). Grab sampling results from the 2025 survey recorded comparable substrates, primarily Sandy Mud (sM) and Muddy Sand (mS) across the array stations. The substrates identified across the array area are reflective of low energy conditions, conducive to deposition of fines (AQUAFACT, 2025). Video footage from the 2025 survey confirmed evidence of *Nephrops* burrowing at all sampled sites, indicating their widespread distribution throughout the array area (AQUAFACT, 2025).

Very low numbers of fish and shellfish were observed within the imagery collected over 'Subtidal Mud', with flatfish (Pleuronectiformes), dragonet (*Callionymidae*) and unidentified fish and decapod crustaceans being recorded (Natural Power, 2022)). At the southern stations dragonet, cod fishes (*Gadidae*) and unidentified fish species were seen. At the stations sampled at the south-west corner of the array area, fish and shellfish were more abundant, with higher numbers of flatfish and dragonet recorded. Other species frequently seen were cod fishes including haddock, gurnards (*Triglidae*) and other (unidentified) fish species. Less frequently seen species were scallops (*Pectinidae*), hermit crabs (*Paguridae*), crabs (Brachyura) and unidentified elasmobranch species.

There are no further changes to this section.

ECC

This section has been updated to include reference to the benthic ecology surveys conducted in 2025 (AQUAFACT, 2025). Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

The site-specific benthic ecology survey across the ECC (Natural Power, 2023) indicates a homogenous seabed characterised predominantly by sand with small but increasing proportions of silt and gravel evident further offshore. At the four stations furthest inshore, muddy sand substrates with small burrows were recorded as the broadscale habitat 'Subtidal Sand'. The remaining stations sampled were recorded as the broadscale habitat 'Subtidal Mud'. Here, burrows including complex burrow systems (e.g., Nephrops) were observed at most sites.

Fish observed throughout the ECC included flatfish, cod fishes, dragonet, gurnards and unidentified species. Shellfish observed included frequent sightings of decapod crustaceans (Paguridae and Brachyura including brown crab, angular crab and the masked crab Corystes cassivelaunus), and some instances of Nephrops, scallop, sea snails (Buccinidae) and bivalve siphons. Higher numbers of both Brachyura and bivalve siphons were recorded at the stations furthest inshore.

And be replaced with:

The 2023 site-specific benthic ecology survey across the ECC (Natural Power, 2023) indicated a homogenous seabed characterised predominantly by sand with small but increasing proportions of silt and gravel evident further offshore. At the four stations furthest inshore, muddy sand substrates with small burrows were recorded as the broadscale habitat 'Subtidal Sand'. The remaining stations sampled were recorded as the broadscale habitat 'Subtidal Mud'. Here, burrows including complex burrow systems (e.g., *Nephrops*) were observed at most sites.

The 2025 benthic ecology survey recorded comparatively higher concentrations of fines in samples along the ECC, with > 10% of mud recorded at all sampled stations. These findings are considered illustrative of the moderate energy environment of the area, with the observed changes in sediment composition likely to be related to natural mobility in the shallow waters of the ECC that are more susceptible to local climatic conditions. During the 2022 survey (Natural Power, 2023), fish observed throughout the ECC included flatfish, cod fishes, dragonet, gurnards and unidentified species. Shellfish observed included frequent sightings of decapod crustaceans (Paguridae and Brachyura including brown crab, angular crab and the masked crab *Corystes cassivelaunus*), and some instances of *Nephrops*, scallop, sea snails (*Buccinidae*) and bivalve siphons. Higher numbers of both Brachyura and bivalve siphons were recorded at the stations furthest inshore. In 2025 (AQUAFACT, 2025), species observed in the nearshore sections of the ECC included crabs and shells of razor clams, while further offshore, auger shells (*Turritellinealla tricarinata*), gurnard and plaice were recorded. As in 2022, *Nephrops* burrows were recorded across the offshore sections of the ECC.

There are no further changes to this section.

3.2 Spawning and Nursery Grounds

There are no changes to this section. Refer to Paragraph 3.2.1 of Appendix 13.1 in the 2024 EIAR.

Spawning Grounds

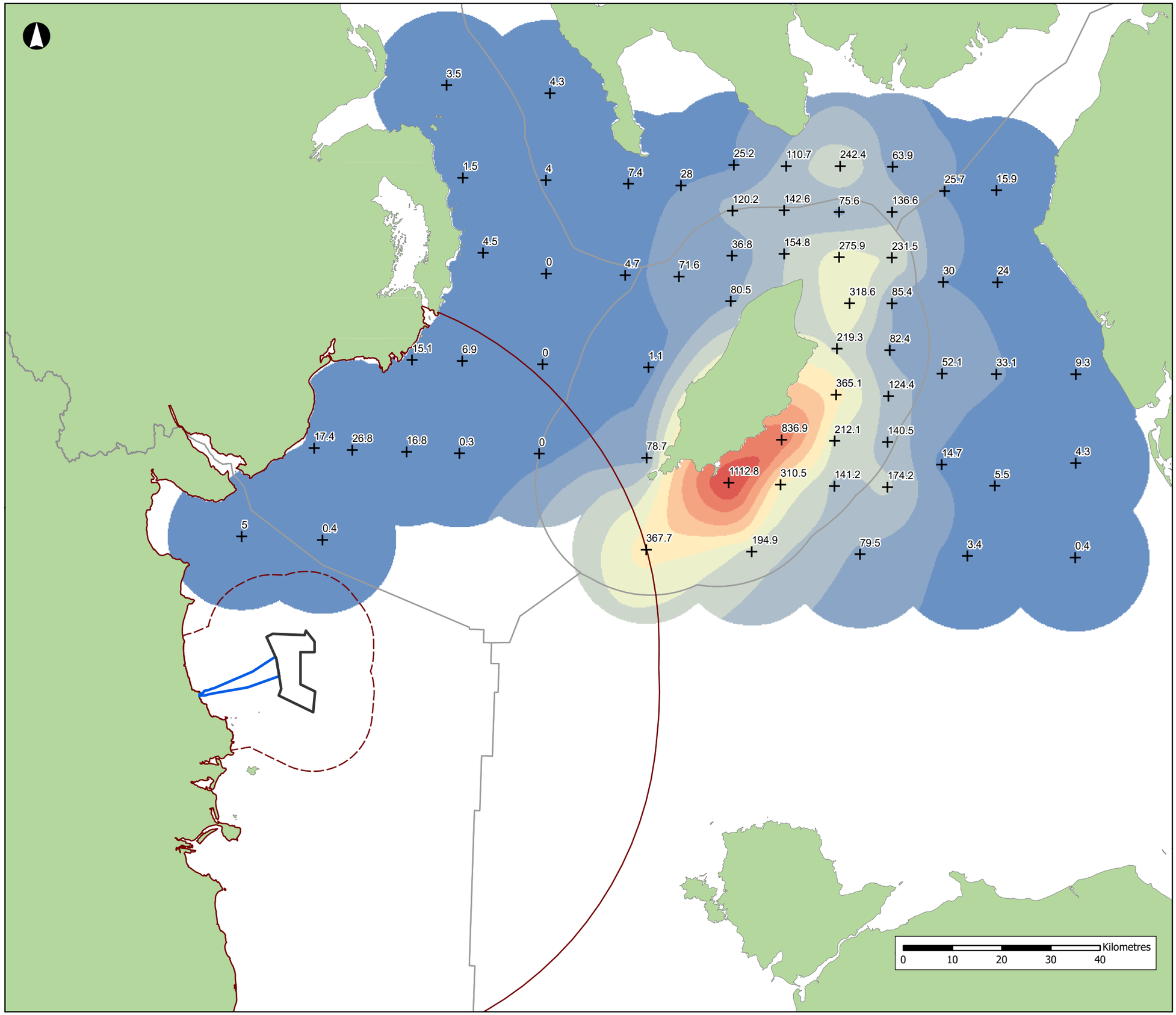
This section has been updated to include reference to the inclusion of the NINEL herring larval data, and heat maps of the larval densities recorded in the surveys, used as a proxy to determine the location of active spawning grounds for herring. Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

Larval densities for cod, plaice and whiting, as recorded within the Irish Sea AEPM plankton surveys (Cefas, 2000) have been presented as heatmaps in Figure 3-8. These data indicate areas of high intensity spawning of cod, plaice and whiting within the study area.

And be replaced with:

Larval densities for cod, plaice and whiting, and herring, as recorded within the Irish Sea AEPM plankton surveys (Cefas, 2000) have been presented as heatmaps in Figure 3-8. These data indicate areas of high intensity spawning of cod, plaice and whiting within the study area. Cumulative larval densities for herring, as recorded in the NINEL surveys (2016-2023) (AFBI, 2024) are presented as a heatmap in Figure A3.1, with annual larval densities shown in Figure A3.2 to Figure A3.3. These data indicate the presence of ongoing herring spawning to the north of the proposed development in outer Dundalk Bay and across the traditional Mourne spawning ground (see also Section 3.4 Atlantic herring) as well as to the east, south and north of the Isle of Man, with the highest larval densities typically found in the coastal waters to the south and south-east of the Island.

To illustrate the distribution of larval densities relative to the proposed development, Figure A3.1 to Figure A3.3 have been provided. These figures follow from Figure 3-8 of Appendix 13.1 in the 2024 EIAR, are additional and do not replace any figures in Appendix 13.1 in the 2024 EIAR.



Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
EEZ Boundary
Herring Larvae Sampling Grid

Northern Irish Northeastern Larvae Survey - Larval Abundance per m²

- 0 - 30
- 30.1 - 90
- 90.1 - 160
- 160.1 - 235
- 235.1 - 320
- 320.1 - 440
- 440.1 - 570
- 570.1 - 720
- 720.1 - 870
- 870.1 - 1,115

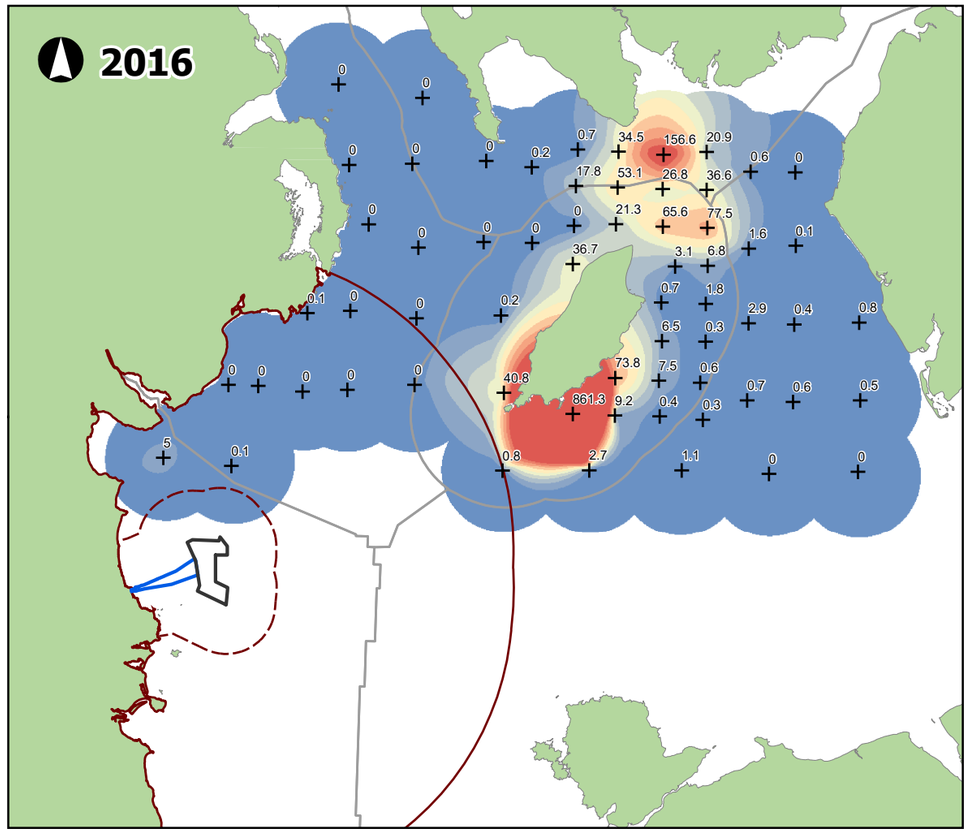
NISA
North Irish Sea Array

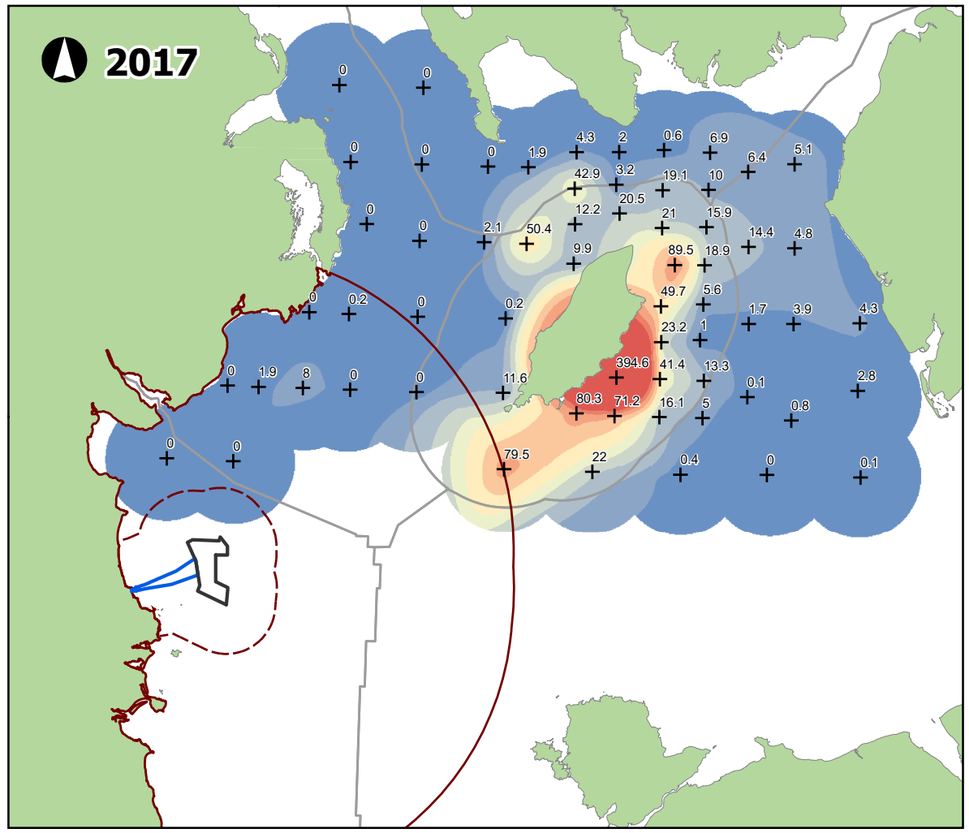
ARUP GoBe

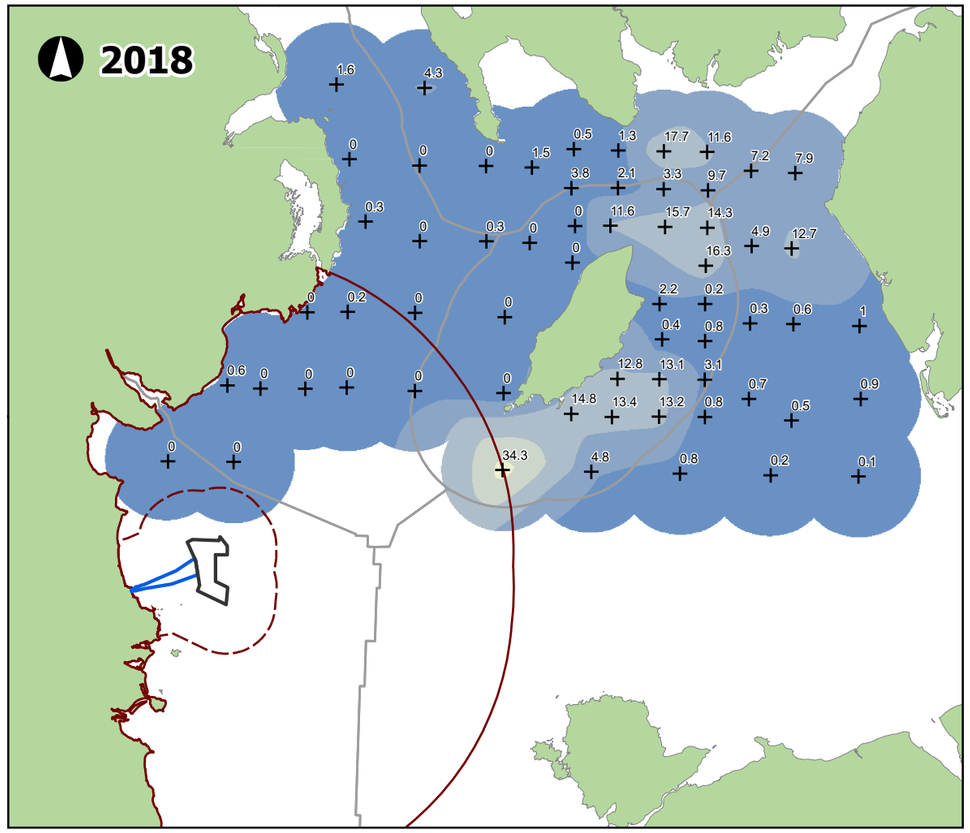
Project
North Irish Sea Array Offshore Wind Farm

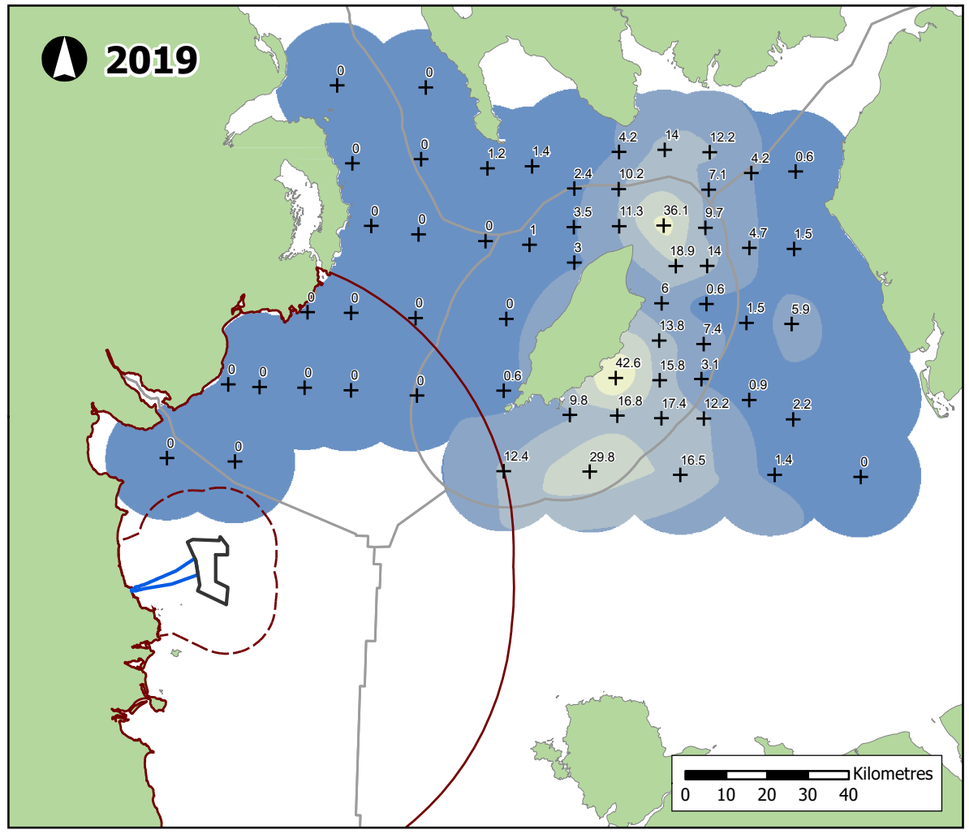
Figure Title
Heapmap of NINEL herring larval densities (2016-2023)

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:** **A3.1**
Scale: 1:750,000 @A3	
Status: Issue	









Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
EEZ Boundary
Herring Larvae Sampling Location

Larval Abundace per m²

- 0 - 4
- 4.1 - 11
- 11.1 - 20
- 20.1 - 30
- 30.1 - 40
- 40.1 - 55
- 55.1 - 70
- 70.1 - 90
- 90.1 - 110
- >110

NISA
North Irish Sea Array

ARUP GoBe

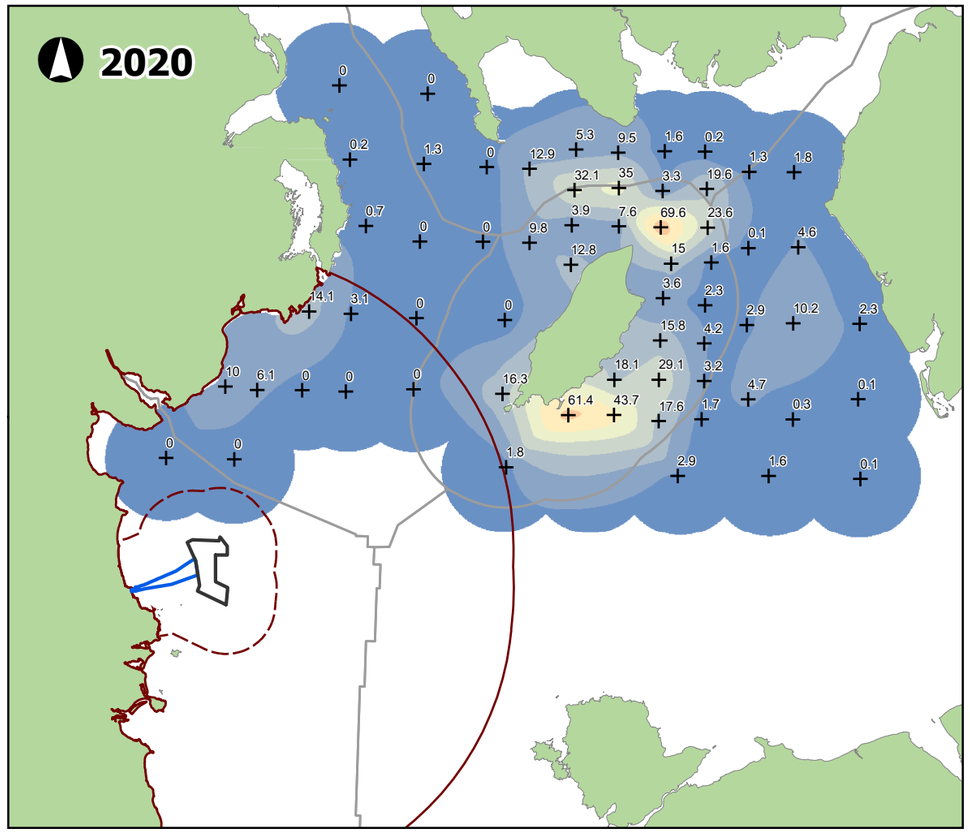
Project

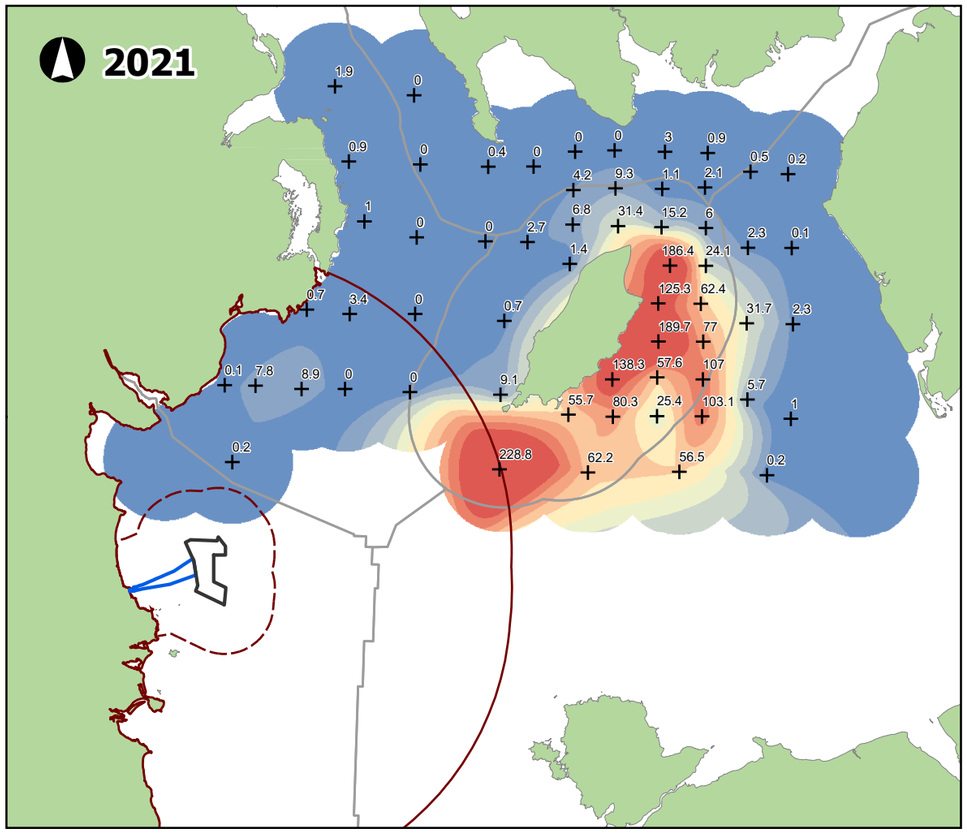
North Irish Sea Array Offshore Wind Farm

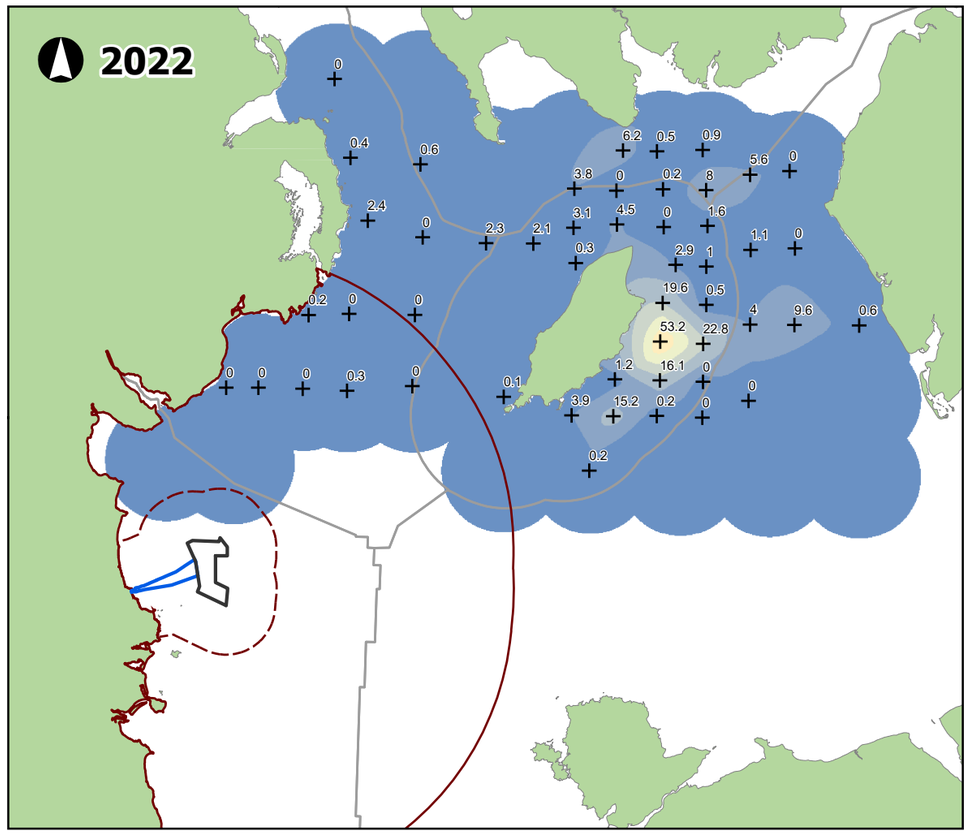
Figure Title

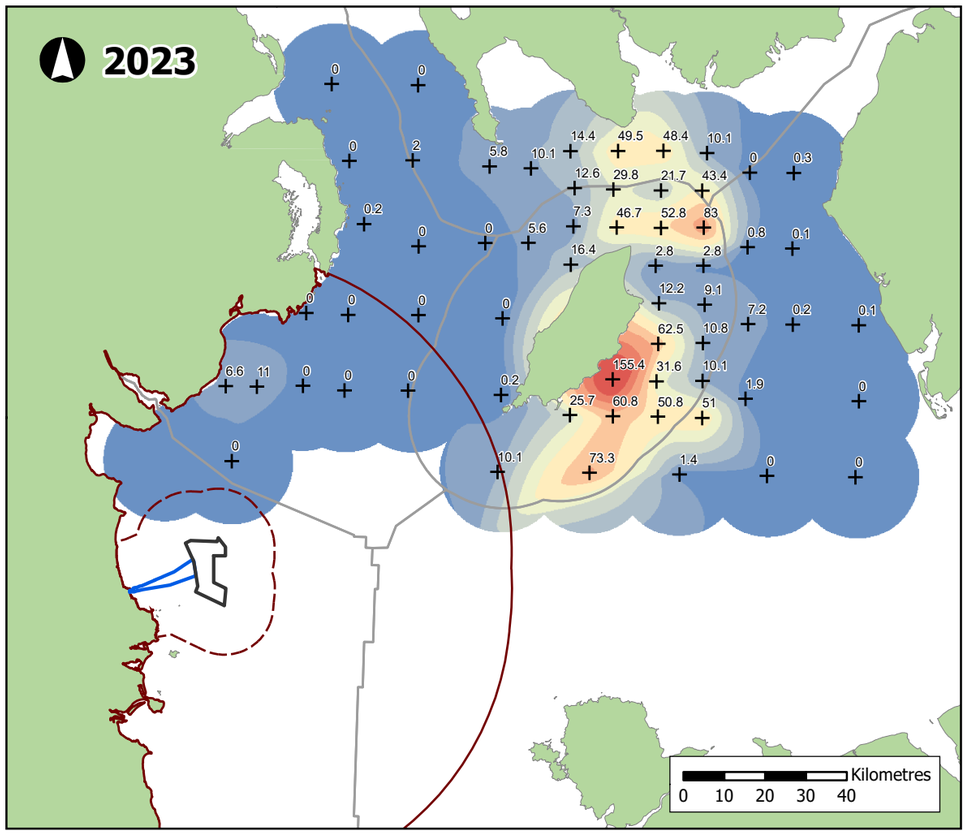
Heapmap of NINEL herring larval densities (2016-2019)

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:** A3.2
Scale: 1:1,500,000 @A3	
Status: Issue	









Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
EEZ Boundary
Herring Larvae Sampling Location

Larval Abundace per m²

- 0 - 4
- 4.1 - 11
- 11.1 - 20
- 20.1 - 30
- 30.1 - 40
- 40.1 - 55
- 55.1 - 70
- 70.1 - 90
- 90.1 - 110
- >110

NISA
North Irish Sea Array

ARUP GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Heapmap of NINEL herring larval densities (2020-2023)

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:** **A3.3**
Scale: 1:1,500,000 @A3	
Status: Issue	

The key change for this section is the inclusion of reference to the benthic ecology surveys conducted in 2025 (AQUAFACT, 2025) and PSA data from the British Geological Survey (BGS) collected within UK waters (BGS, 2015), which have been added to supplement the habitat suitability analysis for sandeel. Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

To support the identification of suitable sandeel habitat within the study area, PSA data collected during site-specific surveys (Natural Power, 2022, 2023) and INFOMAR surveys (INFOMAR, 2023) were categorised following the methodology described in Latto et al. (2013). The site-specific sediment data showed a seabed characterised by sandy Muds and muddy Sands within the array area, indicating 'Unsuitable' conditions for sandeel spawning (Figure 3 9). 'Unsuitable' sediments for sandeel spawning are also located in the north-eastern corner of the ECC, where muddy Sands and Mixed sediments with mud concentrations greater than 10% were recorded. Sediments within the remaining ECC sampling area were categorised as Sands that are either 'Suitable' or 'Sub-Prime' for sandeel spawning (Figure 3 9). Within the sedimentary ZoI (12 km), INFOMAR (2023) seabed substrate data indicate 'Suitable' areas for sandeel spawning to the north and south of the ECC between the array area and the coastline. In addition, the data indicate 'Preferred' ('Prime' and 'Sub-Prime') and 'Marginal' ('Suitable') sandeel habitats to be present to the south of the array area within the southern part of the underwater noise ZoI.

And be replaced with:

To support the identification of suitable sandeel habitats within the study area, PSA data collected during site-specific surveys across the array area and ECC (Natural Power, 2022, 2023 and AQUAFACT, 2025) were categorised following the methodology described in Latto et al. (2013). These data were supplemented with granulometric data collected by INFOMAR (2023) and BGS (2015) to identify areas suitable for sandeel within the wider study area. The site-specific sediment data from the 2022 and 2023 benthic ecology surveys showed a seabed characterised by sandy Muds[1] and muddy Sands within the array area, indicating 'Unsuitable' conditions for sandeel spawning (Figure A3.4). 'Unsuitable' sediments for sandeel spawning are also located in the north-eastern corner of the ECC, where muddy Sands and Mixed sediments with mud concentrations greater than 10% were recorded. Sediments within the remaining ECC sampling area were categorised as Sands that are either 'Suitable' or 'Sub-Prime' for sandeel spawning (Figure A3.4). Sampling undertaken in 2025 along the ECC recorded a comparatively higher concentration of fines, with >10% of mud recorded in all the samples. On account of the higher percentage of fines recorded, the stations sampled along the ECC in 2025 are therefore classified as 'unsuitable' for sandeel. These findings are considered representative of relatively high seabed mobility in the area, with observed changes in the proportion of sand/muds likely to be related to natural mobility in the shallow waters of the ECC that are more susceptible to local climatic conditions. Within the sedimentary ZoI (12 km), INFOMAR (2023) seabed substrate data indicate 'Suitable' areas for sandeel spawning to the north and south of the ECC between the array area and the coastline. In addition, the data indicate 'Preferred' ('Prime' and 'Sub-Prime') and 'Marginal' ('Suitable') sandeel habitats to be present to the south of the array area within the southern part of the underwater noise ZoI.

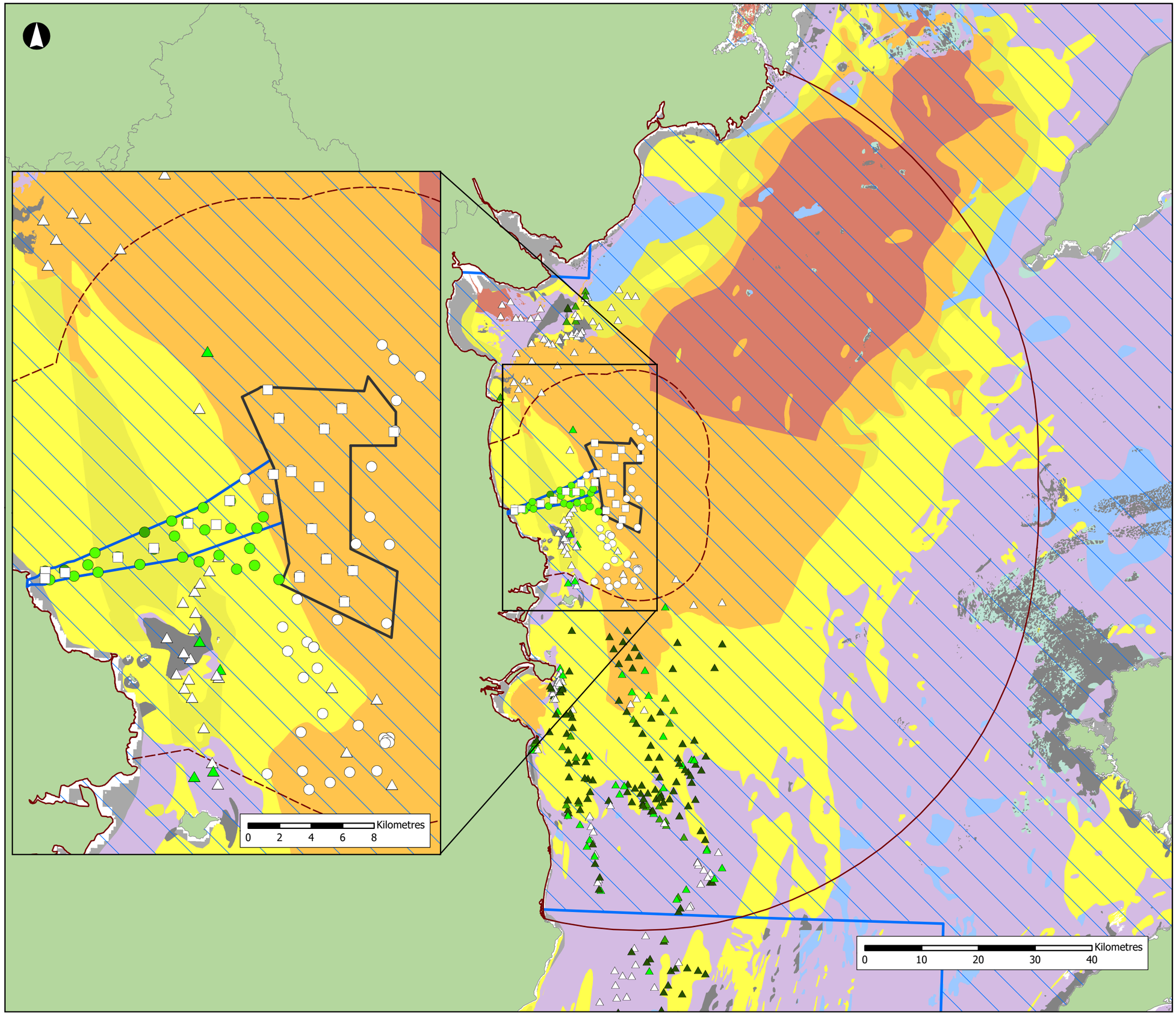
This section has also been amended to include reference to the NINEL herring larval data and the heat mapping outputs, and further evidence is provided on the separate spawning components of the Mourne herring spawning ground. Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Potential suitable substrates for herring spawning were also defined using site-specific and publicly available PSA data, following the methodology described by Reach et al. (2013). The results of this analysis suggest that sediments within the array area and ECC are unsuitable for herring spawning, based on the analysis of substrate type, being dominated by Sands and Muds (Figure 3 10). Besides 'Preferred' substrates across Dundalk Bay (Figure 3 1), sediments suitable for herring spawning may be present across the coarser sediments along nearshore areas within the southern portion of the study area, including the coastal areas of Howth. Whether such areas are ultimately used by herring for spawning depends on additional factors, including small-scale seabed geomorphology and local wind and flow conditions (Frost and Diele, 2022). Larval data taken across the Irish Sea suggests that these are not used as key spawning sites (Dickey-Collas et al., 2001; ICES, 1994). The nearest known active herring spawning ground (the Mourne ground) is located off County Down and the northern sections of County Louth in the underwater noise ZoI to the north of the array area (Dickey-Collas et al., 2001; ICES, 2023c) (Figure 3 1).

And be replaced with:

Potential suitable substrates for herring spawning were defined using site-specific and publicly available PSA data, following the methodology described by Reach et al. (2013). The results of this analysis suggest that sediments within the array area and ECC are unsuitable for herring spawning, based on the analysis of substrate type, being dominated by Sands and Muds (Figure A3.5). To the north of the ECC, off County Down and the northern sections of County Louth, 'Preferred' spawning substrates for herring are present within the Mourne and Dundalk Bay herring spawning grounds (Figure A3.5), within the underwater noise ZoI. Whether such areas are ultimately used by herring for spawning depends on multiple factors, including small-scale seabed geomorphology and local wind and flow conditions (Frost and Diele, 2022). Larval data taken across the Irish Sea suggests that spawning primarily occurs to the east, south and north of the Isle of Man, with the highest larval densities typically found in the coastal waters to the south and south-east of the Island (Figure A3.1 to Figure A3.3). Low intensity spawning does occur within the Mourne and Dundalk Bay spawning grounds, although spawning intensity appears to show interannual variability. A study by AFBINI in 2007 (Service, 2007 (as cited in BlueWise Marine (2024))) investigated the location of the Mourne and Dundalk Bay spawning grounds relative to a proposed aggregate extraction area on the County Down coastline (north of Carlingford Lough extending to Outer Dundrum Bay), through the analysis of herring larval distribution data (collected during the 2007 AFBINI larvae survey (AFBINI Research Cruise CO4507)), and photographic data. The report suggests that spawning within the spawning grounds occurs intermittently between September and early January (Molloy, 1979), although the report also refers to the presence of two discrete spawning components. Accounts from skippers reportedly confirmed that herring fishing in the area occurs in mid-August to early March with spawning fish captured throughout that period, implying that there may be Autumn/Winter and Winter/Spring spawning components in the area, comprising two discrete spawning stocks, one which moves from the north Irish Sea southwards and one from the Celtic Sea northwards (BlueWise Marine, 2024).

Figures 3-9 and 3-10 of Appendix 13.1 in the 2024 EIAR have also been updated to include the new benthic ecology survey PSA data (AQUAFACT, 2025), which have been categorised in accordance with the Latto et al. (2013) and Reach et al. (2013) spawning habitat categories for sandeel and herring respectively. In addition, BGS PSA data collected within UK waters and categorised in accordance with Latto et al. (2013) have been added to Figure 3-9 of Appendix 13.1 in the 2024 EIAR to supplement the habitat suitability analysis for sandeel. Therefore, Figures 3-9 and 3-10 of Appendix 13.1 in the 2024 EIAR shall be deleted and replaced with Figure A3.4 and Figure A3.5 respectively.



Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km

Data Sources

INFOMAR (2022)
Natural Power (2022, 2023)
Aquafact (2025)

Sandeel Habitat Suitability (Latto et al., 2013)

Prime, Preferred
Sub-Prime, Preferred
Suitable, Marginal
Unsuitable

Spawning Grounds (Ellis et al., 2012)

Sandeel, Low Intensity

Seabed Substrate (EUSeaMap2021)

Fine mud
Muddy sand
Sandy mud
Sand
Sediment
Mixed sediment
Coarse substrate
Rock or other hard substrata
Mussel beds
Seabed

NISA

North Irish Sea Array

ARUP GoBe

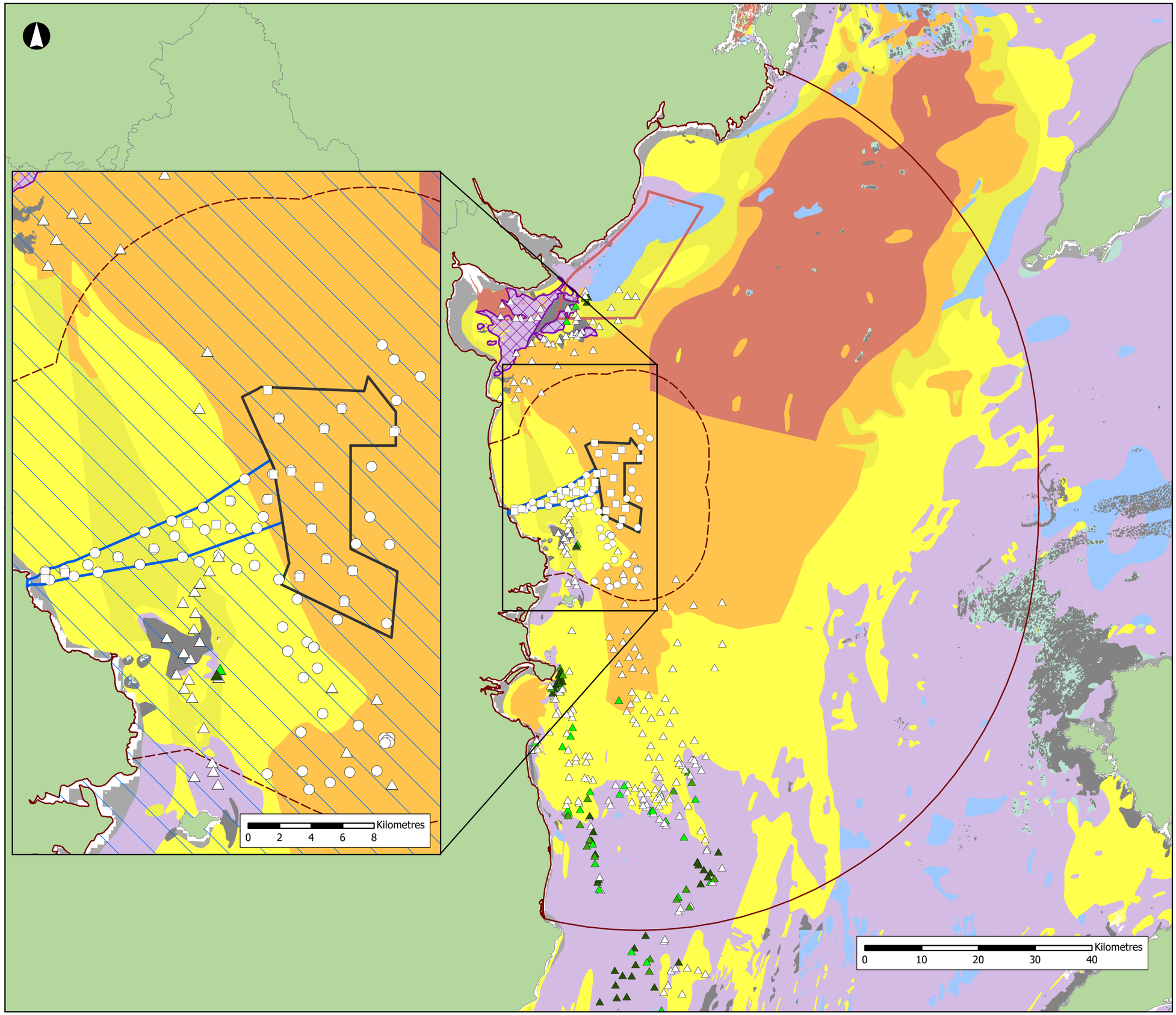
Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Seabed Substrate and Sandeel Habitat Suitability. Based on EUSeaMap Broadscale Habitats and Sediment Data sourced from INFOMAR and Site-Specific Grab Sampling

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:**
Scale: 1:650,000 @A3	**A3.4**
Status: Issue	



Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
Traditional Mourne Herring Spawning Area (Dickey-Collas et al., 2001)
Potential Suitable Herring Spawning Ground (Dundalk Bay) (MPA Advisory Group, 2023)

Data Sources

INFOMAR (2022)
Natural Power (2022, 2023)
Aquafact (2025)

Herring Habitat Suitability (Reach et al., 2013)

Prime, Preferred
Sub-Prime, Preferred
Suitable, Marginal
Unsuitable

Seabed Substrate (EUSeaMap2021)

Fine mud
Muddy sand
Sandy mud
Sand
Sediment
Mixed sediment
Coarse substrate
Rock or other hard substrata
Mussel beds
Seabed

NISA
North Irish Sea Array

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Project

North Irish Sea Array Offshore Wind Farm

Figure Title

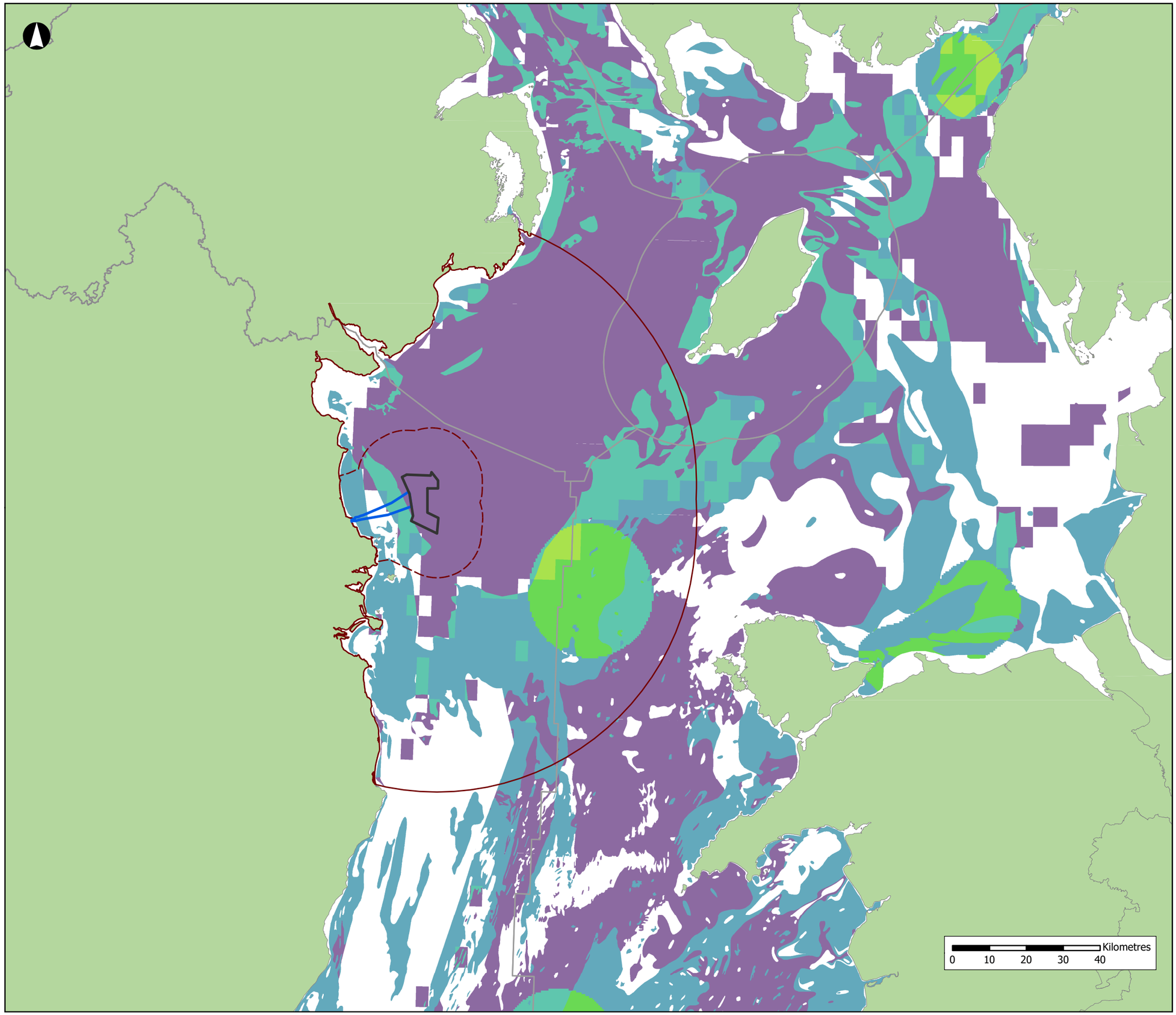
Seabed Substrate and Herring Habitat Suitability. Based on EUSeaMap Broadscale Habitats and Sediment Data sourced from INFOMAR and Site-Specific Grab Sampling

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:**
Scale: 1:650,000 @A3	**A3.5**
Status: Issue	

The spatial distribution of areas suitable for herring and sandeel spawning has been further investigated in accordance with the Kyle-Henney et al. (2024) and Reach et al. (2024) spawning potential heat mapping methodologies (which were made publicly available after the 2024 EIAR). The outputs of the heat mapping exercise are presented in Figure A3.6 for sandeel and Figure A3.7 for herring. These figures are additional and do not replace any figures in Appendix 13.1 in the 2024 EIAR. The following text has therefore also been added to describe these outputs; this text follows paragraph 3.2.10 and does not replace any text in Appendix 13.1 in the 2024 EIAR.

The heat mapping of spawning potential for sandeel (Figure A3.6) indicates that the array area is unsuitable for sandeel (areas shown in white) due to the presence of muddy substrates across the array and the lack of any other indicators of sandeel presence. The offshore ECC transits an area assigned as low-medium spawning potential (normalised score 0.2-0.3), due to the presence of slightly coarser substrates (as informed by the EUSeaMap (2021) broadscale marine habitat mapping). Sandeel records broadly occur in areas characterised by sandy and coarse substrates identified as preferred and suitable habitat within the sediment mapping (areas shown as medium spawning potential in Figure A3.6 with normalised scores of 0.05-0.075 and 0.1-0.2, respectively). This alignment with predicted suitable habitats is consistent with the well-established association between sandeel and particular sediment types.

The heat mapping of spawning potential for herring (Figure A3.7) indicates that neither the array area nor the ECC lie within an area of importance for herring, with low spawning potential areas present along the eastern boundary of the array area (normalised score of 0.75-0.5), and areas of no spawning potential value across the array and ECC, due to an absence of data indicative of spawning activity available. As evident in Figure A3.7, areas of higher spawning potential for herring are present to the north of the array area, within the identified Mourne and Dundalk spawning grounds (score of 0.2-0.03), and to the south, southeast and northeast of the Isle of Man (score of 0.05-0.021).



Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
EEZ Boundary

Potential Supporting Habitat Confidence

0.013 - 0.02 (Higher)
0.02 - 0.03
0.03 - 0.04
0.04 - 0.05
0.05 - 0.075
0.075 - 0.1
0.1 - 0.2
0.2 - 0.3
0.3 - 0.4
0.4 - 0.5
0.5 - 0.75 (Lower)

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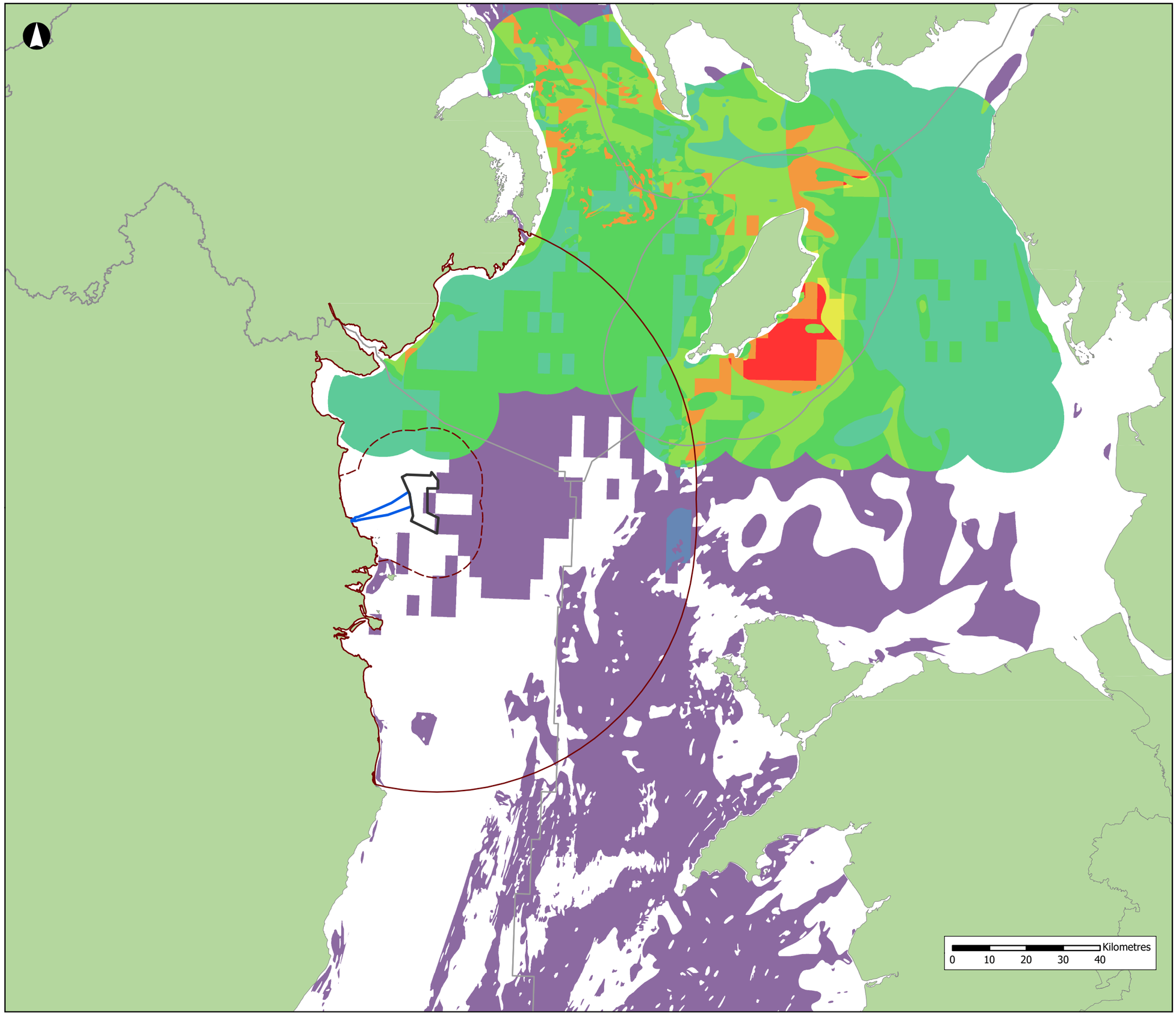
Figure Title

Sandeel Spawning Confidence Heat Map

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:**
Scale: 1:1,000,000 @A3	**A3.6**
Status: Issue	



Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
EEZ Boundary

Potential Supporting Habitat Confidence

- 0.021 - 0.03 (Higher)
- 0.03 - 0.04
- 0.04 - 0.05
- 0.05 - 0.075
- 0.075 - 0.1
- 0.1 - 0.2
- 0.2 - 0.3
- 0.3 - 0.4
- 0.4 - 0.5
- 0.5 - 0.75 (Lower)

NISA

North Irish Sea Array

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Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Herring Spawning Confidence Heat Map

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:**
Scale: 1:1,000,000 @A3	**A3.7**
Status: Issue	

Nursery Grounds

There are no changes to this section. Refer to paragraphs 3.2.11 and 3.2.12 of Appendix 13.1 in the 2024 EIAR.

3.3 Species of Commercial Importance

There are no changes to this section. Refer to paragraphs 3.3.1 to 3.3.6 of Appendix 13.1 in the 2024 EIAR.

3.4 Fish ecology

Atlantic cod

This section has been updated to include further information on the conservation status of Atlantic cod in European waters and to provide the most recent data on the condition of the stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Cod are currently classed as Vulnerable on the IUCN Red List (IUCN, 2023). They are also assessed as being threatened and/or declining across the OSPAR region III, on account of significant declines in stocks over the last decades and very low rates of recovery. The most recent stock assessment for cod populations in the Irish Sea suggests that stock biomass in 2023 remains low, with the spawning-stock biomass (SSB) below the estimated maximum sustainable SSB threshold (Marine Institute, 2023). No direct cod fishery is currently permitted within the Irish Sea and catch quota are exclusively set for landings from bycatch. In 2021, landings of cod were mainly associated with vessels targeting demersal fish (37%) and Nephrops (33%) (Marine Institute, 2022).

And be replaced with:

Atlantic cod are currently assessed as Least Concern at the European scale (Cook et al., 2015a) and Vulnerable at the Global scale (Sobel, 1996a) using IUCN criteria. They are also assessed as being threatened and/or declining across the OSPAR region III, on account of significant declines in stocks over the last decades and very low rates of recovery. The most recent stock assessment for Atlantic cod populations in the Irish Sea suggests that stock biomass in 2025 remained low, with the spawning-stock biomass (SSB) below the estimated maximum sustainable SSB threshold (Marine Institute, 2025). No direct Atlantic cod fishery is currently permitted within the Irish Sea. In 2021, landings of cod were mainly associated with vessels targeting demersal fish (37%) and *Nephrops* (33%) (Marine Institute, 2022).

There are no further changes to this section.

Haddock

This section has been updated to include further information on the conservation status of haddock and to provide the most recent data on the condition of the stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Haddock are currently classed as Vulnerable on the global IUCN Red List and as of Least Concern on the European Red List (IUCN, 2023). The stock size of haddock in the Irish Sea remains high and fishing mortality is low, indicating that the haddock population is in a good state and harvested sustainably (Marine Institute, 2023).

And be replaced with:

Haddock are currently assessed as Least Concern at the European scale (Cook et al., 2015b) and Vulnerable at the Global scale (Sobel, 1996b) using IUCN criteria. In 2024, the spawning stock size of haddock in the Irish Sea remained high and fishing mortality was assessed to be below the Maximum Sustainable Yield (F_{MSY}) threshold, indicating that the haddock population was in a good state and harvested sustainably (Marine Institute, 2023, 2024). A 2025 stock assessment for haddock in the Irish Sea is currently not available due to the absence of updated and quality-assured reference points (Marine Institute, 2025). In the Irish Sea, landings of haddock are currently mainly associated with the Nephrops fishery, with most of the catches being discarded in 2024 (Marine Institute, 2025).

There are no further changes to this section.

Whiting

This section has been updated to provide the most recent data on the condition of the whiting stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Catches of whiting in the waters around Ireland usually form part of a mixed bottom trawl fishery, with the majority of whiting caught as discards in the Nephrops fishery (Marine Institute, 2023). Stock levels in the Irish Sea are considered to be in poor condition; stock size is extremely low and has been since the early 1990s and shows no sign of recovery (Marine Institute, 2023).

And be replaced with:

No targeted fishing of whiting is currently permitted in the Irish Sea, with the majority of whiting caught as discards in the *Nephrops* fishery (Marine Institute, 2023, 2025). The whiting stock size is extremely low and has been since the early 1990s and shows no sign of recovery (Marine Institute, 2023, 2025).

There are no further changes to this section.

Plaice

This section has been updated to include further information on the condition of the plaice stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Irish vessels typically catch plaice as minor bycatch in mixed fisheries targeting Nephrops and haddock. Landings in plaice from Irish fleets have decreased in recent years, and fishing mortality of the Irish Sea stock remains below the Maximum Sustainable Yield (FMSY) threshold, indicating that the stock is harvested sustainably (Marine Institute, 2023).

And be replaced with:

Irish vessels typically catch plaice as minor bycatch in mixed fisheries targeting skates, rays, *Nephrops* and haddock (Marine Institute, 2025). Landings in plaice from Irish fleets have decreased in recent years, remaining well below set quota (Marine Institute, 2025). Fishing mortality of the Irish Sea stock remains just below the Maximum Sustainable Yield (F_{MSY}) threshold, indicating that the stock is harvested sustainably (Marine Institute, 2025). However, spawning stock biomass has decreased over the last 10 years, with a slight increase observed in 2025 (Marine Institute, 2025).

There are no further changes to this section.

American plaice

There are no changes to this section. Refer to paragraphs 3.4.14 to 3.4.15 of Appendix 13.1 in the 2024 EIAR.

Common sole

This section has been updated to include further information on the condition of the common sole stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

In the Irish Sea, common sole are mainly fished as a minor bycatch in mixed fisheries targeting rays and plaice in the St. George's Channel and, to a lesser extent, in the Nephrops fishery. Most landings are from beam trawlers; however, an increasing proportion of landings are from otter trawl fleets (Marine Institute, 2023). Recent biomass estimates suggest that the Irish Sea stock is currently below levels required to support the maximum sustainable yield, following low recruitment and increasing fishing mortality (Marine Institute, 2023).

And be replaced with:

In the Irish Sea, common sole are mainly fished as a minor bycatch in mixed fisheries targeting rays and skates in the St. George's Channel and, to a lesser extent, in the *Nephrops* fishery. Most landings are from beam trawl fleets; however, an increasing proportion of landings are from otter trawls (Marine Institute, 2025). Biomass estimates from 2022 suggested that the Irish Sea sole stock was below levels required to support the maximum sustainable yield, following low recruitment and increasing fishing mortality (Marine Institute, 2023). More recent data and the introduction of new reference points and a new stock assessment model suggest that the stock is now harvested sustainably (Marine Institute, 2024, 2025).

There are no further changes to this section.

Lemon sole

There are no changes to this section. Refer to Paragraphs 3.4.18 to 3.4.19 of Appendix 13.1 in the 2024 EIAR.

Witch flounder

There are no changes to this section. Refer to paragraphs 3.4.20 to 3.4.22 of Appendix 13.1 in the 2024 EIAR.

Anglerfish

This section has been updated to include further information on the condition of anglerfish in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

ICES stock assessments for white anglerfish indicate that the stock is currently fished sustainably, with fishing mortality currently below the F_{MSY} threshold for achieving the Maximum Sustainable Yield; the stock size increased since 2004, peaked in 2020, and has been fluctuating around the 2020 stock size since (Marine Institute, 2023). Much of the Irish anglerfish landings come from highly mixed fisheries, where they are caught together with megrim, Nephrops, haddock, hake and other species (Marine Institute, 2023).

And be replaced with:

ICES stock assessments for white anglerfish in the Celtic Sea and Bay of Biscay indicate that the stock is currently fished sustainably, with fishing mortality currently below the F_{MSY} threshold for achieving the Maximum Sustainable Yield. The stock size increased since 2004, peaked in 2020, and has been fluctuating around the 2020 stock size since (Marine Institute, 2025). In Irish waters, anglerfish are mainly caught together with megrim, *Nephrops*, haddock, hake and other species as part of highly mixed fisheries (Marine Institute, 2025).

Atlantic herring

This section has been updated to include reference to the discrete spawning components of the Mourne spawning ground, and the NINEL herring larval data and in response to RFI Section 11 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Herring are known to display spawning site fidelity, returning to distinct spawning grounds (Frost and Diele, 2022). The Irish Sea herring have historically been divided into two adult spawning populations: (1) the Manx component with spawning grounds located to the east and north of the Isle of Man, and (2) the Mourne component with spawning grounds along coastal areas off County Louth and County Down (ICES, 1994; Figure 3 1). A decline in spawning activity of the Mourne herring population was reported by Dickey-Collas et al. (2001), who, based on larvae data, estimated that the Mourne spawning stock accounted for about 3% of the total production of Irish Sea herring larvae in the 1990s. More recent larval data collected as part of the annual Northern Irish Northeastern Larvae Survey (NINEL) suggests ongoing spawning activity along the Irish and North Irish coasts over the traditional Mourne herring ground (e.g., ICES, 2022c, 2023c), with the overall contributions of the Mourne herring to the Irish Sea spawning stock remaining low (e.g., ICES 2022d). The continued operation of a small local (traditional) gillnet fishery on the Mourne herring, aimed at adult fish that spawn off the Northern Irish eastern coast, further confirm the presence of active spawning beds over the traditional Mourne herring ground (ICES, 2022d).

Both Irish Sea herring populations spawn in autumn between September to November (peak spawning in late September or early October), with a small proportion of the spawning stock likely to continue spawning during the winter months until January/February (Dickey-Collas et al., 2001; ICES, 1994). Following spawning, adult herring disperse to offshore feeding grounds across the northern Irish Sea from October/November until the following April/May (ICES, 1994). Tagging studies suggest that some adults migrate northwards and join the feeding aggregations on the Scottish west coast (Geffen et al., 2011; ICES, 1994). Juvenile herring concentrate in coastal nursery areas in the northern Irish Sea (Campenella and van der Kooij, 2021), which overlap with the offshore development area, the sedimentary ZoI and some parts of the underwater noise ZoI (Figure 3.11). Herring were recorded in relatively high abundances across the study area and western Irish Sea in the NIGFS (ICES, 2023a).

And be replaced with:

Herring are known to display spawning site fidelity, returning to distinct spawning grounds (Frost and Diele, 2022). The Irish Sea herring has historically been divided into two adult spawning populations: (1) the Manx component with spawning grounds located to the east and north of the Isle of Man, and (2) the Mourne component with spawning grounds along coastal areas off County Louth and County Down (ICES, 1994; Figure A3.1). However, a study by AFBINI, suggested that the Mourne spawning ground could consist of two discrete spawning components. A decline in spawning activity of the Mourne herring population was reported by Dickey-Collas et al. (2001), who, based on larvae data, estimated that the Mourne spawning stock accounted for about 3% of the total production of Irish Sea herring larvae in the 1990s. More recent larval data collected as part of the annual Northern Irish Northeastern Larvae Survey (NINEL) suggests intermittent spawning activity along the Irish and North Irish coasts over the traditional Mourne herring ground (Figure A3.1, Figure A3.2, Figure A3.3), with the overall contributions of the Mourne herring to the Irish Sea spawning stock remaining low (e.g., ICES 2022c). The continued operation of a small local (traditional) gillnet fishery on the Mourne herring, aimed at adult fish that spawn off the Northern Irish eastern coast, further confirm the presence of active spawning beds over the traditional Mourne herring ground (ICES, 2022c).

The Manx herring spawning component spawn in autumn between September to November (peak spawning in late September or early October), with a small proportion of the spawning stock likely to

continue spawning during the winter months until January/February (Dickey-Collas et al., 2001; ICES, 1994). The Mourne spawning component also spawn during these months, although evidence suggests the presence of two separate spawning components in the area, an Autumn/Winter component and a Winter/Spring spawning component. Following spawning, adult herring disperse to offshore feeding grounds across the northern Irish Sea from October/November until the following April/May (ICES, 1994). Tagging studies suggest that some adults migrate northwards and join the feeding aggregations on the Scottish west coast (Geffen et al., 2011; ICES, 1994). Juvenile herring concentrate in coastal nursery areas in the northern Irish Sea (Campenella and van der Kooij, 2021), which overlap with the offshore development area, the sedimentary ZoI and some parts of the underwater noise ZoI (Figure 3.11). Herring were recorded in relatively high abundances across the study area and western Irish Sea in the NIGFS (ICES, 2025a).

There are no further changes to this section.

Sprat

There are no changes to this section. Refer to Paragraphs 3.4.29 of Appendix 13.1 in the 2024 EIAR.

Atlantic mackerel

This section has been updated to provide the most recent data on the condition of the Atlantic mackerel stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Atlantic mackerel in the Irish Sea are part of the north-east Atlantic stock, which is considered to form a single spawning population (Marine Institute, 2023). The biomass of the stock has been decreasing since 2015, although it remains above the biomass threshold that would trigger amendments to management measures (Marine Institute, 2023)

And be replaced with:

Atlantic mackerel in the Irish Sea are part of the north-east Atlantic stock, which is considered to form a single spawning population (Marine Institute, 2023). The spawning stock biomass has been decreasing since 2014, and fishing mortality has been increasing since 2019. The introduction of a new stock assessment model suggests that the SSB of the stock is now below the MSY biomass reference point, which has resulted in a substantial decrease in the Total Allowable Catch for the north-east Atlantic mackerel stock (Marine Institute, 2025).

There are no further changes to this section.

Atlantic horse mackerel

This section has been updated to provide the most recent data on the condition of the Atlantic horse mackerel stock in the Irish Sea. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Stock levels of Atlantic horse mackerel in Irish waters and the wider north-east Atlantic have been low since the early 2000s, with the current SSB remaining below levels required to support a sustainable fishery (Marine Institute, 2023). Therefore, no direct fishery for Atlantic horse mackerel is currently permitted.

And be replaced with:

Stock levels of Atlantic horse mackerel in Irish waters and the wider north-east Atlantic have been low since the early 2000s, with the current SSB estimate remaining slightly above levels required to support a sustainable fishery (Marine Institute, 2025). Catch quota remain low to support the recovery of the stock (Marine Institute, 2025).

There are no further changes to this section.

Prey species and food webs

This section has been updated to strengthen the evidence base on forage fish and other important prey species within the study area. The following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Several of the fish and shellfish species present in the study area are important prey items for top marine predators including elasmobranchs, piscivorous fish, seabirds, and marine mammals (e.g., Cummins et al., 2019; Hernandez-Milian et al., 2015). Small planktivorous species such as sandeel, sprat and herring act as important link between zooplankton and top predators (Frederiksen et al., 2006). Sandeels, for example, constitute an important food source for sea birds, such as tern, puffins, kittiwakes and razorbills. They are also preyed upon by marine mammals, such as seals and harbour porpoise, piscivorous fish, such as herring, cod, whiting, and sea trout. Other fish species important in the diet of marine mammals include whiting, mackerel and various clupeoids (e.g., Hernandez-Milian et al., 2015).

And be replaced with:

Several of the fish and shellfish species present in the study area are important prey items for top marine predators including elasmobranchs, piscivorous fish, seabirds, and marine mammals (e.g., Cummins et al., 2019; Hernandez-Milian et al., 2015). Small planktivorous species such as sandeel, sprat and herring are important components of marine food webs, mediating the transfer of energy and organic matter from lower to higher trophic levels (Frederiksen et al., 2006; Lindegren et al., 2018). Sandeels, for example, constitute an important food source for sea birds, such as terns, puffins, kittiwakes, European shag, common guillemots and razorbills (Cummins et al., 2019; Furness, 2002; Green, 2017; Wanless et al., 1998). They are particularly important to seabirds during the breeding season, making up a large proportion of chick diet (Green, 2017). Sandeel are also preyed upon by marine mammals, such as harbour seals (Sharples et al., 2009), grey seals (Hammond et al., 1994) and harbour porpoise (Jansen et al., 2013), as well as piscivorous fishes, including gadoids (e.g., cod, whiting, poor cod and haddock), mackerel, flatfish (e.g., sole, plaice, dab and flounder), anglerfish, and salmon (Engelhard et al., 2013; Furness, 2002; Green, 2017; Haugland et al., 2006; Laurenson and Priede, 2005). Besides sandeel, marine mammals prey on a wide range of other species, such as whiting, cod, mackerel, gobies, salmon, herring, sprat, flatfish and cephalopods, depending on species and prey availability (e.g., Hernandez-Milian et al., 2015; Jansen et al., 2013; Sharples et al., 2009). Other fish species important in the diet of seabirds are sprat and herring (Cummins et al., 2019; Rindorf et al., 2000). Juvenile whiting were identified as an important prey species for several elasmobranch species in the western Irish Sea (Marine Protected Area Advisory Group, 2023).

There are no further changes to this section.

3.5 Shellfish ecology

Nephrops

Ecology

There are no changes to this section. Refer to paragraphs 3.5.1 to 3.5.4 of Appendix 13.1 in the 2024 EIAR.

Distribution in the study area

This section has been updated to include reference to the benthic survey undertaken in 2025 (AQUAFACT, 2025). The following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

The site-specific DDV surveys indicated the presence of Nephrops burrows along most of the ECC (Natural Power, 2023) and within the northern section of the array area where sandy muds predominated (Natural Power, 2022). Faunal communities here were assigned the biotopes 'Burrowing megafauna Maxmuelleria lankesteri in circalittoral fine mud' (SS.SMu.CfiMu.MegMax) or 'Seapens and burrowing megafauna in circalittoral fine mud' (SS.Smu.CfiMu.SpnMeg) (Figure 3 21). In stable muds, these biotopes contain distinctive megafauna including Nephrops.

And be replaced with:

The site-specific DDV surveys indicated the presence of *Nephrops* burrows along most of the ECC (Natural Power, 2023) and within the northern section of the array area where sandy muds predominated (Natural Power, 2022). Similar findings were observed in DDV from the 2025 survey (AQUAFACT, 2025), which identified evidence of *Nephrops* burrowing at all sampled sites across the array area. Faunal communities here were assigned the biotopes 'Burrowing megafauna *Maxmuelleria lankesteri* in circalittoral fine mud' (SS.SMu.CfiMu.MegMax) or 'Seapens and burrowing megafauna in circalittoral fine mud' (SS.Smu.CfiMu.SpnMeg) (Figure 3 21). In stable muds, these biotopes contain distinctive megafauna including *Nephrops*.

There are no further changes to this section. Refer to paragraphs 3.5.6 of Appendix 13.1 in the 2024 EIAR.

Fishing grounds

This section has been updated to provide the most recent data on the condition of *Nephrops* within FU15. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b), and 11 (e). Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

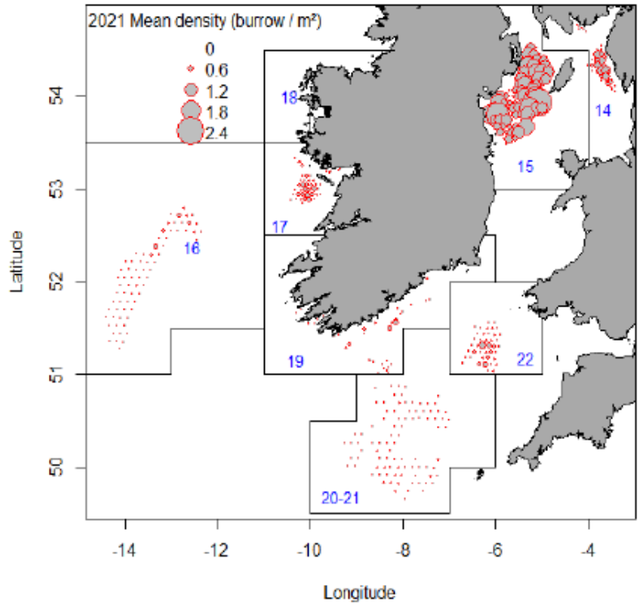
Nephrops is commercially exploited throughout its geographic range. The western Irish Sea stock (assessed and managed as Functional Unit (FU) 15) supports one of the most productive Nephrops fisheries in Irish waters, yielding landings of 5,000-10,000 tonnes annually over the last two decades. The current stock of FU15 is estimated to contain about 4,500 million individuals (ICES, 2022e), which is more than ten times larger than the abundance estimate for the neighbouring stock in FU14 (Irish Sea East) (ICES, 2022f).

Nephrops within FU15 are mainly fished by otter trawlers from the Irish and Northern Ireland demersal fleets (ICES, 2022a). Most landings are taken from ICES rectangle 36E4, which overlaps the array area and the offshore section of the ECC (Figure 3 22). Current stock abundance estimates for FU15 are well above the Maximum Sustainable Yield (MSY) reference trigger point of 3 million burrows, indicating that the western Irish Sea Nephrops population is in a good state and harvested sustainably (ICES, 2022g; McGeady et al., 2022).

And be replaced with:

Nephrops are commercially exploited throughout their geographic range. The western Irish Sea stock (assessed and managed as Functional Unit (FU) 15) supports one of the most productive *Nephrops* fisheries in Irish waters, yielding landings of 5,000-10,000 tonnes annually over the last two decades (ICES, 2022d). *Nephrops* within FU15 are mainly fished by otter trawlers from the Irish and Northern Ireland demersal fleets (ICES, 2025d). Most landings are taken from ICES rectangle 36E4, which overlaps the array area and the offshore section of the ECC (Figure A3.8). The species is also commercially targeted across the East Irish Sea *Nephrops* ground (managed as FU14), which is located between the Isle of Man and the Cumbrian coast (Figure A3.8). The most recent stock abundance estimates for FU15 are below the Maximum Sustainable Yield (MSY) reference trigger point of 3,000 million individuals (ICES, 2025d).

In addition, in response to RFI Section 11 (e), Figure 3.22 in Appendix 13.1 of the 2024 EIAR has been updated to show inshore and offshore *Nephrops* fishing grounds across the northern and central Irish Sea. Figure 3.22 in Appendix 13.1 of the 2024 EIAR shall therefore be deleted and replaced with Figure A3.8 below.



Mean density of Nephrops burrows in 2021 (ICES, 2022g)

Array Area
Offshore Export Cable Corridor
Underwater Noise ZoI - 70km
Sedimentary ZoI - 12km
ICES Statistical Rectangles
Nephrop Ground
(Marine Institute, 2016)

EU Nephrops Landings (2014-18)

>1500

0

NISA
North Irish Sea Array

ARUP GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Nephrops Grounds and Nephrops Fishing Grounds in the North Irish Sea

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: February 2026	**Figure No:**
Scale: 1:1,000,000 @A3	**A3.8**
Status: Issue	

European lobster

There are no changes to this section. Refer to paragraphs 3.5.10 to 3.5.13 of Appendix 13.1 in the 2024 EIAR.

Brown crab

There are no changes to this section. Refer to paragraphs 3.5.14 to 3.5.17 of Appendix 13.1 in the 2024 EIAR.

Razor clam

This section has been updated to provide the most recent data on the condition of razor clams within the study area. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

E. siliqua prefers clean fine sand (Fraser et al., 2018) and is most commonly found in shallow subtidal waters at 3-7 m water depth (Cross et al., 2014). The current fishery for E. siliqua in the western Irish Sea operates in about 4-14 m water depth (Figure 3-19), and it is thought that no large beds occur outside of those areas commercially fished (Marine Institute and Bord Iascaigh Mhara, 2023). The stocks of E. siliqua in the northern Irish Sea are currently managed by a minimum landing size (125 mm shell length) and weekly quotas with the fishery closed on Sundays and in June during peak spawning (Marine Institute and Bord Iascaigh Mhara, 2022). Monitoring data indicate that large size classes were reduced between 2017-2018 but were stable or increasing between 2018 and 2021 (Marine Institute and Bord Iascaigh Mhara, 2023). Data on stock structure are limited, but larval dispersal and the movement of juveniles suggest relatively strong connectivity between beds along the east coast of the north Irish Sea, with the likelihood of self-recruiting beds assessed as being low (Marine Institute and Bord Iascaigh Mhara, 2024).

And be replaced with:

E. siliqua prefers clean fine sand (Fraser et al., 2018) and is commonly found in shallow subtidal waters at 3-7 m water depth (Cross et al., 2014). The current commercial fishery for *E. siliqua* in the western Irish Sea operates in about 4-14 m water depth (Figure A3.9), and it is thought that no large beds occur outside of those areas commercially fished (Marine Institute and Bord Iascaigh Mhara, 2023). Data on stock structure are limited, but larval dispersal and the movement of juveniles suggest relatively strong connectivity between beds along the east coast of the North Irish Sea, with the likelihood of self-recruiting beds assessed as being low (Marine Institute and Bord Iascaigh Mhara, 2024). Fishing for razor clams in the North Irish Sea occurs across four Classified Production Areas from Dundalk south to Malahide (Figure A3.9), with the ECC crossing through the Gormanstown and Skerries Production Areas. Monitoring data show an increase in total razor clam biomass across all size classes for the Skerries and Gormanstown beds from 2018-2024. Strong recruitment was observed in 2017, 2021, 2023 and 2024 in Gormanstown, while the Skerries beds only showed signs of recruitment in 2021 (Marine Institute and Bord Iascaigh Mhara, 2024). Razor clam stocks in the North Irish Sea are currently managed by a minimum landing size, weekly quotas and an annual TAC, with the fishery voluntarily closed in June during peak spawning (Marine Institute and Bord Iascaigh Mhara, 2024).

In addition, Figure 3-19 in Appendix 13.1 of the 2024 EIAR has been updated to include more recent data on the location of razor clam fishing grounds. Figure 3-19 in Appendix 13.1 in the 2024 EIAR shall therefore be deleted and replaced with Figure A3.9.

There are no further changes to this section. Refer to paragraphs 3.5.18 to 3.5.20 of Appendix 13.1 in the 2024 EIAR.

Common cockle

There are no changes to this section. Refer to paragraphs 3.5.21 to 3.5.23 of Appendix 13.1 in the 2024 EIAR.

King scallop

This section has been updated to provide the most recent data on the King scallop population within the study area. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted.

Scallop in the Irish Sea represent spatially discrete stocks, though some can be interconnected through larval dispersal. Larval dispersal simulations indicate no connectivity between stocks in the northern Irish Sea and around the Isle of Man and stocks in the southern Irish Sea and further south. By contrast, stocks in Cardigan Bay and off the Irish coast show limited connectivity, while strong connectivity is predicted between stocks in the south Irish Sea and northeast Celtic Sea (Marine Institute and Bord Iascaigh Mhara, 2024).

And replaced by:

Scallop populations in the Irish Sea represent spatially discrete but interconnected sub-populations, with larval dispersal providing varying degrees of connectivity between them. Recent larval dispersal modelling, including Close et al. (2024), indicates that stocks around the Isle of Man exhibit connectivity with nearby regions of the northern and north-west Irish Sea, as well as with parts of the southern Irish Sea such as North Wales, Tremadog Bay and Cardigan Bay, although the strength of these connections varies between years. By contrast, some more distant populations show limited connectivity, while strong and consistent connectivity is predicted between stocks in the southern Irish Sea and the northeast Celtic Sea (Marine Institute and Bord Iascaigh Mhara, 2024).

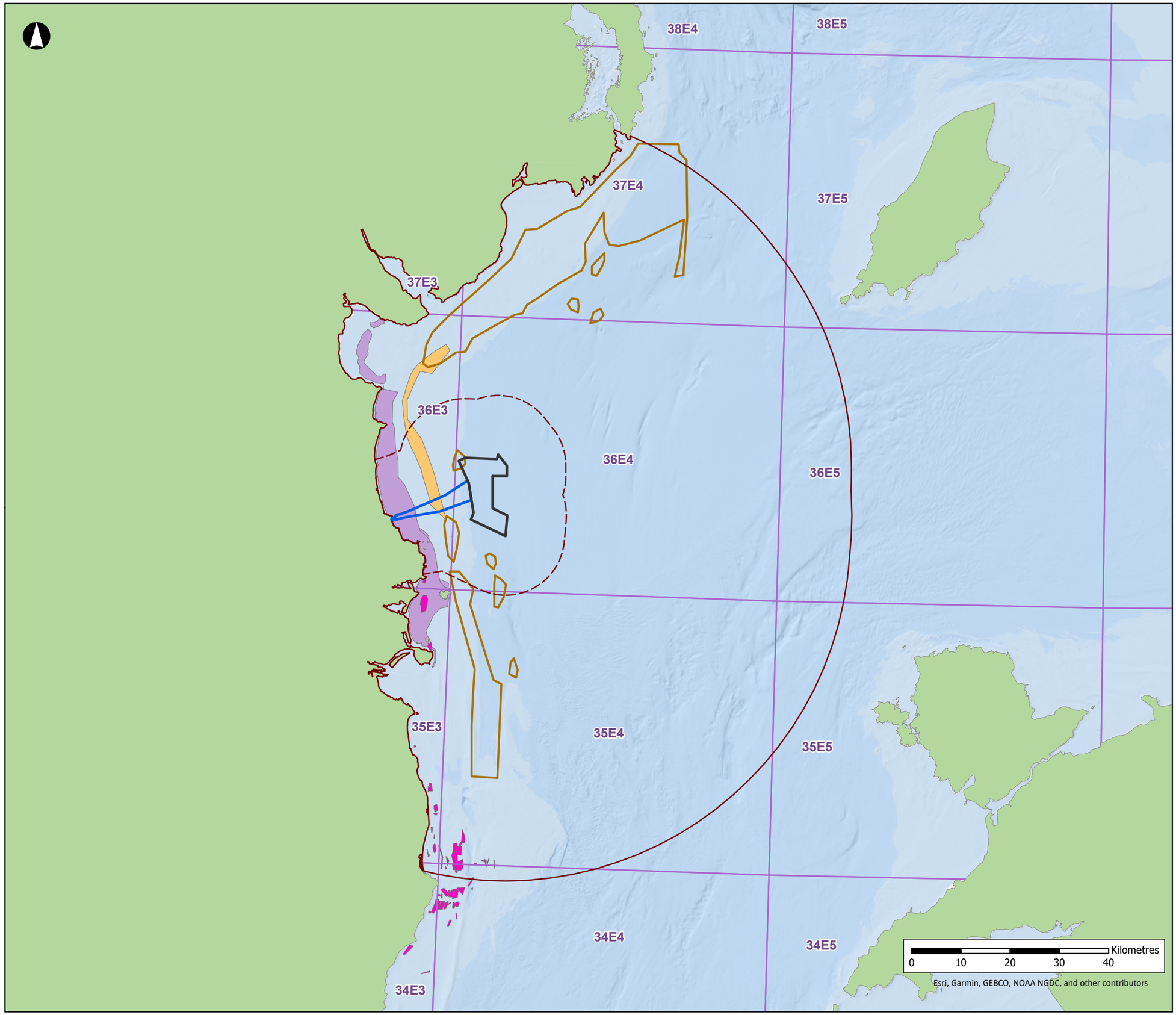
There are no further changes to this section. Refer to paragraphs 3.5.24 to 3.5.26 of Appendix 13.1 in the 2024 EIAR.

Common whelk

There are no changes to this section. Refer to paragraphs 3.5.27 to 3.5.30 of Appendix 13.1 in the 2024 EIAR.

Mussel

There are no changes to this section. Refer to paragraphs 3.5.31 to 3.5.34 of Appendix 13.1 in the 2024 EIAR.



Array Area
Offshore Export Cable Corridor
Sedimentary ZoI - 12km
Underwater Noise ZoI - 70km
ICES Statistical Rectangles
Historical King Scallop Fishing Grounds (ICES, 2020)

Inshore Dredge Fishing (Marine Institute, 2016; The Marine Institute and Bord Iascaigh Mhara, 2024)

Target Species

Razor Clam
Scallop
Seed Mussel

NISA

North Irish Sea Array

ARUP GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Inshore Fishing Grounds Targeted by Dredges

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: February 2026	**Figure No:**
Scale: 1:750,000 @A3	**A3.9**
Status: Issue	

3.6 Diadromous species

There are no changes to this section. Refer to paragraphs 3.6.1 and 3.6.2 of Appendix 13.1 in the 2024 EIAR.

Atlantic salmon

This section has been updated to include further information on the conservation status of Atlantic salmon in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

Atlantic salmon are also classed as being under threat and/or in decline by OSPAR, and the IUCN has recently assessed Atlantic salmon as Near Threatened at global scale (Darwall, 2023) on account of global declines in population densities. The nearest rivers designated as Salmonid waters under the Salmonid River Regulations are the River Boyne and the River Dargle, the latter entering the Irish Sea at Bray to the south of the offshore development area (Figure 2-2).

Salmon smolts are known to descend the river Liffey between March and May but are not counted (Holmes et al., 2018; Millane et al., 2023). A review of monthly fish counter returns on the Liffey for several years, shows that while salmon can run into the Liffey in every month of the year, the main months are June to September, with years when October can also contribute significantly (Aquatic Services Unit, 2020; IFI, 2018). However, 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). Analysis of data from fish counters indicate that salmon stocks within the Rivers Boyne and Slaney are currently below river-specific conservation limits (Millane et al., 2023).

And be replaced with:

Atlantic salmon are also classed as being under threat and/or in decline by OSPAR and are currently assessed as Vulnerable at the Irish scale (King et al., 2011) and European scale (Sayer, 2024) and Near Threatened at a Global scale (Darwall, 2023) using IUCN criteria, reflecting declines in population densities at both regional and global levels. The nearest rivers designated as Salmonid waters under the Salmonid River Regulations are the River Boyne and the River Dargle, the latter entering the Irish Sea at Bray to the south of the offshore development area (Figure 2-2).

Salmon smolts are known to descend the river Liffey between March and May but are not counted (Holmes et al., 2018; Millane et al., 2023). A review of monthly fish counter returns on the Liffey for several years, shows that while salmon can run into the Liffey in every month of the year, the main months are June to September, with years when October can also contribute significantly (Aquatic Services Unit, 2020; IFI, 2018). However, 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). Analysis of recent data from fish counters and catch data indicate that of the 144 salmon designated river stocks in Ireland, approximately 72% (103 stocks) are currently below river-specific conservation limits at the 75% probability level, including stocks within the Rivers Boyne, Castletown, Dee, Liffey, and Dargle (TEGOS, 2025). Return estimates from fish

counters in 2025 were below mean counts from preceding years for most monitored rivers, including the Rivers Boyne, Dee and Liffey (TEGOS, 2025).

There are no further changes to this section. Refer to paragraphs 3.6.3, 3.6.4, 3.6.6 3.6.7, 3.6.9, 3.6.10 and 3.6.11 of Appendix 13.1 in the 2024 EIAR.

Brown/sea trout

This section has been updated to include further information on the conservation status of brown trout in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Brown trout are widespread in all major river and lake systems of Ireland, justifying a conservation assessment of Least concern (Freyhof, 2011a; King et al., 2011). Rivers flowing into the study area that support sea trout include the Boyne, Nanny, Liffey, Dargle, Varty, Avoca, Castletown, Fane, Glyde and Dee (IFI, 2022; Figure 2 2).

And be replaced with:

Brown trout are widespread in all major river and lake systems of Ireland, justifying a conservation assessment of Least Concern at the Irish scale (King et al., 2011), European scale (Freyhof, 2024a) and Global scale (Freyhof, 2024b) using IUCN criteria. Rivers flowing into the study area that support sea trout include the Boyne, Nanny, Liffey, Dargle, Varty, Avoca, Castletown, Fane, Glyde and Dee (IFI, 2022; Figure 2-2).

There are no further changes to this section. Refer to paragraph 3.6.13 of Appendix 13.1 in the 2024 EIAR.

European eel

This section has been updated to include further information on the conservation status of European eel in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

The European eel is a demersal fish that is widely distributed across most inland waters of Europe from Norway to the Mediterranean Sea and the North African coastline (Pike et al., 2020). It is a species of high conservation importance, being classed as Critically Endangered on the Irish, European and Global IUCN Red Lists (Clarke et al., 2016; IUCN, 2023; Pike et al., 2020). European eel is also listed as threatened and/or declining in the OSPAR region.

And be replaced with:

The European eel is a demersal fish that is widely distributed across most inland waters of Europe from Norway to the Mediterranean Sea and the North African coastline (Pike et al., 2020). It is a species of high conservation importance, assessed as Critically Endangered at the Irish scale (Clarke et al., 2016), European scale (Pike et al., 2023) and Global scale (Pike et al., 2020) using IUCN criteria. European eel is also listed as threatened and/or declining in the OSPAR region.

There are no further changes to this section. Refer to paragraph 3.6.16 of Appendix 13.1 in the 2024 EIAR.

Lamprey species

This section has been updated to include further information on the conservation status of lamprey species in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

There are no designated Natura 2000 sites for sea lamprey in the vicinity of the study area, although records for the species exist within several nearby river catchments draining into the western Irish Sea (European Environment Agency, 2023). The nearest SAC protected for sea lamprey is the Slaney River Valley SAC, which is located approximately 149 km from the array area (Figure 3 23). Sea lamprey is also on the OSPAR threatened or declining species list and classed as Near Threatened on the Ireland Red List (King et al., 2011) and as of Least Concern on a global scale (NatureServe, 2013). River lamprey has a classification of Least Concern on both the Irish and global IUCN Red List (Freyhof, 2011b; King et al., 2011).

And be replaced with:

There are no designated Natura 2000 sites for sea lamprey in the vicinity of the study area, although records for the species exist within several nearby river catchments draining into the western Irish Sea (European Environment Agency, 2023). The nearest SAC protected for sea lamprey is the Slaney River Valley SAC, which is located approximately 149 km from the array area (**Error! Reference source not found.**). Sea lamprey is also on the OSPAR threatened or declining species list and is assessed as Near Threatened at the Irish scale (King et al., 2011) and as Least Concern at both the European scale (Ford, 2024a) and Global scale (Ford and NatureServe, 2024) using IUCN criteria. River lamprey is assessed as Least Concern at the Irish scale (King et al., 2011) but as Near Threatened at the European and Global scales (Ford, 2024a) using IUCN criteria.

There are no further changes to this section.

Twaite shad

This section has been updated to include information on the conservation status of twaite shad in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date. This is additional text, which shall follow paragraph 3.6.27 and does not replace any text in Appendix 13.1 in the 2024.

The twaite shad is listed as an Annex II species under the European Habitats Directive and is assessed as Vulnerable at the Irish scale (King et al., 2011), Near Threatened at the European scale (Ford, 2024c) and Least Concern at the Global scale (Ford, 2024d) using IUCN criteria.

There are no further changes to this section.

Marine turtles

This section has been updated to include further information on the conservation status of marine turtles in Irish waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

All five species of sea turtle found in Irish waters are included on the IUCN Red List of Threatened Species. The sub-population of leatherback that visits Irish coastal waters may well be what is termed the north-west Atlantic sub-population in the IUCN Red List (IUCN, 2023).

And be replaced with:

All five species of sea turtle found in Irish waters are included on the IUCN Red List of Threatened Species. The sub-population of leatherback that visits Irish coastal waters may well be what is termed the north-west Atlantic sub-population in the IUCN Red List (IUCN, 2025).

There are no further changes to this section.

3.7 Elasmobranchs

There are no changes to this section. Refer to paragraph 3.7.1 of Appendix 13.1 in the 2024 EIAR.

Small-spotted catshark

This section has been updated to include further information on the conservation status of small-spotted catshark in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted.

Populations of small-spotted catshark in the north-east Atlantic are stable or increasing (Finucci et al., 2021a). Recent stock assessments by ICES using groundfish survey data have shown an increasing trend in the size of the north-east Atlantic stock from 2004 to 2010 and annual fluctuations around higher stock levels since then (Marine Institute, 2023). The species is currently listed as of Least Concern on both the IUCN Red List (Finucci et al., 2021a) and the Ireland Red List (Clarke et al., 2016).

And be replaced with:

Populations of small-spotted catshark in the north-east Atlantic are stable or increasing (Finucci et al., 2021a). Recent stock assessments by ICES using groundfish survey data have shown an increasing trend in the size of the north-east Atlantic stock from 2004 to 2010 and annual fluctuations around higher stock levels since then (Marine Institute, 2023). The species is currently assessed as Least Concern at the Irish scale (Clarke et al., 2016), European scale (Serena et al., 2015) and Global scale (Finucci et al., 2021a) using IUCN criteria.

There are no further changes to this section.

Nursehound

This section has been updated to include further information on the conservation status of nursehound in European. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Data from groundfish surveys conducted in the Irish Sea and Bristol Channel show an overall increase in nursehound numbers since the early 1990s (Clarke et al., 2016). This is also evident in ICES stock assessments, which have shown an increasing trend from 2000 to 2020 (Marine Institute, 2023). Nursehound is a species of conservation importance (IUCN Red List Status: Vulnerable), although it is currently listed as of Least Concern on the Ireland Red List (Clarke et al., 2016).

And be replaced with:

Data from groundfish surveys conducted in the Irish Sea and Bristol Channel show an overall increase in nursehound numbers since the early 1990s (Clarke et al., 2016). This is also evident in ICES stock assessments, which have shown an increasing trend from 2000 to 2020 (Marine Institute, 2023). Nursehound is a species of conservation importance, assessed as Near Threatened at the European scale (Ellis et al., 2015a) and Vulnerable at the Global scale (Finucci et al., 2021b) using IUCN criteria. Although, it is currently listed as of Least Concern at the Irish scale (Clarke et al., 2016).

There are no further changes to this section. Refer to paragraph 3.7.8 of Appendix 13.1 in the 2024 EIAR.

Tope

This section has been updated to include further information on the conservation status of tope in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Tope, also known as tope shark or school shark, is a medium-sized, bottom-dwelling shark species that is found in shallow waters (< 10 m) down to depths of up to 500 m (Ebert and Stehmann, 2013). Tope feed on a variety of prey, including small fish, crustaceans, and cephalopods (Barnes, 2008; Ebert and Stehmann, 2013). It is a species of conservation importance (IUCN Red List Status, Critically Endangered; Walker et al., 2020). Tope is also listed as Vulnerable on the Ireland Red List (Clarke et al., 2016). It is widespread in the eastern Atlantic, ranging from Iceland and Norway to South Africa. Tope occurs more frequently along the east coast on Ireland and off the coast of Donegal (Clarke et al.,

2016), although an exploratory assessment of catch per unit effort (CPUE) data trends from over 20 years of trawl survey data from the Northeast Atlantic suggests a decline in the number of tope present (Dureuil, 2013, cited in Clarke et al., 2016).

And be replaced with:

Tope, also known as tope shark or school shark, is a medium-sized, bottom-dwelling shark species that is found in shallow waters (< 10 m) down to depths of up to 500 m (Ebert and Stehmann, 2013). Tope feed on a variety of prey, including small fish, crustaceans, and cephalopods (Barnes, 2008; Ebert and Stehmann, 2013). It is a species of conservation importance since it is assessed as Vulnerable at the Irish scale (Clarke et al., 2016) and European scale (McCully et al., 2015a) using IUCN criteria. Tope is also listed as Critically Endangered at the Global scale (Walker et al., 2020). It is widespread in the eastern Atlantic, ranging from Iceland and Norway to South Africa. Tope occurs more frequently along the east coast on Ireland and off the coast of Donegal (Clarke et al., 2016), although an exploratory assessment of catch per unit effort (CPUE) data trends from over 20 years of trawl survey data from the Northeast Atlantic suggests a decline in the number of tope present (Dureuil, 2013, cited in Clarke et al., 2016).

There are no further changes to this section. Refer to paragraph 3.7.10 of Appendix 13.1 in the 2024 EIAR.

Spiny dogfish

This section has been updated to include further information on the conservation status of spiny dogfish in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Spiny dogfish are listed as Vulnerable on the IUCN Red List (Finucci et al., 2020), and as Endangered on the Ireland Red List (Clarke et al., 2016). The study area overlaps with high intensity nursery grounds of spiny dogfish (Figure 3 17; Ellis et al., 2010, 2012).

And be replaced with:

Spiny dogfish are of conservation importance, since assessed as Endangered at the Irish scale (Clarke et al., 2016) and European scale (Ellis et al., 2015b) and Vulnerable at the Global scale (Finucci et al., 2020) using IUCN criteria. The study area overlaps with high intensity nursery grounds of spiny dogfish (Figure 3 17; Ellis et al., 2010, 2012).

There are no further changes to this section.

Basking shark

This section has been updated to include further information on the conservation status of basking shark in European and global waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

The basking shark Cetorhinus maximus is a species of conservation importance, being on the OSPAR list of threatened and/or declining species and currently classed as Endangered by the IUCN in Ireland, Europe and on a global scale (Clarke et al., 2016; Rigby et al., 2021). On a national level, basking sharks are protected under the Wildlife Act 1976 (as amended).

And be replaced with:

The basking shark *Cetorhinus maximus* is a species of conservation importance, being on the OSPAR list of threatened and/or declining species and assessed as Endangered at the Irish scale (Clarke et al., 2016), European scale (Sims et al., 2015) and Global scale (Rigby et al., 2021) using IUCN criteria. On a national level, basking sharks are protected under the Wildlife Act 1976 (as amended).

There are no further changes to this section. Refer to paragraph 3.7.15 of Appendix 13.1 in the 2024 EIAR

Skate species

Thornback ray

This section has been updated to include further information on the conservation status of thornback ray in European and global waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Thornback ray is a species of conservation importance (IUCN Red List Status, Near Threatened), although it is listed as Least Concern on the Ireland Red List (Clarke et al., 2016). ICES considers two main populations around Ireland, one in the Irish and Celtic Seas, the other off north-west Ireland (ICES, 2014a, b; 2022h). In the Irish and Celtic Sea stock, the population size indicator has increased markedly since the early 2000s (ICES, 2014b).

And be replaced with:

Thornback ray is a species of conservation importance, assessed as Near Threatened at the European scale (Ellis et al., 2016) and Global scale (Finucci et al., 2024a) using IUCN criteria. Although it is listed as Least Concern at the Irish scale (Clarke et al., 2016). ICES considers two main populations around Ireland, one in the Irish and Celtic Seas, the other off north-west Ireland (ICES, 2014a, b; 2022h). In the Irish and Celtic Sea stock, the population size indicator has increased markedly since the early 2000s (ICES, 2014b).

There are no further changes to this section. Refer to paragraph 3.7.20 of Appendix 13.1 in the 2024 EIAR.

Blonde ray

This section has been updated to include further information on the conservation status of blonde ray in European and global waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Blonde ray is a species of conservation importance (IUCN Red List Status, Near Threatened). It is also listed as Near Threatened on the Ireland Red List (Clarke et al., 2016). Blonde ray has a wide geographic distribution in the north-east Atlantic and Mediterranean Sea and is relatively common in the Irish Sea and Bristol Channel. The only trend information available is for juveniles and shows an increase over time. However, available evidence suggests that the population is over-exploited (Clarke et al., 2016).

And be replaced with:

Blonde ray is a species of conservation importance, assessed as Near Threatened at the Irish scale (Clarke et al., 2016), European scale (McCully et al., 2015b) and Global scale (Finucci et al., 2024b) using IUCN criteria. Blonde ray has a wide geographic distribution in the north-east Atlantic and Mediterranean Sea and is relatively common in the Irish Sea and Bristol Channel. The only trend information available is for juveniles and shows an increase over time. However, available evidence suggests that the population is over-exploited (Clarke et al., 2016).

There are no further changes to this section. Refer to paragraph 3.7.22 of Appendix 13.1 in the 2024 EIAR.

Spotted ray

This section has been updated to include further information on the conservation status of spotted ray in European and global waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Spotted ray is on the OSPAR threatened or declining species list and considered to be of Least Concern on both the IUCN Red List and the Ireland Red List (Clarke et al., 2016). It has a wide geographic distribution in the north-east Atlantic and Mediterranean Sea, with two separate Irish stocks located in the Irish and Celtic Seas, and in the north-west and west of Ireland (ICES, 2014a,b). The Irish and Celtic Seas population has increased over time; however, it is being fished at above sustainable levels (ICES, 2014a; ICES, 2022h).

And be replaced with:

Spotted ray is on the OSPAR threatened or declining species list and is assessed as Least Concern at the Irish scale (Clarke et al., 2016), European scale (Ellis et al., 2015c) and Global scale (Rigby et al., 2024) using IUCN criteria. It has a wide geographic distribution in the north-east Atlantic and Mediterranean Sea, with two separate Irish stocks located in the Irish and Celtic Seas, and in the north-west and west of Ireland (ICES, 2014a, b). The Irish and Celtic Seas population has increased over time; however, it is being fished at above sustainable levels (ICES, 2014a; ICES, 2022c).

There are no further changes to this section. Refer to paragraph 3.7.26 of Appendix 13.1 in the 2024 EIAR.

Cuckoo ray

This section has been updated to include further information on the conservation status of cuckoo ray in European waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Cuckoo ray is listed as Least Concern on the Global and European IUCN Red Lists and classed as Vulnerable on the Ireland Red List (Clarke et al., 2016). ICES considers that a single population is found in Irish waters and includes the Irish and Celtic Seas (ICES 2014a; ICES, 2022h). The population around Ireland and the Celtic Sea shows an overall decline over time.

And be replaced with:

Cuckoo ray is assessed as Vulnerable at the Irish scale (Clarke et al., 2016) and Near Threatened at the Global scale (Finucci et al., 2025) using IUCN criteria. ICES considers that a single population is found in Irish waters and includes the Irish and Celtic Seas (ICES 2014a; ICES, 2022e). The population around Ireland and the Celtic Sea shows an overall decline over time.

There are no further changes to this section. Refer to paragraph 3.7.28 of Appendix 13.1 in the 2024 EIAR.

Small-eyed ray

This section has been updated to include further information on the conservation status of small-eyed ray in European and global waters. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date, as requested in RFI Section 1 (b). Therefore, the following paragraph of Appendix 13.1 in the 2024 EIAR shall be deleted:

Small-eyed ray is a species of conservation importance (IUCN Red List Status, Near Threatened), although it is listed as Least Concern on the Ireland Red List (Clarke et al., 2016). It is restricted primarily to the Atlantic coasts of north-west Europe. Although occasionally caught in the southern Irish Sea, the main concentration is in the Bristol Channel. Survey based indicators showed a stable trend from the mid-1990s to the late 2000s with a more recent decline of 27% (ICES, 2014a).

And be replaced with:

Small-eyed ray is a species of conservation importance, assessed as Near Threatened at the European scale (Ellis and Walls, 2015) and Global scale (Rigby et al., 2025) using IUCN criteria. Although it is listed as Least Concern at the Irish scale (Clarke et al., 2016). It is restricted primarily to the Atlantic coasts of north-west Europe. Although occasionally caught in the southern Irish Sea, the main concentration is in the Bristol Channel. Survey based indicators showed a stable trend from the mid-1990s to the late 2000s with a more recent decline of 27% (ICES, 2014a).

There are no further changes to this section. Refer to paragraph 3.7.30 of Appendix 13.1 in the 2024 EIAR.

3.8 Species of Conservation Importance and Designated Sites

A key change to this section is the update of Table 3-2 of Appendix 13.1 in the 2024 EIAR to include further information on the current conservation status of fish and elasmobranch species that have the potential to be present in the fish and shellfish study area. Therefore, Table 3-2 of Appendix 13.1 in the 2024 EIAR shall be deleted and replaced with Table A3.1. Furthermore, this section has been expanded upon, in response to RFI Section 18, to include information on the Isle of Man Marine Nature Reserves (MNRs). Table A3.2 has been added to Appendix 13.1 and Figure 3-23 of Appendix 13.1 in the 2024 EIAR has been updated to include the Manx MNRs. Therefore, Figure 3-23 of Appendix 13.1 in the 2024 EIAR shall be deleted and replaced with Figure A3.10 below. The potential for transboundary impacts upon the Manx MNRs is assessed in Chapter 13 Fish and Shellfish Ecology. The text below follows on from paragraph 3.8.4 of Appendix 13.1 in the 2024 EIAR.

Other designated sites with fish and shellfish interests include the MNRs within Isle of Man territorial waters (Figure A3.10). The first MNR, the Ramsey MNR, was established in 2011 and since then an additional nine MNRs have been designated. Fish and shellfish species that are currently afforded protection within Isle of Man MNRs are the European eel, basking shark, sandeel, common skate and spiny lobster and spawning and/or nursery grounds of Atlantic cod, plaice and sea bass (DEFA, 2025). Basking sharks are also afforded protection from injury and disturbance under Schedule 5 of the Isle of Man Wildlife Act. In addition, bylaws for the protection of MNRs provide site-specific protection measures for European eel, spiny lobster, sandeel, and king and queen scallops. It is important to note that the MNRs of the Isle of Man are whole environment protections. Whilst each MNR gives particular focus to a list of specific species, these sites do not exclusively protect those listed species. A list of the MNRs and their noted fish and shellfish interests is presented in Table A3.2.

Table A3.1: Species of conservation importance with the potential to occur within the study area (Replaces Table 3-2 in Appendix 13.1 of the 2024 EIAR. Changes are indicated by the grey shading).

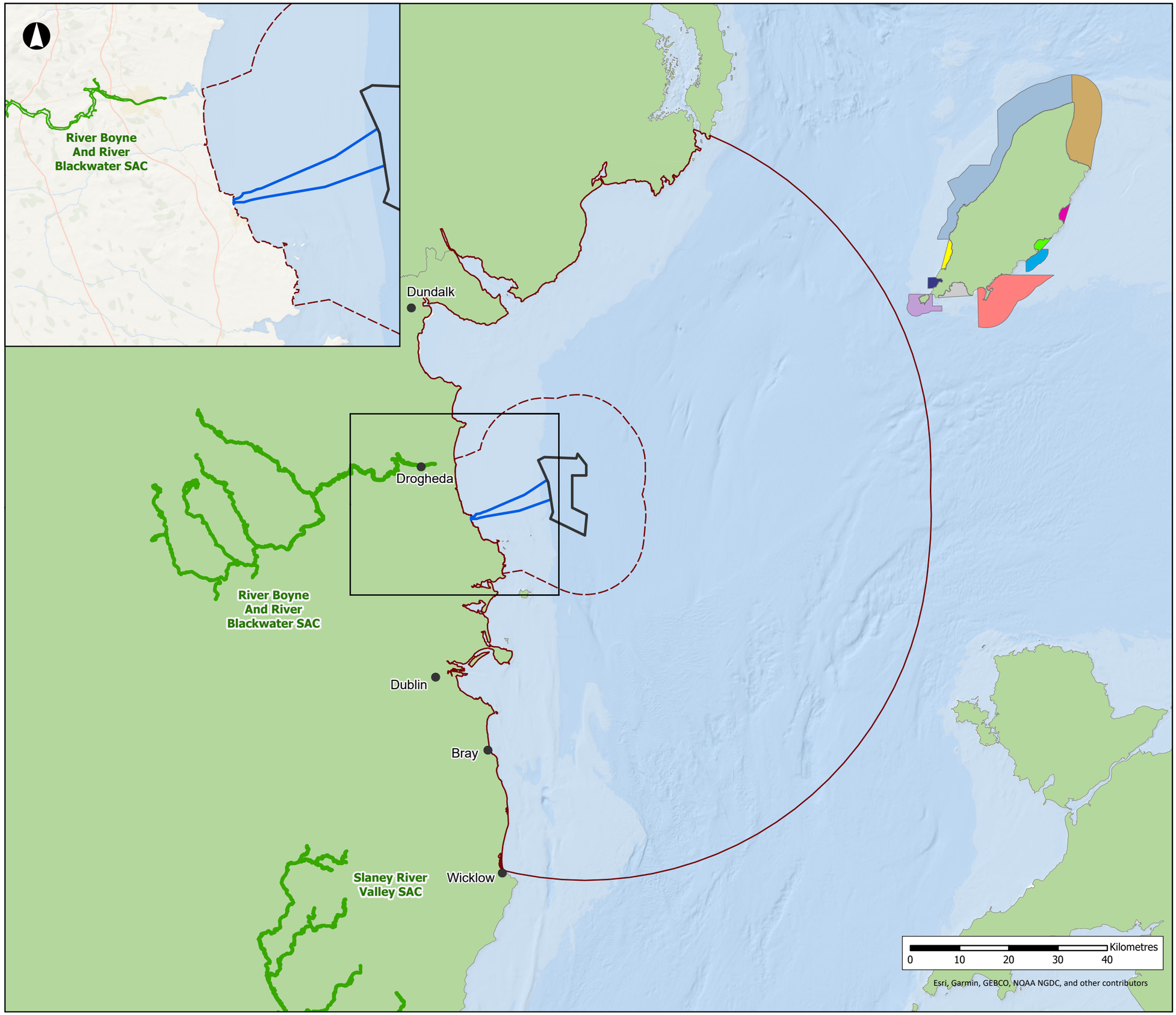
Species	European Habitats Directive	Ireland Red List (King et al., 2011; Clarke et al., 2016)	IUCN Red List of Threatened Species (2025)	Bonn Convention (1979)	OSPAR list of threatened and/or declining species and habitats[2]
River lamprey	II, V	Least Concern	Near Threatened (Global & European; Ford, 2024b)	N/A	N/A
Sea lamprey	II	Near Threatened	Least Concern (European; Ford 2024a) Least Concern (Global; Ford and NatureServe, 2024)	N/A	✓
Atlantic salmon	II, V	Vulnerable	Vulnerable (European; Sayer, 2024) Near Threatened (Global; Darwall, 2023)	N/A	✓
European eel	N/A	Critically Endangered	Critically Endangered (European; Pike et al., 2023) Critically Endangered (Global; Pike et al., 2020)	II	✓
Twaite shad	II	Vulnerable	Near Threatened (European; Ford, 2024c) Least Concern (Global; Ford, 2024d)	N/A	N/A
Brown trout	N/A	Least Concern	Least Concern (Europe; Freyhof, 2024a) Least Concern (Global; Freyhof, 2024b)	N/A	N/A
Atlantic cod	N/A	N/A	Least Concern (Europe; Cook et al., 2015a)	N/A	✓

Species	European Habitats Directive	Ireland Red List (King et al., 2011; Clarke et al., 2016)	IUCN Red List of Threatened Species (2025)	Bonn Convention (1979)	OSPAR list of threatened and/or declining species and habitats[2]
			Vulnerable (Global; Sobel, 1996a)		
Haddock	N/A	N/A	Least Concern (European; Cook et al., 2015b) Vulnerable (Global; Sobel, 1996b)	N/A	N/A
American plaice	N/A	N/A	Least Concern (European; Monroe et al., 2015a) Endangered (Global; Cadrin et al., 2022a)	N/A	N/A
Witch flounder	N/A	N/A	Least Concern (European; Monroe et al., 2015b) Vulnerable (Global; Cadrin et al., 2022b)	N/A	N/A
Basking shark	N/A	Endangered	Endangered (European; Sims et al., 2015) Endangered (Global; Rigby et al., 2021)	I, II	✓
Tope	N/A	Vulnerable	Vulnerable (European; McCully et al., 2015a) Critically Endangered (Global; Walker et al., 2020)	II	N/A
Spiny dogfish	N/A	Endangered	Endangered (European; Ellis et al., 2015b) Vulnerable (Global; Finucci et al., 2020)	II	✓
Cuckoo ray	N/A	Vulnerable	(no European assessment) Near Threatened (Global; Finucci et al., 2025)	N/A	N/A

Species	European Habitats Directive	Ireland Red List (King et al., 2011; Clarke et al., 2016)	IUCN Red List of Threatened Species (2025)	Bonn Convention (1979)	OSPAR list of threatened and/or declining species and habitats[2]
Blonde ray	N/A	Near Threatened	Near Threatened (European; McCully et al., 2015b) Near Threatened (Global; Finucci et al., 2024b)	N/A	N/A
Nursehound	N/A	Least Concern	Near Threatened (European; Ellis et al., 2015a) Vulnerable (Global; Finucci et al., 2021b)	N/A	N/A
Small-eyed ray	N/A	Least Concern	Near Threatened (European; Ellis and Walls, 2015) Near Threatened (Global; Rigby et al., 2025)	N/A	N/A
Spotted ray	N/A	Least Concern	Least Concern (European; Ellis et al., 2015c) Least Concern (Global; Rigby et al., 2024)	N/A	✓
Thornback ray	N/A	Least Concern	Near Threatened (European; Ellis et al., 2016) Near Threatened (Global; Finucci et al., 2024a)	N/A	N/A
Starry smooth hound	N/A	Least Concern	Near Threatened (European; Farrell et al., 2015) Near Threatened (Global; Jabado et al., 2021)	N/A	N/A
Small-spotted catshark	N/A	Least Concern	Least Concern (European; Serena et al., 2015) Least Concern (Global; Finucci et al., 2021a)	N/A	N/A

Table A3.2: Isle of Man Marine Nature Reserves with noted fish and shellfish species (DEFA, 2025).

Marine Nature Reserve	Noted fish and shellfish features
Douglas Bay MNR	European eel
Little Ness MNR	European eel, herring (spawning), whiting (spawning/nursery)
Ramsey Bay MNR	European eel, common skate, European sea bass (nursery), Atlantic cod (spawning/nursery), sandeels
Langness MNR	European eel, basking shark, cod (spawning/nursery), herring (spawning)
Baie ny Carrickey MNR	European eel, basking shark, spiny lobster
Calf and Wart Bank MNR	Sandeel, basking shark, spiny lobster
Port Erin Bay MNR	Basking shark, plaice (spawning/nursery)
West Coast MNR	European eel, basking shark, plaice (spawning/nursery), sandeel
Niarbyl Bay MNR	European eel, basking shark



- Array Area
- Offshore Export Cable Corridor
- Underwater Noise ZoI - 70km
- Sedimentary ZoI - 12km
- Special Areas of Conservation

Isle of Man Marine Nature Reserves (MNR)

- Baie Ny Carrickey
- Calf and Wart Bank
- Douglas Bay
- Langness
- Laxey Bay
- Little Ness
- Niarbyl Bay
- Port Erin Bay
- Ramsey Bay
- West Coast

NISA

North Irish Sea Array

ARUP GoBe

Project

North Irish Sea Array Offshore Wind Farm

Figure Title

Designated Natura Sites for Migratory Fish and Isle of Man Marine Nature Reserves Relative to the Offshore Development Area

Job No: 281240	**Datum:** WGS84 **Projection:** UTM30N
Date: Jan 2026	**Figure No:**
Scale: 1:750,000 @A3	**A3.10**
Status: Issue	

3.9 Valued Ecological Receptors

Table 3-4 in Appendix 13.1 in the 2024 EIAR has been updated to include further information on the current conservation status of fish and elasmobranch VERs that have the potential to be present in the fish and shellfish study area. Furthermore, common skate and European seabass *Dicentrarchus labrax* have been added to the VER list given their protection status within Isle of Man MNRs and their highly mobile nature. Table A3.3 below therefore replaces Table 3-4 in Appendix 13.1 in the 2024 EIAR.

Table A3.3: Summary of fish and shellfish VERs and their value/importance within the fish and shellfish study area (Replaces Table 3-4 in Appendix 13.1 of the 2024 EIRA, changes are indicated by the grey shading).

VER	Valuation	Justification
Demersal VERs		
Atlantic cod	International	Study area overlaps high intensity spawning and nursery grounds. Cod was also recorded in regional surveys. A species of commercial importance in the study area and of conservation importance. Listed on the OSPAR list of threatened and/or declining species and assessed as Least Concern at the European scale (Cook et al., 2015a) but Vulnerable at the Global scale (Sobel, 1996a) using IUCN criteria. Cod are also afforded protection within Isle of Man MNRs.
Plaice	Regional (of National importance in Isle of Man territorial waters)	Study area overlaps high intensity spawning and low intensity nursery grounds. Plaice was also abundant in regional surveys. A species of commercial importance in the study area. Plaice are also afforded protection within Isle of Man MNRs.
Lemon sole	Regional	Study area overlaps spawning and nursery grounds. Lemon sole was also recorded in regional surveys.
Common sole	Regional	Study area overlaps low intensity spawning grounds. Sole was also recorded in regional surveys. A species of commercial importance in the study area.
Whiting	Regional	Study area overlaps low intensity spawning and high intensity nursery grounds. Whiting was also abundant in regional surveys. A species of commercial importance in the study area.
Haddock	Regional	Study area overlaps spawning and nursery grounds. Haddock was also abundant in regional surveys. A species of commercial importance in the study area. A species of conservation importance, assessed as Least Concern at the European scale (Cook et al., 2015b) but Vulnerable at the Global scale (Sobel, 1996a) using IUCN criteria.
Anglerfish	Regional	Study area overlaps with low intensity nursery grounds. Anglerfish was also recorded in regional surveys. A species of commercial importance in the study area
Common dab	Regional	Dab was abundant in regional surveys.

VER	Valuation	Justification
American plaice	Regional	American plaice was frequently recorded in regional surveys. A species of conservation importance, assessed as Least Concern at the European scale (Monroe et al., 2015a) but as Endangered at the Global scale (Cadrin et al., 2022a) using IUCN criteria.
Witch flounder	Regional	Witch flounder was frequently recorded in regional surveys. A species of conservation importance, assessed as Least Concern at the European scale (Monroe et al., 2015b) but as Vulnerable at the Global scale (Cadrin et al., 2022b) using IUCN criteria.
Sea bass	Regional (of national importance in Isle of Man territorial waters).	Sea bass nursery areas are afforded protection within Isle of Man MNRs. Assessed as Near Threatened at European scale (Ford et al., 2024e) and Global scale (Ford et al., 2024f) using IUCN criteria.
Pelagic VERs		
Atlantic mackerel	Regional	Study area overlaps low intensity spawning and low intensity nursery grounds. Mackerel was also recorded in regional surveys.
Sprat	Regional	Study area overlaps spawning grounds. Sprat was also abundant in regional surveys. A species of commercial importance.
Atlantic horse mackerel	Regional	Study area overlaps low intensity spawning and nursery grounds. Atlantic horse mackerel was also recorded in regional surveys. A species of commercial importance.
Substrate-spawning VERs		
Atlantic herring	Regional	Study area overlaps high intensity nursery grounds. Herring was also abundant in regional surveys. Prey species for birds and marine mammals. A species of commercial importance.
Sandeel	Regional (of National importance in Isle of Man territorial waters)	Study area overlaps spawning and low intensity nursery grounds. Sandeel was also recorded in regional surveys. Important prey species for fish, birds, and marine mammals. Sandeel are also afforded protection within Isle of Man MNRs.
Diadromous VERs		
Brown trout	Regional	Potential for this species to transit the study area.
European eel	International	A species of conservation importance, listed on the OSPAR list of threatened and/or declining species and in Appendix II of the Bonn Convention. Also assessed as Critically Endangered at the Irish scale (Clarke et al., 2016), European scale (Pike et al., 2023) and Global scale (Pike et al., 2020) using IUCN criteria. European eel are also afforded protection within Isle of Man MNRs. Potential for this species to transit the study area.
Atlantic salmon	National and International	A species of conservation importance listed as EU Habitats Directive Annex II and V species, on the

VER	Valuation	Justification
		OSPAR list of threatened and/or declining species. Assessed as Vulnerable at the Irish scale (King et al., 2011) and European scale (Sayer, 2024) and Near Threatened at a Global scale (Darwall, 2023) using IUCN criteria. Potential for this species to migrate through the study area.
Sea lamprey	National and International	A species of conservation importance, listed as an EU Habitats Directive Annex II species and being on the OSPAR list of threatened and/or declining species. Also assessed as Near Threatened at the Irish scale (King et al., 2011) but as Least Concern at both the European scale (Ford, 2024a) and Global scale (Ford and NatureServe, 2024) using IUCN criteria. Potential for this species to transit the study area.
River lamprey	National	A species of conservation importance, listed as EU Habitats Directive Annex II and V species. Also assessed as Least Concern at the Irish scale (King et al., 2011) but as Near Threatened at the European scale (Ford, 2024b) and Global scale (Ford, 2024b). Potential for this species to transit the study area.
Twaite shad	National	A species of conservation importance, listed as an EU Habitats Directive Annex II species and assessed as Vulnerable at the Irish scale (King et al., 2011), Near Threatened at the European scale (Ford, 2024c) and Least Concern at the Global scale (Ford, 2024d) using IUCN criteria. Potential for this species to transit the study area.
Shellfish VERs		
Nephrops	Regional	Study area overlaps spawning and nursery grounds. Nephrops burrows were also observed in site-specific and regional surveys. A species of high commercial importance in the study area.
European lobster	Regional	A species of commercial importance in the study area.
Brown crab	Regional	A species of commercial importance in the study area.
Razor clam	Regional	A species of commercial importance in the study area.
Common cockle	Regional	A species of commercial importance in the study area.
King scallop	Regional	A species of commercial importance in the study area.
Queen scallop	Regional	A species of commercial importance in the study area.
Common whelk	Regional	A species of commercial importance in the study area.
Blue mussel	Regional	A species of commercial importance in the study area.
Elasmobranch VERs		

VER	Valuation	Justification
Thornback ray	Regional	Study area overlaps nursery grounds. Thornback ray was also recorded in regional surveys. A species of commercial importance. Also a species of conservation importance, assessed as Near Threatened at the European scale (Ellis et al., 2016) and Global scale (Finucci et al., 2024a) using IUCN criteria. Although it is listed as Least Concern at the Irish scale (Clarke et al., 2016).
Blonde ray	Regional	Blonde ray was recorded in regional surveys. A species of conservation importance, assessed as Near Threatened at the Irish scale (Clarke et al., 2016), European scale (McCully et al., 2015b) and Global scale (Finucci et al., 2024b) using IUCN criteria.
Spotted ray	International	Study area overlaps nursery grounds. Spotted ray was also observed in regional surveys. A species of conservation importance, assessed as Least Concern at the Irish scale (Clarke et al., 2016), European scale (Ellis et al., 2015c) and Global scale (Rigby et al., 2024) using IUCN criteria.
Cuckoo ray	Regional	Cuckoo ray was observed in regional surveys. A species of conservation importance, assessed as Vulnerable at the Irish scale (Clarke et al., 2016) and Near Threatened at the Global scale (Finucci et al., 2025) using IUCN criteria.
Small-eyed ray	Regional	Small-eyed ray was recorded in regional surveys. A species of conservation importance, assessed as Near Threatened at the European scale (Ellis and Walls, 2015) and Global scale (Rigby et al., 2025) using IUCN criteria.
Tope	International	Study area overlaps nursery grounds. Tope was also recorded in regional surveys. A species of conservation importance listed in Appendix II of the Bonn Convention and assessed as Vulnerable at the Irish scale (Clarke et al., 2016) and European scale (McCully et al., 2015a) and Critically Endangered at the Global scale (Walker et al., 2020) using IUCN criteria.
Nursehound	Regional	Nursehound was recorded in regional surveys. A species of conservation importance, assessed as Near Threatened at the European scale (Ellis et al., 2015a) and Vulnerable at the Global scale (Finucci et al., 2021b) using IUCN criteria, however, it is currently listed as of Least Concern at the Irish scale (Clarke et al., 2016).
Spiny dogfish	International	Study area overlaps high intensity nursery grounds. Spiny dogfish was also recorded in regional surveys. A species of conservation importance, listed on the OSPAR list of threatened and/or declining species and in Appendix II of the Bonn Convention. Also, assessed

VER	Valuation	Justification
		as Endangered at the Irish scale (Clarke et al., 2016) and European scale (Ellis et al., 2015b) and Vulnerable at the Global scale (Finucci et al., 2020) using IUCN criteria.
Starry smooth-hound	Regional	Starry smooth-hound was recorded in regional surveys. A species of conservation importance, assessed as Least Concern at the Irish scale (Clarke et al., 2016) but as Near Threatened at the European scale (Farrel et al., 2015) and Global scale (Jabado et al., 2021) using IUCN criteria.
Small-spotted catshark	Regional	Study area may overlap with breeding and nursery grounds. Small-spotted catshark were abundant in regional surveys. A species of commercial importance. Assessed as Least Concern at the Irish scale (Clarke et al., 2016), European scale (Serena et al., 2015) and Global scale (Finucci et al., 2021a) using IUCN criteria.
Basking shark	National and International	A species of conservation importance, listed on the OSPAR list of threatened and/or declining species and assessed as Endangered at the Irish scale (Clarke et al., 2016), European scale (Sims et al., 2015) and Global scale (Rigby et al., 2021) using IUCN criteria. Also in Appendices I and II of the Bonn Convention and protected by the Wildlife Act (1976) as amended. Basking shark are also afforded protection within Isle of Man MNRs.
Blue skate / Flapper skate complex[3]	Regional (of national importance in Isle of Man territorial waters)	Common skate complex are afforded protection within Isle of Man MNRs. Assessed as Critically Endangered at the Irish scale (Clarke et al., 2016) and Global Scale (Ellis et al., 2024) using IUCN criteria.
Marine turtle VERs		
Leatherback turtle, loggerhead turtle, Kemp's Ridley turtle, hawksbill turtle, green turtle	International	All five species are of conservation importance listed on the IUCN Red List. Potential for these species to transit the study area.

[3] Previously referred to as common skate (*Dipturus batis*), but now recognised as two distinct species, the flapper skate (*Dipturus intermedius*) and the blue skate (*Dipturus flossada*).

4 Future Receiving Environment

This section has been updated to reflect the latest Marine Institute Stock Book, and the most recent ICES Ecosystem Overviews. The updates to this section are required to ensure the fish and shellfish information remains relevant and up to date. Therefore, the following paragraphs of Appendix 13.1 in the 2024 EIAR shall be deleted:

The 2023 Stock Book (Marine Institute, 2023) reports that of the commercial stocks fished around the Irish coast 51% are considered to be sustainably fished (i.e., 38 out of 74 fish stocks assessed), while 24% of stocks are currently considered to be overfished). Overall, the stock assessment data show a long-term increase in the number of stocks sustainably harvested.

ICES recently published an ecosystem overview of the Celtic Sea, which includes a large part of the Irish Exclusive Economic Zone (EEZ) (ICES, 2022a). It found that overall fishing pressure on the commercial fish and shellfish stocks in the Celtic Sea ecoregion has decreased since its peak in 1998. Overall biomass of commercial fish and shellfish stocks in the Celtic Sea has increased since the late 1990s. The fishing footprint and the average number of times the seabed is trawled per year have reduced. However, there are still a number of species with very low spawning stocks in some areas, particularly cod and sole in the Irish Sea (ICES, 2022a).

And be replaced with:

The 2025 Stock Book (Marine Institute, 2025) reports that of the commercial stocks fished around the Irish coast 51% are considered to be sustainably fished (i.e., 38 out of 74 fish stocks assessed), while 23% of stocks are currently considered to be overfished (i.e. 17 out of 74 assessed stocks) and the remaining 26% of stocks have an unknown status.

ICES recently published an ecosystem overview of the Celtic Seas, which includes a large part of the Irish Exclusive Economic Zone (EEZ) (ICES, 2024). It found that whilst fishing continues to be the main threat to ecosystem health, overall fishing pressure on the commercial fish and shellfish stocks in the Celtic Sea ecoregion has decreased since the late 1990s, as evident from a 35% reduction in two of its main pressures: physical seabed disturbance and species extraction (ICES, 2024). Some stocks continue to experience fishing pressure above levels consistent with long-term sustainable yields, including mackerel and blue whiting, and others, such as cod, haddock and whiting, have low spawning stocks in some areas of the Celtic Seas (ICES, 2025c).

There are no further changes to this section. Refer to paragraph 4.1.9 of Appendix 13.1 in the 2024 EIAR.

5 Conclusions

There are no changes to this section. Refer to Paragraphs 5.1.1 to 5.1.3 of Appendix 13.1 in the 2024 EIAR.

6 References

The following references are added to the reference list in Section 6 of Appendix 13.1 in the 2024 EIAR.

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