Environmental Impact Assessment Report

NISA

North Irish Sea Array

Volume 6: Summary Chapters

Chapter 38
Cumulative and Inter-Related Effects

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38. Cumulative and Inter-Related Effects

38.1 Introduction

38.1.1 Overview

This chapter of the EIAR consists of an assessment of the likely significant cumulative effects of the North Irish Sea Array (NISA) Offshore Windfarm (hereafter referred to the proposed development) on the receiving environment in combination with other projects and an assessment of the inter-related effects (also known as interactive effects), between different environmental factors of the proposed development itself on the receiving environment.

The results of the Cumulative Effects Assessment (CEA) are presented in the following chapters:

- In Volume 3 (Offshore chapters), the cumulative effects between the proposed development and other "screened in" projects are described within each topic chapter (Chapters 10 to 20).
- In Volume 4 (Onshore chapters), (Chapters 21 to 26) and in Volume 5 (Wider Scheme chapters), (Chapters 27-28, 30-34) the cumulative effects between the proposed development and other "screened in" projects are described in Section 38.2 of this chapter.
- In Volume 5, Chapter 29 SLVIA, the cumulative "seascape and visual" effects between the offshore infrastructure of the proposed development and other "screened in" projects (including other Phase One Projects) are described in Section 29.9 of that chapter. Further details are also provided in Volume 11, Appendix 29.2 Cumulative Visual Impact Assessment at Representative Viewpoint Locations and Volume 7B1 Photomontages (offshore wind farm). The cumulative "landscape and visual" effects between the onshore infrastructure of the proposed development and other "screened in" projects are described in Section 38.2 of this chapter.
- In Volume 5, Chapter 35 Offshore Bats, the cumulative effects between the proposed development and other "screened in" projects are described in Section 35.9 of that chapter.

The inter-related (or interactions) between different environmental effects have been considered the throughout the individual assessment chapters, refer to the section titled 'Potential Effects' in each chapter. The identification and assessment of inter-related effects are intrinsic to the Potential Effects section of each assessment chapter. The interactions of effects between different environmental aspects are also presented as a summary in Section 38.3 of this chapter.

Sections 38.1.2 outlines the relevant guidance and policy documents relevant to cumulative effects and inter-related effects whilst Section 38.1.3 outlines the relevant definitions of cumulative and inter-related effects.

The EIAR also includes the following:

- Detail on the competent experts that have prepared this chapter is provided in Appendix 1.1 in Volume 8.
- Detail on the extensive consultation that has been undertaken with a range of stakeholders during the development of the EIAR including those relating to the Phase One Projects is set out in Appendix 1.2.
- A glossary of terminology, abbreviations and acronyms is provided at the beginning of Volume 2 of the EIAR.
- A detailed description of the proposed development including construction, operation and decommissioning is provided in Volume 2, Chapter 7: Description of the Proposed Development – Onshore (hereafter referred to as the 'Onshore Description Chapter'), and the Construction methodology is described in Section 9.5 of Volume 2, Chapter 9: Construction Strategy – Onshore (hereafter referred to as the 'Onshore Construction Chapter').

38.1.2 Relevant Guidance and Policy

Both the Cumulative effects and Inter-Related effects assessments have been completed with reference to the following guidance documents:

- Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018
- Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (May 2022) (EPA 2022 Guidelines)
- Environmental Protection Agency (2003) Advice Notes for Preparing Environmental Impact Statements
- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EC 2017 Guidelines)
- European Commission (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions

38.1.3 Definitions of Cumulative and Inter-Related Effects

The following definitions are generally used in the description of cumulative effects or interaction of effects.

EC guidance (1999) notes that the *"definitions of indirect and cumulative impacts and impact interactions often overlap*". The 1999 guidance defines impact interactions as "*the reasons between impacts whether between the impacts of just one project or between the impacts of other projects in the area*" whilst it defines cumulative impacts as "*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project".*

The EC guidance (2017) uses the following definition for cumulative effects:

"Changes to the environment that are caused by activities/projects in combination with other activities/projects".

EC guidance (2017) also states that:

"It is important to consider effects not in isolation, but together, that is cumulatively. [….] Cumulative effects are changes to the environment that are caused by an action in combination with other actions. They can arise from:

- The interaction between all of the different projects in the same area;
- The interaction between various impacts within a single Project (while not expressly required by the EIA Directive this has been clarified by the CJEU [Court of Justice of the European Union] […]".

Section 3.7.3 of the EPA guidelines (2022) define cumulative effects are defined as*:*

"The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects" .... "*While a single activity may itself result in a minor impact, it may, when combined with other impacts (minor or insignificant), result in a cumulative impact that is collectively significant. For example, effects on traffic due to an individual industrial project may be acceptable; however, it may be necessary to assess the cumulative effects taking account of traffic generated by other permitted or planned projects" ...*

The EPA guidelines (2022) note that indirect effects are *"sometimes referred to as secondary effects or impacts, these are defined by the European Commission guidance as "impact on the environment, which are not a direct result of the project, often produced away from (the site) or as a result of a complex pathway".*

38.2 Cumulative Effects

38.2.1 CEA Methodology

38.2.1.1 Introduction

The consideration of potential cumulative effects is an important stage in the EIA process. Although the proposed development may not result in significant residual effects in isolation, when the proposed development is considered cumulatively with other projects, significant residual effects may occur.

Annex IV of the EIA Directive (2011/92/EU as amended by 2014/52/EU) requires that an EIAR provides a "*description of the likely significant effects of the project on the environment resulting from…the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*.

Further, the EPA 2022 Guidelines define cumulative effects as: '*The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects*.'

This EIAR has provided a description of the likely significant effects of the proposed development on the environment resulting from the cumulation of effects arising from "*other existing and/or approved projects*" as per the EIA Directive, taking into account any existing environmental issues relating to areas of particular environmental importance likely to be affected or the use of natural resources. The cumulative effects assessment (CEA) has specifically considered whether any of the identified projects in the local or wider area have the potential to exacerbate (i.e. alter the significance of) effects associated with the proposed development.

In general, the CEA does not consider other projects that are already constructed and operating, as such existing projects are already accounted for in the baseline conditions established for the main assessments within Chapters 10 to 35 of this EIAR. The requirements of the EIA Directive and guidelines to consider existing projects is therefore dealt with in those chapters. This chapter considers only proposed developments, being the "*permitted or planned projects*" as noted in Section 3.7.3 of the EPA 2022 Guidelines. While this is the general approach, there are some exceptions where existing offshore projects have been considered in the CEA and this is discussed in further detail in Section 38.2.1.2 below.

The CEA has considered likely significant cumulative effects arising from other *existing and/or approved projects* that may arise during construction, operation and decommissioning of the proposed development.

The cumulative construction assessment considers the total effects of the proposed development and other identified projects being constructed concurrently. It is assumed that the construction of the proposed development starts in 2026/2027. Projects where construction has been completed prior to 2026/2027 are therefore not included in the cumulative construction assessment.

The cumulative operational assessment considers the total effects of the proposed development and other identified projects operating concurrently.

The cumulative decommissioning assessment considers the total effects of the proposed development and other identified projects being decommissioned concurrently (where this is considered a feasible scenario. For example, the operational life of the Tier 3 Onshore projects is predicted to extend well beyond the 35 year operational life of the proposed development and are therefore not included in the cumulative decommissioning assessment).

Cumulative effects were assessed to a level of detail commensurate with the information that was available at the time of assessment.

The methodology for the CEA effects assessment is a three-part assessment as illustrated in Image 38.1.

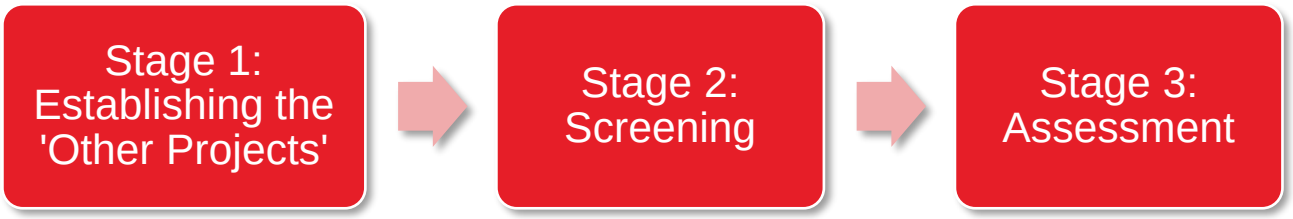

Image 38.1 CEA Methodology

Stage 1: A long list of "*other existing and/or approved projects*" which were deemed to be potentially relevant to be included in the CEA was compiled. This includes consideration of other offshore and onshore projects, such as offshore wind projects in Ireland designated as the "*Phase One Projects*" and the onshore OMF for the proposed development (which does not form part of this planning application). The methodology for compilation of the long list is provided in Section 38.2.1.2 below whilst the long list itself is provided in Table 1 of Appendix 38.1 (onshore projects) and in Table 4 of Appendix 38.2 (offshore projects) of Volume 12 of the EIAR. Note, this chapter must be read in conjunction with Appendices 38.1 and 38.2. As noted previously, some existing offshore projects have been included in the offshore long list of projects and this is discussed in further detail in Section 38.2.1.2 below.

Stage 2: A screening exercise of the "*long list*" was carried out for each environmental topic in order to determine whether those projects, when considered cumulatively with the proposed development could have the potential to give rise to likely significant cumulative effects during construction, operation or decommissioning. The methodology for screening of the long list is provided in Section 38.2.1.3 below. The results of the screening for each of the onshore and wider scheme topics are presented in Tables 38.2, 38.3 and 38.4 of Section 38.2.2.1 of this chapter. The results of the screening for each of the offshore topics are presented in Table 4 of Appendix 38.2 of the EIAR. Many of the other projects in the long list were screened out for a number of reasons including the location, scale and nature of the project or the lack of publicly available details for the project. The reasons for screening out are described in Section 38.2.2.2 below and in Table 4 of Appendix 38.2 of Volume 12 of the EIAR.

Stage 3: Those projects which were "screened in" were carried forward and assessed in the CEA.

The three stages are discussed in further detail below.

Note, Appendix 38.1 and Appendix 38.2 should be read in parallel with the sections below.

38.2.1.2 Stage 1 - Establishing the long list of 'other existing and/or approved projects'

The first stage in determining cumulative effects was to identify a long list of *"other existing and/or approved projects"* deemed potentially relevant to be included in the CEA. This stage took into account any existing environmental issues relating to areas of particular importance likely to be affected or the use of natural resources. Due to the extent of the proposed development traversing both onshore and offshore, the long list is split into two – onshore projects are listed in Table 1 of Appendix 38.1 whilst offshore projects are listed in Table 4 of Appendix 38.2 (Volume 12 of the EIAR).

Details on the nature, location, and status of both the onshore and offshore projects are provided in Table 1 of Appendix 38.1 and Table 4 of Appendix 38.2 respectively.

Assessment tiers

Given the location and nature of the proposed development spanning across both onshore and offshore, a tiered approach to establishing the long list of "*other existing and/or approved projects*" has been undertaken. The tiering of projects is not a hierarchical approach nor based on weighting. The CEA is based on the information which is publicly available at the time of the assessment. Projects which are already built and operating, and which are not identified in this chapter, are included in the baseline environment or have been assessed as not having the potential to exacerbate effects. The general approach for selecting projects is generally only to consider permitted/consented developments which are not yet operational. However, the assessment has gone beyond this in certain circumstances as described below.

For example, some projects which are within the planning/consenting process but not yet consented have been included. In addition, some projects which are planned/pending (but the developer has not yet submitted applications for consent) have been included. In addition, the offshore long list goes beyond the required search criteria nominated within the relevant guidance and policy outlined for the onshore approach. Further explanation on rationale is provided below. There are four different tiers which are described further below:

- Tier 1
- Tier 2
- Tier 3 Onshore
- Tier 3 Offshore

Tier 1: this consists of the proposed OMF which is required for the operation of the proposed development. The OMF does not form part of this planning application and will be developed by others. An application had not been submitted for consent at the time of writing this EIAR, thus it is not yet a "*permitted/consented*" project. However, it has been included in the long list due to the reliance of the proposed development on the operation of this project.

Tier 2: these are the east coast Phase One proposed offshore renewable energy projects located off the east coast of Ireland. These are: Oriel Wind Park, Codling Wind Park, Arklow Bank II and Dublin Array. The proposed development is also a Phase One Project. Whilst none of these other Phase One Projects are "*permitted/consented*" developments and most of these projects have not submitted applications for consent to An Bord Pleanála at the time of writing of this EIAR, they have been included in the CEA for the following reasons:

- all are offshore windfarms off the east coast
- they have all been awarded Marine Area Consent (MAC) and have more certainty of proceeding through the consenting process at the same time as the proposed development
- During S287 pre-application consultation with An Bord Pleanála (ABP), the Developer stated that developers from other Phase One projects have collaborated to share appropriate levels of information. ABP stated that it is important to have ongoing communication in this regard and that there is a consistency in approach and methodology used. For the purposes of the CEA, the developers of the five east coast Phase One projects (North Irish Sea Array Wind Farm, Oriel Wind Park, Dublin Array, Codling Wind Park and Arklow Bank II) shared the following data –
  - Offshore ornithology
  - Marine mammals
  - SLVIA

Only the offshore infrastructure of the Tier 2 projects have been considered in the CEA. The only Tier 2 project for which there was sufficient information available on the onshore infrastructure at the time of writing this EIAR to carry out a meaningful CEA, was Arklow Bank II. The onshore infrastructure elements of Arklow Bank II were screened out of the CEA due to distance (circa 76km) from the proposed development.

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

Tier 3 Onshore Projects: The majority of the onshore projects that have been considered are permitted/consented. Some projects which are within the planning/consenting process and have not yet received consent or are pending/planned (not yet submitted an application for consent) have been included because they are deemed relevant to the proposed development (due to the location, nature and scale of project etc) and likely to be developed in the future.

The identification of the Tier 3 Onshore Project list considered the following onshore sources as listed in Table 38.1 below. There were numerous onshore projects listed on the databases of the onshore sources. However, the focus for this assessment was on the proximity, scale and nature of those projects in relation to the proposed development and on those which could potentially create larger environmental effects and thus be of significance to the CEA. Particular attention was given to larger scale projects in proximity to the onshore development area. Those projects where EIAR or NIS accompanied the applications were also given due regard at review stage. The databases were searched to identify and exclude very minor applications which were not likely to have a significant cumulative environmental effect with the effects of the proposed development. Examples of applications which were excluded were applications to construct or demolish conservatories, house extensions, loft conversions, change of uses for single or small numbers of buildings, construction of outbuildings, modifications to driveways and retention applications.

Granted/permitted and pending applications older than ten years were excluded on the basis that they would likely already have been built (and so would form part of the existing baseline) or are now unlikely to be progressed. Applications which have been refused or cancelled were discounted from the list on the basis that they are unlikely to progress, unless through successful appeal.

The exercise to identify relevant onshore projects was completed in February 2024. Any projects submitted after this date were excluded from the assessment in order to allow the EIAR to be finalised.

The onshore project long list is presented in Table 1 of Appendix 38.1 whilst the offshore project long list is listed in Table 4 of Appendix 38.2 (Volume 12 of the EIAR). Tier 1 and Tier 2 projects are included in both long lists.

The project search boundaries detailed above are onshore only, with the boundary at the coast typically landward of the High Water Mark (HWM). Projects identified within the Tier 3 offshore long list (Appendix 38.2) where there is the potential for them to impact on an onshore receptor, or for where a topic receptor traverses the HWM, have been included in the onshore long list in Appendix 38.1.

The outcome of this search process is the full Tier 3 onshore long list of projects, which is provided in Table 1 of Appendix 38.1. Tier 1 and Tier 2 projects are included in both Appendices 38.1 and 38.2.

Tier 3 Offshore Projects: The approach for selecting offshore Tier 3 project long list differed slightly from the onshore and covered a much wider remit. The Tier 3 offshore projects were identified by a desk-based search that selected projects that were:

- either proposed, submitted, consented or operational and
- that were within the offshore cumulative search area boundaries (see below and Appendix 38.2 for further details) and
- were either potentially being constructed, operational or decommissioned within a time period of 2021 to 2034, which provides a sufficient period either side of the proposed development offshore construction phase (2027-2029) to allow sufficient consideration of the temporal overlap criteria with key development phases (see below and Appendix 38.2 for further details). A longer time period was afforded due to the three-year offshore construction phase which is significantly longer than an onshore construction phase

The Tier 3 offshore project long list provides a comprehensive list of projects that goes beyond the required search criteria nominated within the relevant guidance and policy outlined for the onshore approach. The offshore long list of data sources is presented in Table 38.1. The Tier 3 offshore project long list search has included those projects that are pre and post the planning submission stage, although it is noted that there may be limited information available on some early proposals. This inclusion has been undertaken for this assessment as it replicates the approach undertaken for offshore wind farm applications in other jurisdictions including, within the UK and allows for projects that may be of key relevance due to receptor impacts and/or interest to stakeholders to be considered. The offshore search area boundaries also cross into transboundary areas where planning processes differ, and this ensures that relevant projects and potential cumulative effects are not overlooked. Further details on the search criteria are provided in Appendix 38.2 of this chapter.

The project search boundaries detailed above are offshore only, with the boundary at the coast typically seaward of the High Water Mark (HWM). Projects identified within the Tier 3 onshore long list (Appendix 38.1) where there is the potential for it to impact on an offshore receptor, or for where a topic receptor traverses the HWM, have also been added to the offshore long list.

The outcome of this search process is the full Tier 3 offshore long list of projects, which is provided in Table 4 of Appendix 38.2. Tier 1 and Tier 2 projects are included in both Appendices 38.1 and 38.2.

Table 38.1 Onshore and Offshore Long List data sources

Data Topic	Data Source
Onshore	
Planning	An Bord Pleanála website (http://www.pleanala.ie/index.htm) – for details of projects under appeal, Strategic Infrastructure Development (SID), Strategic Housing Developments (SHD), Large-scale Residential Developments (LRD) and other major projects (focused on 15km buffer zone from onshore development area);
Local Authority Planning (including Part 8 Applications)	Planning websites of Fingal County Council and Dublin City Council (focused on 500m buffer zone from onshore development area, extending out to 3km where necessary for specific environmental topics). Planning websites of neighbouring local authorities (Meath County Council and Louth County Council etc);
Planning	National Planning Application Database (https://data.gov.ie/dataset/national-planning-applications) – for downloadable list of planning applications sent from Local Authorities; https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=9cf2a09799d74d8e9316a3d3a4d3a8de (focused on the relevant coastal planning authorities)
EIA Portal	The EIA Portal (https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal) maintained by the Department of Housing, Planning and Local Government – for applications for development consent accompanied by an EIAR; https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1 (focused on 15km buffer zone from onshore development area).
Water projects	Irish Water's website, which includes a page on its projects (https://www.water.ie/projects/);
EPA	EPA website, for details on projects subject to licences and permits such as Industrial Licensing, Waste licences and Wastewater Discharges (http://www.epa.ie/)
Building Control	National Building Control and Market Surveillance Office (NBCO) for details on commencement notices. https://nbco.localgov.ie/
Offshore	
Offshore GIS Data	
Aggregate Production Area	The Crown Estate
Disposal Sites	Centre for Environment, Fisheries, and Aquaculture Science (CEFAS) (Executive Agency of Defra (the UK Government's Department of Environment, Food and Rural Affairs)
Dumping at Sea Boundaries	Environmental Protection Agency (EPA)
Carbon Areas	The Crown Estate (UK)
Oil & Gas Surface Features	O&G Authority / North Sea Transition Authority (NSTA)
O&G Subsurface Features	O&G Authority / NSTA

O&G Pipelines	O&G Authority / NSTA
Ports	World Ports Index (WPI)
Subsea Cables	KISORCA / GoBe Compiled Dataset
Offshore Wave Site Agreements	The Crown Estate / Crown Estate Scotland
Offshore Tidal Site Agreements	The Crown Estate / Crown Estate Scotland
Offshore Wind Farms	The Crown Estate / Crown Estate Scotland / EMODnet / Irish OWFs digitised (4COffshore) / Isle of Man Government
Shipping	UKHO
Aquaculture	Department of Agriculture, Food and the Marine
Recreation - Watersports	http://mida.ucc.ie/
Offshore Online Resources	
Aggregates	https://data.gov.ie/dataset/irish-sea-marine-aggregates-initiative
	https://epawebapp.epa.ie/terminalfour/DaS/index.jsp
	https://gis.epa.ie/EPAMaps/AAGeoTool
Offshore Wind Farms	https://www.gov.ie/en/collection/f2196-foreshore-applications-and-determinations/
	https://tethys.pnnl.gov/
	https://www.4coffshore.com/windfarms/ireland/
	https://kis-orca.org/map/
	https://infrastructure.planninginspectorate.gov.uk/
	https://marine.gov.scot/marine-licence-applications
	https://naturalresourceswales.gov.uk/
	Individual project websites
Other Offshore Energy	https://tethys.pnnl.gov/
	https://marine.gov.scot/marine-licence-applications
	Individual project websites
Subsea Cables	https://kis-orca.org/map/
	https://www.gov.ie/en/foreshore-notices/
	https://www.submarinecablemap.com/
	https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwjTg_em2dKEAxV62QIHHefnBg8QFnoECBkQAQ&url=https%3A%2F%2Fassets.gov.ie%2F265468%2F14606532-28d5-4108-b315-6c4f6327e64d.pdf&usg=AOvVaw3gFTy7vhgzVACTH1KJkjN2&opi=89978449
O&G pipelines	https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines
O&G infrastructure	https://www.gov.ie/en/publication/10d43-acreage-reports-and-concession-maps/#2022
	https://iooa.ie/exploration-activity/#drilling-operations
	https://www.gov.ie/en/policy-information/bf1b50-oil-and-gas-exploration-and-production/
	https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines

	https://www.gov.ie/en/foreshore-notices/
	https://iooa.ie/exploration-activity/#drilling-operations
Dump Site Boundaries	https://gis.epa.ie/EPAMaps/
Dumping at Sea	https://epawebapp.epa.ie/terminalfour/DaS/index.jsp
	Publicly accessible planning application documents
Shipping and Ports	https://hub.arcgis.com/datasets/1e7dfd86350e4e00b722b943a02cb14c
	https://www.gov.ie/en/foreshore-notices/
	Port websites
Aquaculture	https://www.gov.ie/en/collection/d8ea9-aquacultureforeshore-licence-applications
	https://www.gov.ie/en/collection/794ef-marine-finfish-licences/
	https://www.gov.ie/en/collection/ae2ab-shellfish-licences/
CCUS	https://opendata-thecrownestate.opendata.arcgis.com/datasets/8cae2b24b1f6457c8311af3e794246d3
	UK Planning Inspectorate website
	https://www.ccstlm.com/site/system/resources/interfaces/The_East_Irish_Sea_CCS_Cluster_Summary_Brochure2728.pdf?id=16
	https://www.geos.ed.ac.uk/sccs/project-info/2121
	https://www.offshore-energy.biz/uk-awards-storage-licence-for-depleted-gas-field-in-east-irish-sea/
Coastal Assets and Infrastructure	https://www.gov.ie/en/collection/f2196-foreshore-applications-and-determinations/
	https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1
	https://www.pleanala.ie/
	https://www.pleanala.ie/en-ie/map-search
	https://www.myplan.ie/national-planning-application-map-viewer/
	https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1
	https://www.maritimeregulator.ie/
	Public notices
	County council planning portals and maps
Surveys	https://iooa.ie/exploration-activity/#drilling-operations
	https://www.housing.gov.ie/
	https://www.gov.ie/en/foreshore-notices/
	https://www.maritimeregulator.ie/
	https://www.oireachtas.ie/en/debates/question/2019-10-15/623/

38.2.1.3 Stage 2: Screening of the Long List of 'Other Projects'

Stage 2 of the CEA involved a screening exercise of the "*Long List*" whereby each of the EIA Specialists (onshore, offshore, and wider scheme) considered whether each of other projects (including all of the Tier 1, 2 and Tier 3 onshore and Tier 3 offshore projects) have the potential to give rise to likely significant cumulative effects with the proposed development during the construction, operation or decommissioning phases. Many of the projects were screened out by the EIA Specialists for a number of reasons including the location, scale and nature of the project, level of confidence in the publicly available data provided, predicted construction timelines etc. The outcome of this '*screening*' exercise for the onshore and wider scheme and offshore EIAR topics and the reasons why certain projects were screened out are provided in Section 38.2.2 below and Appendix 38.2 respectively.

38.2.1.4 Stage 3: CEA

Following Stage 2, those projects which were "screened in" by the EIA Specialists were carried forward for assessment.

The results of the Stage 3 CEA are presented in the following chapters:

- In Volume 3 (Offshore chapters), the cumulative effects between the proposed development and other "screened in" projects are described within each topic chapter (Chapters 10 to 20).
- In Volume 4 (Onshore chapters), (Chapters 21 to 26) and in Volume 5 (Wider Scheme chapters), (Chapters 27-28, 30-34) the cumulative effects between the proposed development and other "screened in" projects are described in Section 38.2 of this chapter. Table 38.5 below presents the results of the CEA (under the relevant onshore and wider scheme topics) for the 'screened-in' projects with the proposed development.
- In Volume 5, Chapter 29 SLVIA, the cumulative "seascape and visual" effects between the offshore infrastructure of the proposed development and other "screened in" projects (including other East coast Phase One Projects) are described in Section 29.9 of that chapter. Further details are also provided in Volume 11, Appendix 29.2 Cumulative Visual Impact Assessment at Representative Viewpoint Locations and Volume 7B1 Photomontages (offshore wind farm). The cumulative "landscape and visual" effects between the onshore infrastructure of the proposed development and other "screened in" projects are described in Section 38.2 of this chapter. Table 38.5 below presents the results of the "landscape and visual" CEA for the 'screened-in' projects with the proposed development.
- In Volume 5, Chapter 35 Offshore Bats, the cumulative effects between the proposed development and other existing and/or approved projects are described in Section 35.9 of that chapter.

Mitigation measures to minimise likely significant cumulative effects for onshore and wider scheme topics are detailed in Section 38.2.4. Mitigation measures, should they be required to minimise likely significant cumulative effects for offshore topics are detailed in within each topic chapter (Chapters 10 to 20 and 35).

Table 38.6 below in Section 38.2.5 presents a summary of the overall CEA of the "screened-in" projects (i.e. Tier 1, Tier 2, Tier 3 Onshore and Tier 3 Offshore) in combination with the proposed development for all onshore, offshore, and wider scheme EIA topics.

38.2.2 Stage 2: Screening

38.2.2.1 Screening Results of Long List (Onshore and Wider Scheme Topics)

As noted in Section 38.2.1.3 above, Stage 2 involved a screening exercise of the onshore and offshore "Long Lists" (as presented in Tables 38.2, 38.3 and 38.4 below and in Table 4 of Appendix 38.2) whereby each of the EIA Specialists considered whether each of the other projects have the potential to give rise to likely significant cumulative impacts with the proposed development during the construction, operation and decommissioning phases. Many of the projects were screened out by the EIA Specialists for a number of reasons including the location, scale, nature and construction timing of the projects. The outcome of this '*screening*' exercise is presented in Tables 38.2, 38.3 and 38.4 below for the onshore and wider scheme topics.

Table 38.2 lists the screened-in projects for the construction stage, Table 38.3 lists the screened-in projects for the operational stage whilst Table 38.4 lists the screened-in projects for the decommissioning stage. Note: only projects which have been screened-in by onshore and wider scheme topics are listed in these tables. Refer to the long list of projects in Appendix 38.1 and 38.2 for full details of the projects such as distance to proposed development boundary, status etc. The project numbers referenced in the tables below correspond to the projects listed in Table 1 of Appendix 38.1.

The reasoning why certain projects were screened out is also provided below in Section 38.2.2.2. The screening exercise and reasoning for the offshore topics are presented in Table 4 of Appendix 38.2.

Note on decommissioning: the operational life of the Tier 1 and Tier 3 Onshore projects is predicted to extend well beyond the 35-year operational life of the proposed development. The Tier 1 and Tier 3 Onshore projects are expected to be still operating when the proposed development is being decommissioned.

Therefore, there is no potential for cumulative effects during the decommissioning phase of the Tier 1 or Tier 3 Onshore projects and the decommissioning phase of the proposed development.

The potential for cumulative effects arising during the decommissioning of the proposed development and the operational phase of Tier 1 and Tier 3 Onshore projects is limited to the following EIA topics - Water (surface water run-off), Biodiversity (disturbance), Noise (noise emissions during decommissioning activities), Air Quality (dust emissions during decommissioning activities), Resource and Waste Management and Traffic and Transportation.

Due to the distance of the Tier 1 project from the onshore elements of the decommissioning activities, it is considered that there is no potential for cumulative affects to occur in relation to the aforementioned environmental topics and is therefore these were screened out from further consideration.

Due to the nature (i.e. residential, transportation) and location of the Tier 3 Onshore projects along with the relatively small scale and non-intrusive nature of the onshore decommissioning activities along the onshore cable route, no significant cumulative decommissioning effects are predicted. The decommissioning activities at the grid facility are of a larger scale than those along the onshore cable route but given the nature of the Tier 3 Onshore projects, no significant cumulative effects are predicted. Therefore, Tier 3 Onshore projects are screened out from further consideration.

None of the onshore and wider scheme topics screened-in Tier 2 or Tier 3 offshore projects during decommissioning stage with the exception of the Major Accidents and Disasters topic. Major Accidents and Disasters identified potential cumulative effects during the decommissioning phase for each of the Tier 2 projects and two Tier 3 Offshore projects due to the nature of the offshore infrastructure of the proposed development, the potential decommissioning activities, and the location of these particular Tier 2 and Tier 3 offshore projects.

Table 38.2: Stage 2: Projects Screened in by onshore and Wider Scheme EIA Topics and brought forward for Stage 3 Assessment – CONSTRUCTION Phase

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
Tier 1															
1	OMF														✓
Tier 2															
2	Oriel Wind Park					✓									✓
3	Codling Wind Park					✓									✓
4	Arklow Bank Wind Park 2					✓									✓
5	Dublin Array					✓									✓
Tier 3 Onshore															
7	Residential Development		✓	✓		✓		✓							
8	Greater Dublin Drainage Project	✓	✓	✓	✓	✓		✓			✓	✓	✓		
9	Transport Infrastructure		✓	✓	✓			✓				✓	✓		
10	Residential Development		✓	✓		✓		✓				✓			
11	Residential Development	✓	✓	✓	✓	✓		✓				✓			

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
12	Residential Development		✓	✓		✓		✓							
13	Transport Infrastructure				✓			✓					✓		
14	Residential Development					✓		✓							
15	Residential Development														
16	Electricity Infrastructure				✓			✓					✓		
17	Residential Development					✓		✓							
18	Residential Development					✓		✓				✓			
19	Residential Development					✓		✓			✓				
20	Residential Development					✓		✓							
24	Residential Development					✓									
25	Residential Development					✓									
26	Residential Development		✓	✓		✓						✓			

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
30	Residential Development					✓					✓	✓			
31	Residential Development		✓	✓		✓									
32	Residential Development		✓	✓		✓					✓				
33	Greenway			✓											
34	Residential Development					✓						✓			
35	Residential Development					✓					✓	✓			
36	Transport Infrastructure		✓	✓	✓							✓	✓		
37	Transport Infrastructure				✓							✓	✓		
38	Electricity Infrastructure		✓	✓	✓			✓				✓	✓		
45	Residential Development	✓				✓		✓							
46	Electricity Infrastructure			✓											
49	Residential Development		✓	✓		✓		✓							

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
50	School Development/ amendments		✓	✓				✓		✓	✓				
51	Residential Development	✓				✓		✓							
52	Electricity Infrastructure			✓											
53	Residential Development		✓	✓		✓		✓			✓				
54	Infrastructure Development							✓		✓	✓				
55	Electricity Infrastructure		✓	✓	✓			✓					✓		
56	Residential Development					✓		✓							
57	Residential Development					✓		✓							
60	Residential Development							✓							
61	Commercial Developments			✓											
63	Residential Development					✓		✓							

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
64	School Development/ amendments							✓			✓				
66	Transport Infrastructure				✓			✓					✓		
68	Residential Development					✓									
69	Transport Infrastructure		✓	✓	✓	✓		✓			✓	✓	✓		✓
70	Electricity Infrastructure		✓	✓	✓		✓	✓			✓		✓		✓
71	Residential Development					✓		✓			✓				
72	Commercial Development		✓	✓		✓					✓				
73	Residential Development														
75	Residential Development					✓		✓			✓				
76	Transport Infrastructure			✓	✓	✓		✓		✓	✓	✓	✓		✓
77	Greenway (Fingal Coastal Way)		✓	✓	✓	✓		✓		✓		✓	✓		

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
78	Infrastructure Development		✓	✓	✓			✓			✓	✓	✓		
79	Transport Infrastructure		✓	✓	✓			✓					✓		
80	Sports and Recreation		✓	✓		✓		✓		✓	✓	✓			
81	Residential Development					✓		✓			✓				
82	Residential Development					✓		✓			✓				
83	Residential Development			✓											
84	Residential Development					✓						✓			
85	Residential Development		✓	✓		✓		✓			✓				
88	Electricity Infrastructure	✓	✓	✓	✓		✓	✓			✓		✓		
Tier 3 Offshore															
A38.2	Arklow Bank Phase 1														✓
A38.2 38.2	Bremore Port														✓

* Refer to Table 1 of Appendix 38.1 and Table 4 of Appendix 38.2 (A.38.2) for further details on the project types.

** Landscape and Visual cumulative effects from the onshore infrastructure are considered in this chapter. Seascape and Visual cumulative effects from the offshore infrastructure are separately considered in Chapter 29.

Table 38.3: Stage 2: Projects Screened in by onshore and Wider Scheme EIA Topics and brought forward for Stage 3 Assessment – OPERATIONAL Phase

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
Tier 1															
1	OMF														✓
Tier 2															
2	Oriel Wind Park					✓	✓	✓	✓				✓	✓	✓
3	Codling Wind Park					✓	✓	✓	✓				✓	✓	✓
4	Arklow Bank Wind Park 2					✓	✓	✓	✓				✓	✓	✓
5	Dublin Array					✓	✓	✓	✓				✓	✓	✓
Tier 3 Onshore															
21	School Development/									✓					
50	School Development/									✓					
54	Infrastructure Development									✓					
69	Transport Infrastructure						✓								✓
70	Electricity Infrastructure						✓								✓
73	Residential Development									✓					
76	Transport Infrastructure						✓			✓					✓
86	Transport Infrastructure (Harry Reynolds) Road)									✓					

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
88	Electricity Infrastructure						✓								
Tier 3 Offshore															
A38.2	Arklow Bank Phase 1														
A38.2	Bremore Port														✓

* Refer to Table 1 of Appendix 38.1 and Table 4 of Appendix 38.2 for further details on the project types.

** Landscape and Visual cumulative effects from the onshore infrastructure are considered in this chapter. Seascape and Visual cumulative effects from the offshore infrastructure are separately considered in Chapter 29.

Table 38.4: Stage 2: Projects Screened in by onshore and Wider Scheme EIA Topics and brought forward for Stage 3 Assessment – DECOMISSIONING Phase

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
Tier 1															
1	OMF														✓
Tier 2															
2	Oriel Wind Park														✓

Project No.	Project Name/ Type*	Onshore EIA Topics							Wider Scheme EIA Topics						
		Land and Soils	Water	Biodiversity	Traffic and Transport	Onshore Archaeology	Material Assets	Air Quality	Climate	Landscape and Visual**	Noise and Vibration	Resource and Waste	Population and Human Health	Socio – Economic, Tourism & Recreation	Major Accidents and Disasters
3	Codling Wind Park														✓
4	Arklow Bank Wind Park 2														✓
5	Dublin Array														✓
Tier 3 Offshore															
A38.2	Arklow Bank Phase 1														✓
A38.2	Bremore Port														✓

* Refer to Table 1 of Appendix 38.1 and Table 4 of Appendix 38.2 for further details on the project types.

** Landscape and Visual cumulative effects from the onshore infrastructure are considered in this chapter. Seascape and Visual cumulative effects from the offshore infrastructure are separately considered in Chapter 29.

38.2.2.2 Reasons for Screening out Projects (Onshore and Wider Scheme Topics)

Land and Soils

This topic covers an assessment of cumulative effects from the proposed development on land, soil, geology and hydrogeology landward of the HWM during its construction, operation and decommissioning phases. Construction of the onshore infrastructure of the proposed development is expected to commence in 2026/2027 (subject to planning consent). The construction phase is expected to last two years.

The study area of this topic extends to a radius of 2km from the onshore development area. (Details on the Study Area are provided in Section 21.2.2 of Chapter 21).

Note as the potential adverse residual effects on land, soil, geology and hydrogeology arise during construction phase only, operational phase is disregarded.

Tier 1, Tier 2 and Tier 3 Offshore projects

Considering the distance and location of the Tier 1 and Tier 2 projects and Tier 3 Offshore projects from the onshore development area (i.e. extends well beyond the 2km study area), it is not predicted there will be a cumulative effect on land, soils, geology and hydrogeology.

Thus, no direct or indirect significant negative cumulative effects are predicted between these Tier 1, Tier 2 and Tier 3 Offshore projects and the proposed development on land, soils, geology, and hydrogeology. Therefore, the Tier 1, Tier 2 and Tier 3 Offshore projects have all been screened out from further assessment.

Tier 3 Onshore Projects

There were a number of Tier 3 Onshore projects which were screened out due to the distance, scale and nature of those projects in relation to the proposed development in terms of potential for cumulative effects on land, soils, geology and hydrogeology. The remaining Tier 3 Onshore projects (as listed in Table 38.2) were brought forward for further assessment (construction stage only).

Water (includes hydrology, surface water quality and flooding)

This topic covers an assessment of cumulative impacts from the proposed development on surface water quality and the existing onshore hydrological regime landward of the HWM under the heading of Water during its construction, operation, and decommissioning phases.

The study area extends to a radius of 250m from the onshore development area (details on the Study Area are provided in Section 22.2.2.1 of Chapter 22).

However, while assessing the potential impacts, due consideration was also given to surface water receptors where there is the potential for a hydrological connection irrespective of the distance from the onshore development area.

Tier 1, Tier 2 and Tier 3 Offshore projects

Given the distance and location of the Tier 1 and Tier 2 projects and the Tier 3 Offshore projects from the onshore development area (i.e. extends well beyond the study area), it is not predicted that there will be a cumulative effect on water.

Thus, no direct or indirect significant negative cumulative effects predicted between these Tier 1, Tier 2 and Tier 3 Offshore projects and the proposed development on Water. Therefore, the Tier 1, Tier 2 and Tier 3 Offshore projects have all been screened out from further assessment.

Tier 3 Onshore Projects

During construction phase, cumulative effects resulting from the proposed development and Tier 3 Onshore projects are considered to arise where both the onshore infrastructure of the proposed development and the Tier 3 Onshore projects occur in close proximity. In this case, cumulative effects mainly relate to changes to water quantity, water quality and flooding. The following process was followed when screening out Tier 3 Onshore projects during construction stage:

- Tier 3 projects outside 2km from the proposed development (based on professional judgement)

- Tier 3 projects outside the hydrological drainage catchment of a watercourse crossed or impacted by the proposed development
- Tier 3 projects not crossing a watercourse crossed or impacted by the proposed development
- Tier 3 projects not within the catchment flood risk management boundary

Tier 3 Onshore projects which met any of the above criteria were screened out from further assessment. The remaining Tier 3 Onshore projects (as listed in Table 38.2) were brought forward for further assessment.

Given that the operational phase of the proposed development will have an imperceptible and slight effect on water and flooding respectively, it is considered that there is no potential for cumulative effects during the operational phase of the proposed development. In addition, while the operation of the Tier 3 Onshore projects will result in an increase of impermeable surfaces, the proposed development site will be restricted to greenfield run-off rates and any other Tier 3 Onshore developments will be required to implement SuDS, which will restrict run-off and therefore the potential for cumulative effects is screened out.

Biodiversity

This topic covers an assessment of cumulative impacts from the proposed development on biodiversity occurring landward of the HWM.

Tier 1, Tier 2 and Tier 3 Offshore projects

Given the distance and location of the Tier 1, Tier 2 and Tier 3 offshore projects from the onshore development area, no cumulative negative or positive likely significant effects are predicted from these developments and are therefore disregarded from further assessment.

Tier 3 Onshore projects

Note as the potential adverse residual effects on biodiversity arise during construction phase only. The proposed development will have a not significant positive effect during the operational phase.

Tier 3 Onshore projects have been screened out of the CEA in relation to biodiversity if:

- the cumulative project alone does not result in habitat loss and does not occur in close proximity to the offline sections of the onshore development area
- the cumulative project does not occur within 300m of the offline sections of the onshore development area or Malahide Estuary, which is a sensitive receptor for biodiversity or
- does not occur within the same hydrological catchment of the onshore development area and will not result in potential water quality effects which could have an indirect effect on biodiversity
- A distance of 300m is considered to be a threshold for disturbance and displacement effects on fauna, in particular wintering waterbirds as it is not expected that these effects will extend beyond a distance of c. 300m from construction works, as noise levels associated with general construction activities would attenuate close to background levels at that distance (Cutts *et al*., 2009)

Offline sections of the onshore development area located at the landfall site, grid facility, water crossing Wx10 (Aldrumman Stream), Blakes Cross North including water crossing Wx11 (Ballough Stream), Blakes Cross South including water crossings Wx12 (Deanestown Stream) and Wx13 (Ballyboghill Stream), M1 crossing, Malahide Estuary, water crossing Wx20 (Gaybrook Stream), water crossing Wx22 (Sluice Stream) and at the existing 220kv substation at Belcamp.

The remaining Tier 3 Onshore projects were brought forward for further assessment during construction phase.

Traffic and Transportation

This topic covers an assessment of cumulative impacts from the proposed development on traffic landward of the HWM during its construction, operation, and decommissioning phases.

Tier 1, Tier 2 and Tier 3 Offshore projects

Given the distance and location of the Tier 1 project from the onshore development area, there are no direct or indirect significant negative cumulative effects predicted between the Tier 1 project and the proposed development on traffic and transportation. Given that all components will be brought to site via vessel and not road, no direct or indirect significant negative cumulative effects are predicted between the proposed development and Tier 2 and Tier 3 Offshore projects.

Therefore, the Tier 1, Tier 2 and Tier 3 Offshore projects have all been screened out from further assessment.

Tier 3 Onshore projects

A screening exercise of the "long list" was carried out in order to determine whether any of the Tier 3 projects have the potential to give rise to likely direct or indirect significant cumulative effects with the proposed development from a traffic and transportation perspective.

Note, the 2023 annual average daily traffic (AADT) were converted to 2026 AADT based on county specific link-based growth rates for light goods vehicles and heavy goods vehicles. Growth rates for Dublin, Meath and Louth were used as appropriate. Therefore, it is considered that any traffic generated as a result of Tier 3 Onshore projects has already been accounted for. As such, it is considered there is no potential for cumulative effects during the operational phase of the proposed development.

Residual effects were not identified as a result of the proposed development's construction traffic impact or abnormal loads impact on traffic operations. Any potential additional construction traffic or abnormal loads expected as part of the Tier 3 Onshore projects were therefore screened out from further assessment. Residual effects were identified as a result of the proposed development's temporary full and partial road closures on local and strategic diversion route operations. Any Tier 3 Onshore projects with the potential for temporary full or partial road closures were therefore screened in. Projects such as residential and commercial developments, were screened out as they were not likely to require any temporary full or partial road closures during their construction phases and due to the contribution of the proposed development on traffic volumes being considered low or negligible.

Those projects which were "screened in" for construction phase included infrastructure development, for example, Bus Connects and Metrolink railway and Metrolink 110kV cables, as these may require temporary full or partial road closures during construction.

Archaeology, Architectural and Cultural Heritage

This topic covers an assessment of cumulative impacts from the proposed development on archaeological, architectural, or cultural heritage landward of the HWM during its construction, operation and decommissioning phases.

Tier 1 and Tier 3 Offshore projects

No significant negative cumulative effects have been identified upon the archaeological, architectural, or cultural heritage resource as a result of the development of Tier 1 projects and Tier 3 Offshore projects, due to the distance of separation for both construction and operational phases.

Tier 2 Projects

There is potential for cumulative effects arising from Tier 2 projects during operation and construction and these have therefore been screened in (as listed in Table 38.2 and 38.3) and brought forward for further assessment.

Tier 3 Onshore projects

Any proposed or permitted Tier 3 Onshore projects where no disturbance of greenfield areas is required, or which have already been subject to archaeological investigations, have been screened out of the cumulative assessment, as no impacts upon the archaeological or cultural heritage resource will occur. No direct or indirect significant negative cumulative impacts upon the architectural heritage resource have been identified as a result of the proposed onshore development. The proposed onshore development will not impact any architectural heritage resource. The remaining Tier 3 Onshore projects (as listed in Table 38.2) were brought forward for further assessment during the construction phase.

Given that no residual effects are predicted upon the archaeological, architectural, or cultural heritage resource during operation it is considered that there is no potential for cumulative effects during the operational phase of the proposed development.

Material Assets

This topic covers an assessment of cumulative impacts from the proposed development on material assets landward of the HWM during its construction, operation, and decommissioning phases.

Tier 1, Tier 2 and Tier 3 Offshore projects

Given the distance and location of the Tier 1 project and the Tier 3 Offshore projects from the onshore development area, there are no direct or indirect significant negative cumulative effects predicted between these Tier 1 and Tier 3 Offshore projects and the proposed development on Material Assets. Therefore, the Tier 1 and Tier 3 Offshore projects have all been screened out from further assessment for both construction and operational phases.

There is potential for cumulative effects arising from Tier 2 projects in the operational phase and these have therefore been screened in (as listed in Table 38.3) and brought forward for further assessment.

Tier 3 Onshore projects

The majority of the Tier 3 Onshore projects have been screened out due to the distance, scale and nature of those projects and the expectation that those projects will employ mitigation measures to avoid damage, in relation to the potential for cumulative effects on material assets for both construction and operational phases.

However, a number of Tier 3 Onshore projects were screened in for further assessment given the location and nature of the projects. These projects are listed in Section 38.2.2.1 and discussed in further detail in Section 38.2.3.

Air Quality

Tier 1 and Tier 3 Offshore projects

No significant adverse air quality impacts associated with the offshore elements of the proposed development alone are predicted to occur. Given the separation and nature of the Tier 1 and Tier 3 Offshore projects, no significant adverse cumulative effects predicted. Therefore, Tier 1 and Tier 3 Offshore (including offshore long list) projects (construction and operational phases) have all been screened out from further assessment.

Tier 2 projects

Tier 2 projects have been screened in during the operational phase due to the potential positive effect due to the reduction in pollution due to the generation of non-renewable power.

Tier 3 Onshore projects

Tier 3 Onshore projects have been screened in (during construction phase) for consideration where they are located within 250m of the onshore development area. This is on the basis that construction dust impacts will only arise within 250m of the works in accordance with Institute of Air Quality Management (IAQM) guidance (Assessment of dust from demolition and construction 2024 V2.2). Any Tier 3 Onshore projects which do not meet this criterion are screened out.

A positive effect on air quality is predicted during the operational phase of the proposed development alone. Therefore, no adverse cumulative effects are likely to arise during operational phase and Tier 3 Onshore projects are not considered further.

Climate

Tier 1, Tier 3 Onshore and Tier 3 Offshore Projects

A significant beneficial effect on climate due to the proposed development alone is predicted to occur over its lifecycle. The Tier 1, Tier 3 Onshore and Tier 3 Offshore projects are predicted to have an adverse effect. Therefore, there will not be a cumulative effect that is greater than the project on its own. Consequently, these projects are screened out from further assessment.

Tier 2

A significant beneficial effect on climate due to the proposed development alone is predicted to occur over its lifecycle. Due to the nature of the Tier 2 projects (renewable offshore energy) there will be significant beneficial cumulative effects with the proposed development and these projects have been screened in for further assessment.

Landscape and Visual

Tier 2 projects in combination with the offshore infrastructure of the proposed development

The cumulative seascape and landscape effects of the Tier 2 projects in combination with the offshore infrastructure of the proposed development are assessed in detail in Chapter 29 and in Appendix 29.2 and Volume 7B1 Photomontages (offshore wind farm) of this EIAR.

Tier 3 Offshore Projects in combination with the offshore infrastructure of the proposed development

Details on the screening of the Tier 3 Offshore projects in combination with the offshore infrastructure of the proposed development in terms of seascape and landscape are provided in Appendix 38.2 of the EIAR.

Tier 1 and Tier 3 Onshore projects in combination with the offshore infrastructure of the proposed development

Given the distance, location and terrestrial context of the Tier 1 and Tier 3 Onshore projects in relation to the offshore infrastructure of the proposed development, no significant cumulative effects are predicted during construction or operation and these projects are therefore screened out.

Tier 1 and Tier 3 Onshore projects in combination with the onshore infrastructure of the proposed development

Given the distance between the onshore infrastructure of the proposed development and the Tier 1 project, no significant cumulative effects are predicted during construction or operation, and this project is therefore screened out.

Due to distance and relative scale, the Tier 3 Onshore projects that fall outside of the defined study areas for the proposed Grid Facility (3km radius) and onshore cable route (500m buffer) are not considered to have any potential to generate significant cumulative effects in combination with the proposed development during construction or operation and are screened out.

In relation to Tier 3 Onshore projects located within the study areas, the proposed onshore cable route will only give rise to temporary and transient landscape and visual effects during the construction phase, and these are predominantly within the road corridor and occasionally within adjacent fields at river and road crossings. There will be no material effects from the underground cable during the operational phase of the proposed development. Consequently, the only potential for any cumulative effects to occur in combination with the onshore cable route is where the timing / location of construction works for other Tier 3 projects within the onshore cable route study area overlaps directly with the construction works for the onshore cable route. In such instances, the combined effects of construction activities may result in a minor increase in temporary landscape and visual effects in a very localised context. Such temporary cumulative effects are not considered to be potentially significant, therefore, onshore cumulative developments that fall within the onshore cable route study area are screened out.

Only Tier 3 Onshore projects that fall within the proposed Grid Facility 3km study area have been screened-in for further cumulative assessment for construction and operational phases.

Noise and Vibration

Tier 1, Tier 2 and Tier 3 Offshore projects

Given there are no predicted significant noise impacts associated with the offshore elements of the proposed development alone during either the construction or operational phase, and similarly Tier 2 projects and given the distance, location and nature of the Tier 1 projects and the Tier 3 Offshore projects, there are no negative significant cumulative effects predicted. Therefore, Tier 1, Tier 2 and Tier 3 Offshore projects have all been disregarded/screened out from further assessment.

Tier 3 Onshore projects

For the operational phase of the proposed development, there are no noise or vibration impacts which could lead to any cumulative effects in combination with other Tier 1 or Tier 3 Onshore projects: all potential operational phase cumulative effects from onshore projects were therefore screened out.

Regarding construction phase impacts, Tier 3 Onshore projects were screened out which met all of the following criteria:

- Those Tier 3 projects whose proposed footprint/development boundary is greater than 300m from the proposed development boundary (meaning no cumulative effects from combined construction activities could occur), and
- Those Tier 3 projects whose associated construction traffic is not likely to use the same local roads as the construction traffic for the proposed development (meaning no cumulative effects from construction traffic noise could occur), and
- Those projects of a scale small enough that their individual noise impacts would not be likely to lead to any cumulative effects (meaning no cumulative effects could occur).

The remaining Tier 3 Onshore projects (as listed in Table 38.2) were brought forward for further assessment.

Resource and Waste Management

Tier 1 and Tier 2 projects

Given that the Tier 1 and Tier 2 projects have not yet submitted planning consent applications and no publicly available waste generation and resource use information is available on these projects, these projects have all been screened out from further assessment.

Tier 3 Offshore projects

Given the distance, location, nature and scale of the Tier 3 Offshore projects, there are no significant cumulative effects predicted. Therefore, Tier 3 Offshore projects have all been screened out from further assessment.

Tier 3 Onshore projects

Given the nature and moderate scale of the majority of the Tier 3 onshore projects, there are no significant cumulative effects predicted. Therefore, these projects have been disregarded/screened out from further assessment. The remaining Tier 3 Onshore projects (as listed in Table 38.2) were brought forward for further assessment.

Population and Human Health

Tier 1, Tier 2 and Tier 3 Offshore projects

Given the distance, location, nature and scale of the Tier 1, Tier 2 and the Tier 3 Offshore projects from the onshore development area, there are no significant cumulative effects predicted. Therefore, Tier 1, Tier 2 and Tier 3 Offshore projects have all been screened out from further assessment.

Tier 3 Onshore projects

During the construction phase, there will be residual significant effects from the proposed development alone on accessibility and journey patterns in proximity to some sections of the onshore cable route due to full and partial road closures and diversions. There will be no residual effects relating to environmental amenity or human health during the construction phase.

A screening exercise was carried out in order to determine whether any Tier 3 Onshore projects have the potential to give rise to likely significant cumulative effects, based on the locations of significant accessibility and journey pattern effects and cumulative traffic and transport impacts. The onshore cable route sections where significant accessibility and journey pattern effects were identified.

Projects leading to potential cumulative traffic and transport impacts in these locations may lead to potential cumulative effects on accessibility and journey patterns. Those projects (as listed in Table 38.2) were screened in and brought forward for further assessment. All other Tier 3 onshore projects have been screened out.

During the operational and decommissioning phases, no residual population and human health effects were identified. There is no potential for direct or indirect significant negative cumulative effects from any Tier 3 onshore projects during these phases.

Socio-Economic, Tourism and Recreation

Tier 1, Tier 3 Onshore and Tier 3 Offshore

Employment and Gross Value Added (GVA)

The proposed development itself will have a positive, significant and long-term effect on employment during the operational phase and a positive, significant and short-term effect during the construction phase. It is not considered the that the Tier 3 Onshore and Tier 3 Offshore projects will cumulatively result in change to the magnitude of this impact due to the nature and scale of these projects.

In relation to the Tier 1 project, there is not sufficient data available to carry out a meaningful cumulative assessment. Note, employment and GVA associated with the operation and maintenance phase of the proposed development is accounted for in Volume 5, Chapter 33 Socio-Economic, Tourism and Recreation itself.

Therefore, Tier 1, Tier 3 Onshore and Tier 3 Offshore projects are screened out for further assessment.

Tourism and Recreation

During the construction phase, given the nature of the proposed development and the mitigation measures proposed, there will be no significant residual effects from the proposed development on tourism and recreation from an onshore and offshore perspective. Localised road closures will be enforced at various locations of the proposed development during the construction phase. Access will be maintained during the construction phase of the proposed development for tourism, recreational, community and social facilities as far as practicable.

The proposed development itself will have a not significant effect on Tourism and Recreation during the operational phase.

Therefore, there is no potential for cumulative effects arising from the proposed development with any of the Tier 1, Tier 3 Onshore or Tier 3 Offshore projects from a tourism and recreation perspective and are therefore screened out for further assessment.

Tier 2

Employment and GVA

Given that the Tier 2 projects will also each be providing a Community Benefit Fund and employment, it is considered reasonable to assume that a cumulative positive significant (or greater) effect will arise. Therefore, the Tier 2 projects have been screened in for further assessment during operational phase.

Tourism and Recreation

Given the nature of the proposed development and the mitigation measures proposed, there will be no significant residual effects from the proposed development on tourism and recreation from an onshore and offshore perspective.

The proposed development itself will have a not significant effect on Tourism and Recreation during the operational phase.

Therefore, there is no potential for cumulative effects arising from the proposed development with any of the Tier 2 projects from a tourism and recreation perspective and are therefore screened out for further assessment during construction or operational phases.

Major Accidents and Disasters

Tier 1 and Tier 2 Projects

Having regard to the risk events presented in Volume 5, Chapter 34: Major Accidents and Disasters (hereafter referred to as the 'Major Accidents and Disasters' Chapter), it is considered that all Tier 1 and Tier 2 projects have the potential to result in negative significant cumulative effects during the construction, operational and decommissioning phases and therefore have been screened in for further assessment. Table 38.2, 38.3 and 38.4 list the Tier 2 projects which were brought forward for further assessment.

Tier 3 Onshore Projects

Due to the nature and scale of the majority of the Tier 3 Onshore projects (with the exception of three), there are no negative significant cumulative effects predicted during the construction, operational and decommissioning phases. Therefore, these projects have been screened out from further assessment.

The three remaining Tier 3 Onshore projects which were brought forward for further assessment are those which are considered to present a plausible risk event cumulatively with the proposed development during construction phase. Table 38.2 lists the Tier 3 Onshore projects which were brought forward for further assessment.

Tier 3 Offshore Projects

Due to the nature, location and scale of the majority of the Tier 3 Offshore projects, there are no negative significant cumulative effects predicted during the construction, operational or decommissioning phases. Therefore, these projects have all been screened out from further assessment.

The remaining Tier 3 Offshore projects which were bought forward for further assessment are listed in Tables 38.2, 38.3 and 38.4.

38.2.3 Stage 3 CEA

Section 38.2.2 above explains which Tier 1, Tier 2, Tier 3 Onshore and Tier 3 Offshore projects were screened in/out for CEA for which environmental topics. Table 38.2, 38.3 and 38.4 above lists the environmental topics for which the Tier 2, Tier 3 Onshore and Tier 3 Offshore projects were screened in during construction, operational and decommissioning.

Table 38.5 presents the results of the CEA (under the relevant onshore and wider scheme topics). The project numbers mentioned in the table below correspond to the projects listed in Table 1 of Appendix 38.1, which is the onshore long list.

Table 38.6 below in Section 38.2.5 presents a summary of the overall CEA of the "screened-in" projects (i.e. Tier 1, Tier 2, Tier 3 Onshore and Tier 3 Offshore) in combination with the proposed development for the onshore, offshore and wider scheme EIA topics.

Table 38.5: Onshore and Wider Scheme CEA

Environmental Topic	"Screened-in" Projects	Significance of Effects
Land, Soils, Geology and Hydrogeology	Tier 3 Onshore: Projects 8, 11, 45, 51 and 88	During the construction phase, the residual effects of the proposed development alone on land, soils, geology and hydrogeology will be imperceptible. The proposed works associated with the screened-in projects will all individually result in the loss of a small quantity of soil and geology. Given that the residual effects from the proposed development alone will be imperceptible, its contribution to cumulative effects will be imperceptible and no additional mitigation is required. In conclusion, no likely significant direct or indirect cumulative effects from the proposed development and the screened-in projects are predicted during the construction phase.
Water	Tier 3 Onshore: Projects 7, 8, 9, 10, 11, 12, 26, 31, 32, 36, 38, 49, 50, 53, 55, 69, 70, 72, 77, 78, 79, 80, 85 and 88	During the construction phase, the residual effects of the proposed development alone on water quality or flood risk are expected to be temporary and imperceptible. The EIARs for the screened-in projects have all been reviewed. Some of these screened-in projects are located within the same hydrological catchment as the onshore development, therefore there is potential for downstream cumulative water quality impacts. However, none of the EIARs for the screened-in projects are reporting significant residual effects on water quality from those screened-in projects alone. Cumulatively, the overall effect on water quality and flood risk of the proposed development and all of the other screened-in projects combined is considered not significant and no additional mitigation is required. Therefore, no likely significant direct or indirect cumulative effects are predicted during the construction phase.
Biodiversity	Tier 3 Onshore: 7, 8, 9, 10, 11, 12, 26, 31, 32, 33, 36, 38, 46, 49, 50, 52, 53, 55, 61, 69, 70, 72, 76, 77, 78, 79, 80, 83, 85 and 88	The majority of the screened in projects are within the same hydrological catchment as the onshore development area, therefore there is potential for downstream cumulative water quality impacts and subsequently an indirect effect on biodiversity. As assessed under Water above, there are no likely significant direct cumulative effects predicted with the proposed development and the screened-in projects on water quality and therefore no indirect cumulative effects on biodiversity. The majority of these projects do not occur within 300m of Malahide Estuary or any offline section of the onshore development area, therefore there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity. Therefore, no likely significant direct or indirect cumulative effects are predicted during the construction phase. Project 53 does occur within 300m of the offline section at water crossing Wx22 (Sluice Stream). If construction works were to occur simultaneously, cumulative displacement and disturbance impacts on breeding birds and local fauna could arise. The Project 53 Outline CEMP sets out mitigation measures to protect and reduce impacts on biodiversity. Considering the mitigation of the proposed development along with the mitigation of Project 53, there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with Project 53. The Broadmeadow greenway project (Project 33) is proposed to traverse Malahide Estuary along the existing railway embankment. While the greenway location at the Malahide Estuary is not within 300m of the onshore development area, given the sensitive nature and importance of Malahide Estuary for wintering waterbirds, for which it is designated a European and national site of conservation, there is potential for cumulative disturbance and displacement effects to arise. Mitigation measures set out in the EIAR for the Broadmeadow greenway state that construction along the embankment will occur outside the overwintering period. This measure will avoid an overlap of construction with the proposed development during the sensitive overwintering period. With the proposed mitigation measures for Project No. 33 in place, including water quality measures, there are no significant adverse impacts. There are no likely significant direct or indirect cumulative effects in combination with the proposed development and Broadmeadow greenway project (Project 33) on habitat loss, disturbance and displacement and water quality. Project 46 does occur within 300m of the offline section of the onshore development area at Belcamp substation as Project 46 connects into the same existing substation. If construction works are to occur simultaneously cumulative displacement and disturbance impacts on breeding birds and local fauna could arise. The project mitigation measures reduce the impacts to neutral imperceptible. Therefore, there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with Project 46. Project 52 does occur within 300m of the offline section of the onshore development area at Belcamp substation as Project 52 is for a substation at Belcamp. If construction works are to occur simultaneously cumulative displacement and disturbance impacts on breeding birds and local fauna could arise. The project mitigation measures reduce the residual impacts to low in magnitude or short-term in duration. Considering the mitigation of the proposed development along with the mitigation of Project 52, there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with Project 52. Projects 55, 70, 78 and 88 all occur within 300m of the offline section of the onshore development area at Belcamp substation. If construction works were to occur simultaneously, cumulative displacement and disturbance impacts on breeding birds and local fauna could arise. The screened-in projects (55,70,78,80) mitigation measures reduce the residual effects to no significant effects on biodiversity. Considering the mitigation of the proposed development along with the mitigation of the screened-in projects, there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with the screened-in projects. Project 76 – DART+ will involve works at the existing railway lines, of particular focus for biodiversity at the landfall site and Malahide Estuary along the existing railway embankment. As both of these locations works will occur at sensitive locations for wintering waterbirds, and there is potential for cumulative disturbance and displacement effects on wintering waterbirds and other fauna to arise. (Note a planning application for Project No 76 was pending at the time of writing this EIAR) For the purposes of this assessment and taking a precautionary approach, it has been assumed that that the likely construction period for Project 76 would overlap with the planned construction period of the proposed development at the landfall and grid facility area as well as the onshore cable route. The project will be subject to EIA and AA. It is expected that mitigation measures contained in these assessments, and considering mitigation measures for the proposed development will not result in significant residual effects. There are no likely significant direct or indirect cumulative effects predicted in combination with the proposed development and this project on disturbance and displacement of fauna and water quality. The Fingal Coastal Way greenway project (Project No 77) is proposed to traverse the coastline at the landfall site which is within 300m of the onshore development area where there is potential for cumulative disturbance and displacement effects to arise on wintering waterbirds and other fauna. (Note a planning application for Project No 77 was pending at the time of writing this EIAR). Project No 77 will be subject to EIA and AA. It is expected that mitigation measures contained in these assessments, and considering mitigation measures for the proposed development will not result in significant residual effects. There are no likely significant direct or indirect cumulative effects in combination with the proposed development and Project 77 on disturbance and displacement of fauna and water quality. Project 80 (Bremore Regional Park) is located within 300m of the offline section of the onshore development area at the landfall site. If construction works were to occur simultaneously, cumulative displacement and disturbance impacts on wintering waterbirds and local fauna could arise. Considering the mitigation measures of the proposed development, there will be no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with Project 80. Project 85 is located within 300m of the offline section at water crossing Wx22 (Sluice Stream). If construction works were to occur simultaneously, cumulative displacement and disturbance impacts on breeding birds and local fauna could arise in the absence of mitigation. The project 85 mitigation measures protect and reduce impacts on biodiversity. Considering the mitigation of the proposed development along with the mitigation of Project 85, there are no significant cumulative effects arising from habitat loss or disturbance and displacement on biodiversity from the proposed development in combination with Project 85. In conclusion, no likely significant direct or indirect negative cumulative effects from the proposed development and the screened-in projects are predicted during the construction phase.
Traffic and Transportation	Tier 3 Onshore: Projects 8, 9, 11, 13, 16, 36, 37, 38, 55, 66, 69, 70, 76, 77, 78, 79 and 88	There are likely to be negative, significant but temporary residual effects on traffic from the proposed development alone during the construction phase due to road closures on local and strategic diversion routes. Construction of the proposed development at the landfall and grid facility area and the onshore cable route is expected to commence in 2026/27 (subject to planning consent). The construction phase is expected to last for two years. For the purposes of this assessment, it was assumed that the likely construction period for the screened-in projects would partially overlap with the planned construction period for the proposed development at the landfall and grid facility area as well as the onshore cable route. The screened-in projects are located in proximity to one or more sections of the onshore cable route (1 to 15) and therefore the local and

Environmental Topic	"Screened-in" Projects	Significance of Effects
		strategic diversion route operations associated with road closures required along Sections 1-15 are most likely to have a cumulative effect with the construction of these screened-in projects. The project number and associated section of the cable route are outlined below – • Project 8 – Sections 14A, 14B and 15 • Project 9 – Sections 14A, 14B and 15 • Project 13 – Section 12 • Project 16 – Section 13 • Project 36 – Sections 6, 7, 8, 9, 10, 11, 12 & 13 • Project 37 – Section 15 • Project 38 - Sections 5, 6, 7, 8, 9, 10 & 11 • Project 55 – Section 15 • Project 66 - Sections 14A & 14B • Project 69 - Sections 8, 9, 10, 11, 12, 13, 14A, 14B & 15 • Project 70 – Section 15 • Project 76 - Sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 & 12 • Project 77 - Sections 1, 2, 3, 4, 5, 6 & 7 • Project 78 - Sections 14A, 14B & 15 • Project 79 - Sections 8 & 9 • Project 88 – Section 15 Given that the proposed development alone has reported negative, significant but temporary residual effects on traffic, the significance of the cumulative effect of the impact of potential road closures on local and strategic diversion route operations in this area is likely to be at least negative, significant but temporary.
Onshore Archaeology, Architectural and Cultural Heritage	Tier 2: Projects 2, 3, 4 and 5	**Onshore architectural, cultural heritage and archaeological assets, which will have a direct relationship, in terms of their setting, with the coast.** The proposed development alone will result in indirect impacts upon onshore architectural, cultural heritage and archaeological assets, which will have a direct relationship, in terms of their setting, with the coast. Effects on these assets from the proposed development alone will range from imperceptible to moderate negative (Refer to Table 25.17 of Chapter 25 and Figures 25.15a and 25.15b). The proposed Oriel Windfarm offshore infrastructure will be located circa. 14km north of the offshore infrastructure of the proposed development. Codling Wind Park offshore infrastructure will be located c. 51km south of the offshore infrastructure of the proposed development. Arklow Bank Windfarm Offshore Infrastructure will be located circa. 76km south of the offshore infrastructure of the proposed development. Dublin Array Offshore Infrastructure will be located c. 35km south of the offshore infrastructure of the proposed development. Due to the distance of separation between the proposed development and the Tier 2 projects, no cumulative effects are predicted upon the archaeological, cultural heritage and architectural coastal assets that are greater than already predicted as part of the proposed development alone. Therefore, no likely significant direct or indirect negative cumulative effects are predicted during the operation phase. The construction impacts for offshore infrastructure (on onshore assets) are no greater than the operational impacts.
	Tier 3 Onshore: Projects 7, 8, 10, 11, 12, 14, 17, 18, 19, 20, 24, 25, 26, 30, 31, 32, 34, 35, 45, 49, 51, 53, 56, 57, 63, 68, 69, 71, 72, 75, 76, 77, 80, 81, 82, 84 and 85	**Onshore archaeological, architectural and cultural heritage resource** The proposed onshore development will result in direct impacts upon the archaeological, architectural and cultural heritage resource, which when mitigated will be reduced to slight negative residual effects. The screened-in projects may also result in direct impacts on the archaeological, architectural and cultural heritage resource. Assuming mitigation is applied for those projects, archaeological, architectural or cultural heritage remains will be either preserved in-situ or by record. Therefore, residual effects from those screened-in projects alone will be no greater than slightly negative. Cumulatively, the overall effect on the archaeological, architectural and cultural heritage resource of the proposed development and all of the other screened-in projects combined (when considered against the resource in County Dublin) is considered not significant and no additional mitigation is required. Therefore, no likely significant direct or indirect negative cumulative effects are predicted during the construction phase.
Material Assets	Tier 2: Projects 2, 3, 4, and 5	During the operational phase, the proposed development alone will have a significant, positive, and long-term residual effect through the generation of renewable energy and a reduction in the reliance on fossil fuels. The Tier 2 Phase One projects will also generate offshore renewable energy during the operational phase. Considering that the grid upgrades required for these Tier 2 Phase One projects are either planned or in place, there will not be any potential for significant cumulative effects on the grid infrastructure. The cumulative effect of the proposed development in combination with the screened-in projects will be at least significant positive (or higher) and long term on the national electricity supply (due to the combined generation/connection of renewable energy into the grid). Therefore, there will be a likely significant direct positive cumulative effect predicted during the operation phase.
	Tier 3 Onshore: Projects 69, 70,76 and 88	During the construction phase, the proposed development alone will have a negative, moderate and short-term effect on land use due to direct construction activities. There is the potential for construction overlap between the proposed development and Project 70 and 88 at Belcamp substation. However, given that it will not be feasible for construction of different projects to be undertaken at the same time within the same footprint, and that Construction Environmental Management Plans have been prepared for all projects, no likely significant direct or indirect cumulative effects are predicted during the construction phase of the proposed development. During the operational phase, the proposed development will have a positive, significant and long-term effect on electricity supply in Ireland. EirGrid has confirmed that Belcamp-Shellybanks 220kV project (EirGrid project code CP0984), which has had full planning permission since July 2020, will create sufficient capacity for the Belcamp substation for the grid connection requirements of the proposed development. Therefore, no additional reinforcements of the grid or modifications of the substation are required to accommodate the connection of the proposed development to the Irish electricity network other than the approved Belcamp Extension Project (Project 52). Project 70 and 88 also tie into the existing Belcamp substation and have agreement from Eirgrid that there will be sufficient capacity for the grid connection requirements of both these projects. Therefore, no likely significant direct or indirect cumulative effects are predicted. Both Project 69 and 76 railway projects will consume a considerable amount of power during their operational phases. Given that the proposed development will generate power, no likely significant direct or indirect cumulative effects are predicted on electricity supply.

Environmental Topic	"Screened-in" Projects	Significance of Effects
Air Quality	Tier 2: Projects 2, 3, 4, and 5	During the operational phase, the proposed development alone is predicted to have a positive moderate and long-term impact on air quality due to the offset of emissions through the use of renewable wind energy. The Tier 2 Phase 1 projects will also generate wind energy during the operational phase. The cumulative effect of the proposed development in combination with the screened-in projects will be at least positive, moderate and long-term on air quality during the operational phase due to the reduction in pollution from non-renewable power generation. No likely significant direct or indirect negative cumulative effects are predicted during the operational phase
	Tier 3 Onshore: Projects 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 38, 45, 49, 50, 51, 53, 54, 55, 56, 57, 60, 63, 64, 66, 69, 70, 71, 75, 76, 77, 78, 79, 80, 81, 82, 85 and 88	During the construction phase, the proposed development alone is predicted to have negative slight and short-term residual effects on air quality due to construction activities associated with the onshore construction. Due to the proximity, location and scale of some of the screened-in projects, there is the potential for a significant cumulative effect on air quality during the construction phase of the onshore elements of the proposed development, in the form of local dust emissions. Should the construction of these screened-in projects proceed in parallel or overlap with the construction of the proposed development, this could give rise to a direct, negative, significant, short term cumulative effect in the absence of mitigation. However, upon review of the various EIARs/CEMPs/EIA Screening reports that were submitted as part of the planning applications for the screened-in projects, these documents conclude that residual effects are short-term and negligible due to the implementation of mitigation measures to minimise construction dust. As a result of the combined measures outlined in the screened-in project EIARs/CEMPs/EIA Screening reports, and the proposed development EIAR, no likely significant direct or indirect cumulative effects are predicted due to construction activities of the proposed development. Further mitigation measures for the proposed development are therefore not required. The proposed development alone is predicted to have negative, moderate and temporary residual effects on air quality due to construction traffic at one affected link road (Flemington Lane). As it is highly unlikely that construction of these screened-in projects will proceed in parallel or overlap with the diversions associated with the construction of the proposed development, no likely significant adverse cumulative effects are predicted to arise. Other projects were also screened-in; however, these projects are of a smaller scale than those discussed above (i.e. they were not of a scale that required an EIA). While there is a potential for the construction period of these projects to overlap with the construction of the proposed development, it is considered very unlikely and with the implementation of the mitigation measures outlined for the proposed development, no significant adverse cumulative effects are likely to arise during the construction phase. In conclusion, no likely significant direct or indirect negative cumulative effects are predicted during the construction phase.
Climate	Tier 2: Projects 2, 3, 4 and 5	A significant beneficial impact on climate due to the proposed development alone is predicted to occur over its lifecycle. Due to the nature of the Tier 2 projects (renewable offshore energy) there will be significant beneficial cumulative effects with the proposed development, and these screened in projects due to the significant cumulative reduction in greenhouse gas emissions.
Landscape and Visual	Tier 3 Onshore: Projects 21, 50, 54, 73, 76, 77, 80 and 86	As noted previously in Section 38.2.2, only the Tier 3 Onshore projects which are located within the proposed development Grid Facility study area (3km) have been screened in. These are considered individually with the proposed development first and then considered cumulatively together as a whole. Project No 21: This school redevelopment project will occur around 1.3km to the southeast of the proposed Grid Facility within the urban context of the settlement of Balbriggan rather than its rural hinterland. There will be little potential for intervisibility between the two developments and little contextual connection in terms of landscape character. As a 3-storey refurbishment development of an existing school, the cumulative development does not represent significant uplift in the intensity of built development within the Grid Facility study area. Consequently, the operational stage cumulative effects between the proposed development and with project 21 are deemed to be Imperceptible. Project No 50: This project for the redevelopment of a school will occur around 850m to the southeast of the proposed grid facility, but within the urban context of the settlement of Balbriggan rather than its rural hinterland. There will be little potential for intervisibility between the two developments and little contextual connection in terms of landscape character. As a 2-storey refurbishment development of an existing school, the cumulative development does not represent significant uplift in the intensity of built development within the Grid Facility study area. There may be some noticeable construction stage cumulative effects from increased construction activity in the general area if the construction programmes overlap but given the relative development scales and separation distances these are likely to be very minor. Overall, cumulative impacts between the proposed development and with Project 58 are deemed to be Not Significant. Project No 54: This 6m mast structure represents a small-scale feature that is more than 2.5km to the southeast of the proposed grid facility. Due to its scale and separation from the grid facility cumulative effects at both construction and operational stages between the proposed development and with project 54 are deemed to be Imperceptible. Project No 73: This residential development project will occur around 600m to the southeast of the proposed Grid Facility within the urban context of the settlement of Balbriggan rather than its rural hinterland. There will be little potential for intervisibility between the two developments and little contextual connection in terms of landscape character. As a modest scale development of low-rise apartments, duplexes and houses, the cumulative development does not represent significant uplift in the intensity of built development within the Grid Facility study area. Consequently, the operational stage cumulative effects between the proposed development and with project no 73 are deemed to be Imperceptible. Project No 76: DART+ This upgrade of the existing trainline runs through the landfall site and is within the grid facility study area. (Note a planning application for Project No 76 was pending at the time of writing this EIAR). There will be potential for cumulative impacts if the construction phase activities, particularly the HDD cable section that will pass under the railway line coincide with construction phase works for the adjacent Project No 76. Both construction phases will be temporary for the section of railway line in question and any cumulative effects will be no greater than Slight and not deemed significant in EIA terms. There will also be potential for very limited operational phase cumulative impacts between the proposed Grid Facility and the substation associated with Project No 76 which will be positioned downhill to the east of the grid facility adjacent to the west of the DART line. Due to the small scale of Project No 76 substation (similar to a single storey dwelling) the separation distance of over 650m and intervisibility being restricted by intervening landform and vegetation, cumulative effects will be no greater than Slight-imperceptible. Project No 77 (Fingal Coastal Way): The construction of the greenway will likely run through the landfall site adjacent to the existing railway line and is within the grid facility study area. (Note a planning application for Project No 77 was pending at the time of writing this EIAR). The only potential for material cumulative impacts is from the coinciding of the construction phase activities. Both construction phases will be temporary and any cumulative effects between the proposed development and with project 77 will be no greater than Slight and not deemed significant in EIA terms. Project No 80 (Bremore Regional Park): This recreational park development is adjacent to south of the landfall site, and within the grid facility study area. Two entrances to the park will also be provided from the R132 within the onshore cable route study area. The main potential for material cumulative impacts is from the coinciding of the construction phase activities at the landfall site and the northern end of the park, as well as for the onshore cable route and the park entrances along the R132. Both construction phases will be temporary / short in duration and any cumulative effects between the proposed development and with project 80 will be no greater than Slight and not deemed to be significant in EIA terms. Project No 86 (Harry Reynolds Road Pedestrian and Cycle Route): The northern end of this cycleway development project will occur around 1km to the southeast of the proposed Grid Facility within the urban context of the settlement of Balbriggan rather than its rural hinterland. There will be no potential for intervisibility between the two developments and little contextual connection in terms of landscape character. As an urban cycleway, the cumulative development does not represent significant uplift in the intensity of built development within the Grid Facility study area. Consequently, the operational stage cumulative effects between the proposed development and with project 86 are deemed to be Imperceptible. Taking all of the screened-in projects together cumulatively with the proposed development: Given the limited intervisibility between projects and little contextual connection in terms of landscape character and given that the effects reported above range from imperceptible to not significant to slight, there are no likely significant cumulative effects with the proposed development, and these screened in projects.

Environmental Topic	"Screened-in" Projects	Significance of Effects
Noise	Tier 3 Onshore: Projects 8, 19, 30, 32, 35, 50, 53, 54, 64, 69, 70, 71, 72, 75, 76, 78, 80, 81, 82, 85 and 88	No likely significant effects on noise-sensitive receptors from the proposed development alone are predicted during the construction phases. The screened-in projects are all located within 300m of the 33-35km long onshore cable route works for the proposed development. Should some of these screened-in projects' construction phases overlap with that of the proposed development's, noise-sensitive receptors may be subject to direct construction noise from both the proposed development and these screened-in projects. However, the works associated with the construction of the onshore cable route alone are temporary in nature and hence would not result in any cumulative significant direct effects (refer to the Noise chapter: the Design Manual for Roads and Bridges guidance is that construction noise and construction traffic noise impacts constitute a likely significant effect for a duration exceeding 10 or more days or nights in any 15 consecutive days or nights; or a total number of days exceeding 40 in any six consecutive months). Note, there is a very low likelihood that the construction programmes of all of the screened-in projects would overlap at the same time with that of the proposed development plus the screened-in projects are dispersed throughout the 33-35km long onshore cable route. Should some of these screened-in project construction programmes overlap with that of the proposed development, construction traffic from these screened-in projects may use some of the same roads as the proposed development construction traffic. However, the quantum of combined construction traffic from both the proposed development and the screened-in projects is likely to be small relative to existing traffic flows and below the threshold for a likely significant indirect cumulative effect. In conclusion, no likely significant direct or indirect cumulative effects are predicted during the construction phase of the proposed development.
Resource and Waste Management	Tier 3 Onshore: Projects 8, 9, 10, 11, 18, 26, 30, 34, 35, 36, 37, 38, 69, 76, 77, 78, 80 and 84	Waste management effects from the proposed development alone on the capacity of waste management facilities and waste industry trends in Ireland during the construction phase due to an increased demand on waste recovery and / or disposal sites will range from direct, negative, not significant to direct, negative, moderate. The majority of the screened-in projects are small scale in nature and unlikely to generate significant quantities of construction waste which require offshore recovery/disposal. Cumulatively negative significant effects are unlikely to arise from those screened-in projects in combination with the proposed development. The construction waste generation from Project No 8 (Greater Dublin Drainage Project) was included in the EIAR prepared for that project. The waste generation volumes for Project No 8 were analysed in conjunction with the estimated construction waste generation from the proposed development. The cumulative quantity of maximum waste arisings is 702,300 tonnes (of which 227,900 tonnes relates to the proposed development). Should the construction of Project No 8 overlap with the construction of the proposed development, this could give rise to a direct, negative, significant, short-term cumulative effects on the capacity of waste management facilities in Ireland. Resource use from the proposed development alone during the construction phase will be direct, negative, slight. Due to the nature and small scale of screened-in projects, no likely significant direct or indirect negative cumulative resource use effects are predicted during the construction phase.
Population and Human Health	Tier 2 and Tier 3 Onshore: Projects 2, 3, 4, 5, 8, 9, 13, 16, 36, 37, 38, 55, 66, 69, 70, 76, 77, 78, 79 and 88	During the construction phase, the residual effects of the proposed development alone on population and human health will range from negative temporary slight to negative temporary significant. During the construction phase, potential cumulative effects from the screened-in projects in-combination with the proposed development were identified in locations where cumulative traffic and transport impacts occur in conjunction with significant effects on accessibility and journey patterns. These cumulative effects were identified as potentially significant, negative and temporary with Projects 8, 9, 13, 16, 36, 37, 38, 55, 66, 69, 70, 76, 77, 78, 79 and 88. During the operational phase, the impact of the proposed development alone on economic regeneration as result of the Community Benefit Fund is predicted to result in in a permanent, positive, significant health and wellbeing effect at the regional level. Given that the Tier 2 Phase One projects will also be each providing a Community Benefit Fund, it is considered reasonable to assume that a cumulative positive significant (or greater) on health and wellbeing effect at a regional level will arise.
Socio-Economic, Tourism and Recreation	Tier 2: Projects 2, 3, 4 and 5	The Community Benefit Fund from the proposed development alone will be approximately €4 million per annum for 20 years and commences as soon as construction starts. The fund is expected to give residents a significant opportunity to bring about transformative and positive change to their local community. This fund will allow communities to develop new and existing initiatives in their own areas, support existing local amenities and clubs, develop environmental and energy efficiency schemes, and improve local industries including fishing industries within the region. The magnitude of the effect from the proposed development alone is considered to be medium given the positive and long-term nature of the effect. The sensitivity of the existing environment is considered high as the focus of the fund is on local communities. Therefore, the overall significance of effect is estimated to be positive, significant and long-term. Given that the Tier 2 Phase One projects will also be each providing a Community Benefit Fund and employment, it is considered reasonable to assume that a cumulative positive significant (or greater) effect will arise. Given the uncertainties in predicting employment numbers they prevent precise quantification of the scale of the potential cumulative impacts during the construction and operations stages. The potential cumulative effects from the Tier 2 projects include the potential for a stimulus to (i.e. encouragement for the expansion of) the domestic supply chain relevant to the proposed development The potential for this stimulatory effect on the supply chain is highlighted as a rationale for the Irish Government policy support for the offshore wind power sector, as mentioned in the policy review in Section 4.4.1 of Chapter 4. It is clear that the Irish Government recognises that the development of the offshore renewables sector provides a large opportunity for a substantial expansion of high-value business chain activity and associated employment.
Major Accidents and Disasters	Tier 1: Project 1 Tier 2: Projects 2, 3, 4 and 5 Tier 3 Offshore: Bremore Port and Arklow Bank Phase 1 (as listed in Appendix 38.2)	The potential for cumulative major accidents and/or disasters is considered for the following Risk Events - <u>Vessel Collision</u> The cumulative presence of the proposed development and Tier 2 projects has the potential to increase disruption to passages on some of the busiest main commercial routes identified within the study area (as outlined in Volume 5, Chapter 17: Shipping and Navigation, hereafter referred to as the 'Shipping and Navigation Chapter') which has the potential to reduce passing distances and increase the risk of collision. In addition, at the time of writing, the base ports for the proposed development and Tier 2 developments (for construction/decommissioning and operation) are not known. If the developments have a common base port (such as the OMF (Tier 1 Project) there may be an increased collision risk when vessels are entering/existing the port and enroute to/from the array area. If taken forward, the Bremore Port development would increase the overall vessel traffic volumes in the vicinity of both the array and export cable corridor as well as introducing vessels which will be entering/exiting the new port, including on new routes. This potential increase in vessels may also increase the risk of collision. With the implementation of mitigation measures, (including embedded mitigation) such as advisory safe passing distances, buoyed construction/decommissioning area, compliance with relevant regulator guidance and marking on nautical charts, no likely significant direct or indirect negative cumulative effects are predicted during the construction, operation or decommissioning phases. <u>Helicopter/Aircraft Collision</u> During the construction and decommissioning phases of the proposed development there is likely to be an increase in helicopter air traffic over the current baseline levels due to the use of helicopters in the provision of support in the airspace around the proposed development. In addition, construction of the proposed development will involve the installation of infrastructure above sea level which could pose a physical obstruction to military low flying and other offshore fixed-wing and helicopter operations, including those undertaking SAR missions over the Irish Sea. There is potential for cumulative effects when also considering the infrastructure associated with other offshore projects, including Arklow Bank Phase 1. The predicted number of daily helicopter movements is considered to be low, however the cumulative effect of this activity and similar activities associated with the other Tier 2 projects and Tier 3 Offshore Project (Arklow Bank Phase 1) will create a greater potential risk of mid-air collision between aircraft engaged in such operations and/or aircraft in transit across the study area.

Environmental Topic	"Screened-in" Projects	Significance of Effects
		However, through the use of embedded mitigation measures such as obstacle notification, the charting, marking and lighting of obstacles, no significant negative cumulative effects are predicted during the construction, operation or decommissioning of the proposed development. Cable Damage The Bremore Port development is proposed to be located in conjunction with the landfall of the ECC and therefore if taken forward may create exposure for associated vessels and routes to an anchor interaction effect. However, the application of good seamanship is anticipated, with mariners checking the relevant nautical charts prior to making the decision to drop the anchor. It is considered 'unlikely' that a vessel would require to drop anchor at a location where the export cables and other cable developments are in close proximity. With the implementation of mitigation measures (including embedded mitigation) such as cable protection, compliance with relevant regulator guidance, marking on nautical charts and promulgation of information, no likely significant direct or indirect negative cumulative effects are predicted during the construction, operation or decommissioning phase. Third Party Vessel Collision with Offshore Structures Although allision risk is localised in nature, there remains a cumulative effect associated with routeing through the Rockabill gap (Route 3), which with the presence of Bremore Port may feature additional routeing vessels. This increases exposure to allision risk with perimeter structures on the south-western extent of the array area. However, the Drogheda Port Company confirmed during consultation that concerns relating to the Rockabill gap were limited to collision risk rather than allision risk. Nevertheless, with the implementation of the Structure Exclusion Zone, the risk of an allision with an isolated structure on the south-west of the array area has been minimised. There may also be increased exposure to allision risk with perimeter structures on the northern extent of the array area depending on the chosen passage for an indicative new route between the proposed Bremore Port and the UK. With the implementation of mitigation measures (including embedded mitigation) such as compliance with relevant regulator guidance, guard vessel(s) as required, lighting and marking and marking on nautical charts, no likely significant direct or indirect negative cumulative effects are predicted during the construction, operation or decommissioning phases.
	Tier 3 Onshore: Projects 69, 70 and 76	The potential for cumulative major accidents and/or disasters is considered for the following Risk Events – Flooding of onshore working areas, causing silt run-off to nearby receptors During construction, if flooding of the working areas of both the proposed development and Tier 3 Onshore projects was to occur as a result of an extreme weather event (i.e. periods of heavy rainfall) this could result in a cumulative increase in the sedimentation of nearby watercourses. However, with the implementation of mitigation measures, no likely significant direct or indirect negative cumulative effects are predicted during the construction phase of the proposed development. Incident at nearby Seveso site resulting in off-site environmental effects During the construction or operational phases of the proposed developments, if an incident was to occur at a nearby Seveso site which would result in off-site environmental effects at both the site of the proposed development and Tier 3 Onshore projects, this could have a cumulative negative effect on human health (i.e. through injury or loss of life) or damage to infrastructure. However, with the implementation of mitigation measures and the low likelihood of this risk event occurring, no likely significant direct or indirect negative cumulative effects are predicted during the construction phase of the proposed development.

38.2.4 CEA Mitigation Measures

Further mitigation for the proposed development is not proposed as it will not materially change the assessed effects as presented in Table 38.6 above.

38.2.5 Overall Cumulative Residual Effects

Table 38.7: below presents the results of the CEA of all of the "screened-in" projects together as a whole (i.e. Tier 1, Tier 1, Tier 3 Onshore and Tier 3 Offshore) in combination with the proposed development.

Table 38.6 Overall Cumulative Effects

Potential Cumulative Effects on Environmental Factors	
CEA of all screened in projects together with the proposed development	**Marine Geology, Oceanography and Physical Processes:** The CEA undertaken in Section 10.9 of Chapter 10 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with marine geology, oceanography and physical processes.
	Marine Water and Sediment Quality: The CEA undertaken in Section 11.9 of Chapter 11 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with marine water and sediment quality.
	Intertidal and Subtidal Ecology: The CEA undertaken in Section 12.9 of Chapter 12 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with intertidal and subtidal ecology.
	Fish and Shellfish Ecology: The CEA undertaken in Section 13.9 of Chapter 13 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with fish and shellfish ecology.
	Marine Mammals: The CEA undertaken in Section 14.9 of Chapter 14 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with marine mammals
	Intertidal and Offshore Ornithology: The CEA undertaken in Section 15.9 of Chapter 15 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with intertidal and offshore ornithology.
	Commercial Fisheries: The CEA undertaken in Section 16.9 of Chapter 16 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with commercial fisheries.

Potential Cumulative Effects on Environmental Factors	
	Shipping & Navigation: The CEA undertaken in Section 35.9 of Chapter 17 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with shipping and navigation.
	Offshore Archaeology and Cultural Heritage: The CEA undertaken in Section 18.9 of Chapter 18 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with offshore archaeology and cultural heritage.
	Aviation & Radar: The CEA undertaken in Section 19.9 of Chapter 19 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with aviation and radar.
	Infrastructure and Other Users: The CEA undertaken in Section 20.9 of Chapter 20 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with infrastructure and other users.
	Offshore Bats: The CEA undertaken in Section 35.9 of Chapter 35 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with offshore bats.
	Land and Soils: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with onshore land and soils.
	Water: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with water (onshore).
	Biodiversity: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with biodiversity (onshore).
	Traffic and Transport: There are likely to be negative, significant but temporary residual effects from the proposed development alone during construction due to road closures on local and strategic diversion routes. As a result, the CEA undertaken in Section 38.2.3 presents an outcome of likely significant temporary negative cumulative effects during the construction stage. No likely significant effects are predicted for the operation and decommissioning stages.
	Archaeological, Architectural and Cultural Heritage: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with archaeological, architectural and cultural heritage (onshore).
	Material Assets: The CEA undertaken in Section 38.2.3 presents an outcome of a positive, significant and long-term cumulative effects arising with the Tier 2 projects on the national electricity supply (due to the combined generation/connection of renewable energy into the grid).
	Air Quality: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with air quality.
	Climate: The CEA undertaken in Section 38.2.3 presents an outcome of a significant beneficial impact on climate due to the proposed development alone is predicted to occur over its lifecycle. Due to the nature of the Tier 2 projects (renewable offshore energy) there will be significant beneficial cumulative effects with the proposed development, and these screened in projects due to the significant cumulative reduction in greenhouse gas emissions.
	Seascape, Landscape and Visual Impact Assessment: The CEA undertaken in Section 29.9 of Chapter 29 notes that the assessment concluded that the greatest significance of effect on the seascape and landscape of the area, and on visual amenity, will be major to moderate negative, which is not significant in EIA terms. The cumulative effect assessment carried out for the Seascape, Landscape and Visual Chapter concluded that though there is Negligible or Low-negligible contribution of the proposed development to the overall cumulative effect from the southerly viewpoints (VP36 to VP47), it is acknowledged that a significant cumulative effect is generated at these viewpoints predominantly in relation to other projects. The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with landscape and visual.
	Noise: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects for the impacts assessed on receptors associated with noise.
	Resource and Waste Management: The CEA undertaken in Section 38.2.3 presents an outcome of a direct, negative, significant and short-term cumulative effect on the capacity of waste management facilities and waste industry trends in Ireland during the construction phase due to an increased demand on waster recovery and/or disposal sites. This is as a result of the cumulative effect of the proposed development with Project No. 8.
	Population and Human Health: The CEA undertaken in Section 38.2.3 presents an outcome of likely significant negative but temporary cumulative effects for the impacts assessed on receptors associated with population and human health due to significant negative cumulative traffic effects predicted.
	Socio-Economic, Tourism and Recreation: The CEA undertaken in Section 38.2.3 presents an outcome of a cumulative positive, significant and long-term effect given that the Tier 2 Phase One projects will also each be providing a Community Benefit Fund and employment.
	Major Accidents and Disasters: The CEA undertaken in Section 38.2.3 presents an outcome of no likely significant cumulative effects with the potential to cause a major accident or disaster or result in the proposed development being vulnerable to a major accident or disaster during the construction, operation or decommissioning phases of the proposed development.

38.3 Inter-related Effects

38.3.1 Inter-related Effects – Assessment Methodology

Article 3(1) of the EIA Directive is as follows:

'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:

a. *population and human health;*
b. *biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
c. *land, soil, water, air and climate;*
d. *material assets, cultural heritage and the landscape;*
e. *the interaction between the factors referred to in points (a) to (d).'*

The inter-related (or interactions[1]) between effects on different environmental factors have been considered throughout the individual assessment chapters as recommended in Section 3.7.6 of the EPA 2022 guidelines EPA EIA guidance (2022), which states:

"*The interactions between effects on different environmental factors should be addressed as relevant throughout the EIAR. For example, where it is established in the Hydrology section that there will be an increase in suspended solids in discharged surface waters during construction, then the Biodiversity section should assess the effect of that on sensitive aquatic receptors. Close coordination and management within the EIA team is needed to ensure that interactions are adequately addressed throughout an EIAR"*

The 'Potential Effects' section of each assessment chapter in this EIAR considers the potential direct, indirect and inter-related effects as relevant for each project phase. For example, during the construction of the onshore cable route at watercourse crossings, there is a potential for interactions between water and biodiversity effects as a result of a potential increase in suspended solids in the watercourses. The Water chapter has considered the water quality effect on the watercourse itself whilst the Biodiversity chapter has considered the water quality effects on sensitive aquatic receptors. These inter-related effects are considered in the "Potential Effects" section of the respective chapters and significance rating assigned for each inter-related effects identified.

The inter-related effects between different environmental factors were identified by each EIA competent expert based on their knowledge of the topic and after extensive communication and information sharing between all EIA competent experts and the EIA management team during the assessment process to ensure the inter-related effects have been adequately addressed throughout the EIAR.

Mitigation measures to minimise negative inter-related effects have been incorporated during the assessment process and are described in the individual assessment chapters where appropriate in each 'Mitigation and Monitoring' section. For example, the Biodiversity chapter takes into account the mitigation measures proposed in the Water chapter to reduce effects on water quality when considering the residual effects on sensitive aquatic receptors.

Given that each assessment chapter has already considered and described the relevant inter-related effects between the different environmental factors within the 'Potential Effects' section, the purpose of Section 38.3 of this chapter is to signpost where the inter-related effects have been addressed within the EIAR (Tables 38.7 and 38.8) and to give a brief description of the inter-related effects to provide the reader with context (Table 38.9).

Tables 38.7 and 38.8 present a matrix of interactions between effects on the different environmental factors that have been identified and in which phase of the project they occur (i.e. construction, operation, decommissioning). This is in line with the approach set out in the EPA 2022 guidelines. Given the extent of environmental factors, the interactions between effects are presented in two tables for readability: the

[1] Note - The terms 'interactions' and 'inter-related' are used interchangeably in this EIAR

offshore environmental factors are considered in Table 38.7 and the onshore environmental factors are considered in Table 38.8. Where environmental factors consider both offshore and onshore effects (such as Noise and Vibration), these are presented in both tables.

It is noted that Tables 38.7 and 38.8 should be read down starting with each topic identified across the top. If there is the potential for an inter-related effect during the construction phase, this is indicated by a 'C'. An 'O' indicates the potential for an inter-related effect during the operational phase, 'D' indicates the potential for an inter-related effect during the decommissioning phase, while 'COD' for example indicates the potential for an inter-related effect during all project phases. If it is considered that there will be no potential for an inter-related effect all project phases, that is indicated by a blank cell.

For example:

- In Table 38.8, the construction of the proposed development will generate construction traffic (see traffic and transportation along the top row), which could potentially generate negative construction effects ('C') on a number of environmental factors (see the "C" under the traffic and transport column for each environmental factor) such as air, climate, noise and population & human health.
- Air emissions (secondary effect) arising from the construction traffic could subsequently have a negative effect on population.

Table 38.9 provides a brief description of the key inter-related effects that have been identified at each project phase in Tables 38.7 and 38.8 and cross-refers to the relevant EIAR assessment chapter where these have been addressed. The identification and assessment of inter-related effects are intrinsic to the Potential Effects section of each assessment chapter.

It is noted that, unlike chapters such as biodiversity, water, air quality etc., in which impacts on specific environmental factors are assessed, Chapter 34, Risk of Major Accidents and Disasters, documents risk assessments for major accident and disaster events. These are low probability but potentially high consequence events, to which the proposed development may be vulnerable, or which the proposed development may cause. Major accidents and disasters are not an environmental factor in the context of the requirements of Article 3(1)(e) of the EIA Directive.

38.3.2 Matrix of Inter-related Effects

The matrices in Tables 38.7 and 38.8 has been prepared to demonstrate where the interactions between effects on different environmental factors have been identified. This is in line with the approach set out in the EPA 2022 guidelines. These interactions are described briefly in Table 38.9. Note in Table 38.7, the following wider scheme environmental topics are not included in the top row as no key effects from these topics have been identified which would generate potential effects with the offshore environmental topics. These are Air Quality, Climate, SLVIA, Resource and Waste Management, Population and Human Health and Socio-economic, Tourism and Recreation.

Notes - these matrices should be read down, starting with each topic identified across the top. Blank cells indicate no interaction.

Table 38.7 Potential interaction of effects matrix for offshore EIA factors (C=Construction, O=Operational, D=Decommissioning)

Key: C = Construction phase interactions; O = Operational phase interactions; and D = Decommissioning phase interactions													
EIA factor interacting with:	**Marine Geology, Oceanography, & Physical Processes**	**Marine Water & Sediment Quality**	**Benthic, Subtidal & Intertidal Ecology**	**Fish & Shellfish Ecology**	**Marine Mammal Ecology**	**Offshore & Intertidal Ornithology**	**Commercial Fisheries**	**Shipping and Navigation**	**Offshore Archaeology and Cultural Heritage**	**Aviation & Radar**	**Infrastructure & Other Uses**	**Offshore Bats**	**Noise and Vibration**
Marine Geology, Oceanography, and Physical Processes													
Marine Water and Sediment Quality	COD												
Benthic & Intertidal Ecology	CD	COD											
Fish & Shellfish Ecology	CD	COD	COD										COD
Marine Mammal Ecology	COD	CD	C	COD									COD
Offshore and Intertidal Ornithology			COD	COD									COD
Commercial Fisheries	COD	COD		COD				COD					
Shipping and Navigation													
Offshore Archaeology & Cultural Heritage													
Aviation and Radar													
Infrastructure and Other Uses		COD								CD			
Offshore Bats													C
Population & Human Health													C
Socio-economic, Tourism & Recreation													

Notes: This matrix should be read down, starting with each topic identified across the top. Blank cells indicate no interaction.

Table 38.8 Potential interaction of effects matrix for onshore EIA factors (C=Construction, O=Operational, D=Decommissioning)

Key: C = Construction phase interactions; O = Operational phase interactions; and D = Decommissioning phase interactions													
EIA factor interacting with:	**Land, Soils, Geology and Hydrogeology**	**Water**	**Biodiversity**	**Traffic and Transport**	**Onshore Archaeology, Architectural and Cultural Heritage**	**Material Assets**	**Air Quality**	**Climate**	**Seascape, Landscape and Visual**	**Noise and Vibration**	**Resource and Waste Management**	**Population and Human Health**	**Socio-Economic, Tourism and Recreation**
Land, Soils, Geology and Hydrogeology													
Water	COD										C		
Biodiversity	CD	COD								CD			
Traffic and Transport	CD												
Onshore Archaeology, Architectural and Cultural Heritage									O				
Material Assets													
Air Quality	CD			CD		COD							
Climate	CD			CD							CD		
Seascape, Landscape and Visual													
Noise and Vibration	CD			CD									
Resource and Waste Management													
Population and Human Health				COD			CD		CO	COD			
Socio-Economic, Tourism and Recreation				CD		CD			CO				
Risk of Major Accidents and/or Disasters													

Notes: This matrix should be read down, starting with each topic identified across the top. Blank cells indicate no interaction.

38.3.3 Potential Inter-related effects

As noted in Section 38.3.1, the potential inter-related effects have been considered and documented in each assessment chapter. Table 38.9 below provides a brief description of the key inter-related effects that have been identified in Tables 38.7 and 38.8 and cross-refers to the relevant EIAR assessment chapter where these have been addressed.

The key potential inter-related effects are summarised below in Table 38.9 below. (Note: where one or more of the project phases i.e. construction, operation, decommissioning is not listed, no inter-related effects for that project phase were identified in Tables 38.7 or 38.8). The table documents the potential for the environmental factor written in bold in the left-hand column to have an effect on the environmental factor listed in normal text underneath it. This is expanded upon in the middle column.

Table 38.9 Key inter-related effects that have been identified at each project phase in Tables 38.7 and 38.8 and cross-reference to the relevant EIAR assessment chapter where these have been addressed

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
Ch 10 Marine Geology, Oceanography and Physical Processes interactions with: Ch 11 Marine Water and Sediment Quality Ch 12 Benthic Subtidal and Intertidal Ecology	Ch 11 Marine Water and Sediment Quality *Section 11.6.2 Construction* During construction there is potential for offshore activities to cause a temporary increase in suspended sediment concentration (SSC) which is assessed in Chapter 10 for its effects on marine geology, oceanography and physical processes. Works also have the potential to generate sediment plumes, causing release of sediment-bound contaminants from disturbed sediments. Increased SSC has the potential to cause deterioration in water quality due to sediment suspension, which may then affect marine water and sediment quality receptors such as bathing waters, which is assessed in Chapter 11. *Section 11.6.3 Operation* Operational activities, including cable reburial and/or replacement activities and activities in the array area, have the potential to cause an increase in SSC and this is assessed in Chapter 10. This increase in SSC may cause a deterioration in marine water quality due and then effect marine water and sediment quality receptor such as bathing waters, which is assessed in Chapter 11. *Section 11.6.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The design and construction strategy ensures that there will be no likely significant negative residual effects predicted on marine water and sediment quality receptors as a result of interactions with effects identified for marine geology, oceanography and physical processes.	Ch 10 Marine Geology, Oceanography and Physical Processes and Ch 11 Marine Water and Sediment Quality
	Ch 12 Benthic, Subtidal and Intertidal Ecology *Section 12.5.2 Construction* During construction there is potential for offshore activities to cause a temporary increase in suspended sediment concentration (SSC) which is assessed in Chapter 10 for its effects on marine geology, oceanography and physical processes. There is also the potential for this impact to affect benthic subtidal and intertidal ecology receptors through sediment deposition causing potential smothering impacts, which is assessed in Chapter 12. In addition, changes to physical processes can also affect supporting seabed habitats of prey species, affecting marine mammal prey availability and distribution which is also assessed in Chapter 12.	Ch 10 Marine Geology, Oceanography and Physical Processes and Ch 12 Benthic Subtidal and

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Section 12.5.4 Decommissioning During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 12 Benthic Subtidal and Intertidal Ecology, no likely significant negative residual effects are predicted on benthic subtidal and intertidal ecology as a result of interactions with the impacts identified for marine geology, oceanography and physical processes.	Intertidal Ecology
Ch 10 Marine Geology, Oceanography and Physical Processes interactions with: Ch 13 Fish and Shellfish Ecology Ch 14 Marine Mammal Ecology	Ch 13 Fish and Shellfish Ecology *Section 13.5.2 Construction* During construction there is potential for offshore activities to cause a temporary increase in suspended sediment concentration (SSC) which is assessed in Chapter 10 for its effects on marine geology, oceanography and physical processes. There is also the potential interaction for this impact to affect fish and shellfish ecology receptors through sediment deposition causing potential smothering impacts, which is assessed in Chapter 13. *Section 13.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 13 Fish and Shellfish Ecology, no likely significant negative residual effects are predicted on fish and shellfish ecology as a result of interactions with impacts identified for marine geology, oceanography and physical processes.	Ch 10 Marine Geology, Oceanography and Physical Processes and Ch 13 Fish and Shellfish Ecology
	Ch 14 Marine Mammal Ecology *Section 14.5.2 Construction* During construction there is potential for offshore activities to cause a temporary increase in SSC which is assessed in Chapter 10 for its effects on marine geology, oceanography and physical processes. Increased SSC has the potential to impair visibility of marine mammals, which is assessed in Chapter 14. Changes to physical processes can also affect supporting seabed habitats of prey species, affecting marine mammal prey availability and distribution. *Section 14.5.3 Operation* As with construction activities, operational works have the potential to affect marine mammal ecology through disturbance to water quality, which can impair visibility, due to increased concentrations of suspended sediments. Changes to physical processes can also affect supporting seabed habitats of prey species, affecting marine mammal prey availability and distribution. *Section 14.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The design, operation and construction strategy ensures that there will be no likely significant negative residual effects are predicted on marine mammal receptors as a result of interactions with impacts identified for marine geology, oceanography and physical processes.	Ch 10 Marine Geology, Oceanography and Physical Processes and Ch 14 Marine Mammal Ecology

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
Ch 10 Marine Geology, Oceanography and Physical Processes interactions with: Ch 16 Commercial Fisheries	Ch 16 Commercial Fisheries *Section 16.5.2 Construction* During construction there is potential for offshore activities to cause a temporary increase in SSC (assessed in Chapter 10) and potentially affect fish and shellfish species (assessed in Chapter 13) including commercially important resources. Sediment deposition, assessed in Chapter 10, also has the potential to impact commercially important fish and shellfish through smothering (as assessed in Chapter 12). *Section 16.5.3 Operation* Operational works have the potential to affect commercially important fish and shellfish resources in the same way as construction works, though not to the same extent. *Section 16.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 16: Commercial Fisheries, no likely significant negative residual effects are predicted on commercially important fish and shellfish receptors as a result of impacts identified for marine geology, oceanography and physical processes.	Ch 10 Marine Geology, Oceanography and Physical Processes and Ch 16 Commercial Fisheries
Ch 11 Marine Water and Sediment Quality interactions with: Ch 12 Benthic and Intertidal Ecology Ch 13 Fish and Shellfish Ecology	Ch 12 Benthic and Intertidal Ecology *Section 12.5.2 Construction* During construction, there is potential for offshore activities to cause accidental contamination and a release of contaminated sediments, which is assessed in Chapter 11 for its effect on marine water and sediment quality. There is potential for this impact to affect benthic subtidal and intertidal ecology receptors, which are assessed in Chapter 12. *Section 12.5.3 Operation* As with construction activities, operational works have the potential to affect benthic receptors through effects on marine water and sediment quality. However, this is likely to be of a lesser extent than during construction activities. *Section 12.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The assessment in Volume 3, Chapter 12: Benthic Subtidal and Intertidal Ecology, does not predict there to be any likely significant negative residual effects are predicted on benthic subtidal and intertidal ecology as a result of interactions with the impacts identified for marine water and sediment quality.	Ch 11 Marine Water and Sediment Quality and Ch 12 Benthic Subtidal and Intertidal Ecology
	Ch 13 Fish and Shellfish Ecology *Section 13.5.1 Construction* During construction, there is potential for offshore activities to affect the quality of the marine water (e.g. dissolved oxygen) for which fish depend upon as a result of deterioration in water quality, accidental releases or spills of materials or chemicals and disturbance and release of contaminated sediments (assessed in Chapter 11). *Section 13.5.2 Operation*	Ch 11 Marine Water and Sediment Quality and Ch 13 Fish and Shellfish Ecology

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Operational works have the potential to cause deterioration in water quality due to sediment suspension, which affects water clarity, and changes through accidental releases or spills of materials or chemicals. These effects have the potential to affect fish and shellfish receptors in the same way as construction works, though not to the same extent. *Section 13.5.3 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* No likely significant residual effects have been concluded in Volume 3, Chapter 13: Fish and Shellfish Ecology. As such, no likely significant negative effects are predicted on shellfish receptors as a result of interactions with marine water and sediment quality.	
Ch 11 Marine Water and Sediment Quality interactions with: Ch 14 Marine Mammal Ecology Ch 16 Commercial Fisheries Ch 20 Infrastructure and Other Users	<u>Ch 14 Marine Mammal Ecology</u> *Section 14.5.1 Construction* During construction, impacts on the marine water and sediment quality as a result of seabed disturbance can indirectly impact marine mammals if the disturbance impacts their fish prey or habitats supporting the prey (as assessed in Chapter 13) which depend upon the dissolved oxygen levels in the water to survive. *Section 14.5.3 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The assessment in Volume 3, Chapter 14 Marine Mammal Ecology, does not predict there to be any likely significant negative residual effects are predicted on marine mammal ecology as a result of interactions with the impacts identified for marine water and sediment quality.	Ch 11 Marine Water and Sediment Quality and Ch 14 Marine Mammal Ecology
	<u>Ch 16 Commercial Fisheries</u> *Section 16.5.2 Construction* During construction, there is potential for offshore activities to affect the marine water and sediment quality for which fish species (including commercial species) depend upon as a result of deterioration in the water quality, accidental releases or spills of materials or chemicals and disturbance and release of contaminated sediments (assessed in Chapter 11). *Section 16.5.3 Operation* Operational works have the potential to cause deterioration in water quality due to sediment suspension, which affects water clarity, and changes through accidental releases or spills of materials or chemicals. These effects have the potential to affect fish and shellfish receptors in the same way as construction works, though not to the same extent. *Section 16.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* No likely significant negative residual effects have been concluded in Volume 3, Chapter 13: Fish and Shellfish Ecology. As such, no likely significant negative effects are predicted on shellfish receptors as a result of interactions with marine water and sediment quality.	Ch 11 Marine Water and Sediment Quality and Ch 16 Commercial Fisheries

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Ch 20 Infrastructure and Other Users *Section 20.5.2 Construction* During construction, there is potential for offshore activities to cause seabed disturbance and accidental releases within designated bathing waters, which are assessed in Chapter 11 for their effects on marine water and sediment quality. There is also the potential for this impact to affect recreational marine users of bathing waters, which are assessed in Chapter 20. *Section 20.5.3 Operation* Operational works have the potential to affect infrastructure and other users in the same way as construction works, though not to the same extent. *Section 20.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The assessment in Volume 3, Chapter 11: Marine Water and Sediment Quality concludes there to be no likely significant negative residual effect on bathing waters. As such, there is no pathway for effect on recreational marine users as a result of impacts identified for marine water and sediment quality.	Ch 11 Marine Water and Sediment Quality and Ch 20 Infrastructure and other Uses
Ch 12 Benthic and Intertidal Ecology interactions with: Ch 13 Fish and Shellfish Ecology	Ch 13 Fish and Shellfish Ecology *Section 13.5.1 Construction* During construction the introduction of infrastructure such as wind turbine generators (WTG) and offshore substation platform (OSP) foundations, cable protection and scour protection would introduce hard substrate to the current sedimentary habitats within the array area and export cable corridor (ECC), subsequently increasing the heterogeneity of the seabed substrate and changing the composition of benthic communities, which is assessed in Chapter 12 for its effects on benthic subtidal and intertidal ecology. There is also the potential interstation for this impact to create a pathway for effects on fish, marine turtle and shellfish species through change to the structure and function of supporting habitats, which is assessed in Chapter 13. *Section 13.5.2 Operation* During the operational phase of the proposed development, the use of jack-ups and anchored vessels and cable inspection work would be expected to lead to localised seabed disturbance, which is likely to result in short-term periods of increased SSCs and sediment deposition. Elevated levels of suspended sediments and associated bed level changes would be comparable or less to those experienced during the construction phase. In addition, any maintenance activities to support the ongoing operation would be temporary (typically in terms of days). Consequently, any impacts on fish and shellfish receptors would be no greater in magnitude than those encountered during construction activities. *Section 13.5.3 Decommissioning* During the decommissioning phase, the removal (or partial removal) of any surface and subsurface infrastructure and associated protection measures would be expected to lead to localised seabed disturbance, which is likely to result in short-term periods of increased SSCs and sediment deposition. Elevated levels of suspended sediments and associated bed level changes would be comparable to those experienced during the construction phase. Consequently, any impacts on fish and shellfish receptors would be no greater in magnitude than those encountered during construction activities. *Conclusion*	Ch 13 Benthic Subtidal and Intertidal Ecology and Ch 13 Fish and Shellfish Ecology

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 13 Fish and Shellfish Ecology, no likely significant negative residual effects are predicted on fish and shellfish receptors as a result of interactions with the impacts identified benthic subtidal and intertidal ecology.	
Ch 12 Benthic and Intertidal Ecology interactions with: Ch 14 Marine Mammal Ecology Ch 15 Offshore and Intertidal Ornithology	<u>Ch 14 Marine Mammal Ecology</u> *Section 14.5.1 Construction* During construction the introduction of infrastructure such as WTG and OSP foundations, cable protection and scour protection would introduce hard substrate to the current sedimentary habitats within the array area and ECC, subsequently increasing the heterogeneity of the seabed substrate and changing the composition of benthic communities, which is assessed in Chapter 12 for its effects on benthic subtidal and intertidal ecology. There is also the potential interstation for this impact to create a pathway for effects on marine mammals through change to the structure and function of supporting habitats, which is assessed in Chapter 14. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 14 Marine Mammal Ecology, no likely significant negative residual effects are predicted on marine mammal receptors as a result of interactions with the impacts identified benthic subtidal and intertidal ecology.	Ch 13 Benthic Subtidal and Intertidal Ecology and Ch 14 Marine Mammal Ecology
	<u>Ch 15 Offshore and Intertidal Ornithology</u> *Section 15.5.2 Construction* During construction the introduction of infrastructure such as WTG and OSP foundations, cable protection and scour protection would introduce hard substrate to the current sedimentary habitats within the array area and ECC, subsequently increasing the heterogeneity of the seabed substrate and changing the composition of benthic communities, which is assessed in Chapter 12 for its effects on benthic subtidal and intertidal ecology. There is also the potential interaction for this impact to create a pathway for effects on ornithology species due to the change to the structure and function of supporting habitats, which is assessed in Chapter 15. *Section 15.5.3 Operation* There is potential for interactions of the same nature during the operational phase of the proposed development involving potential effects on prey availability and distribution for ornithological receptors. *Section 15.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* No likely significant negative residual effects on benthic ecology receptors have been concluded in Volume 3, Chapter 12: Intertidal and Subtidal Benthic Ecology. As such, no potential significant negative residual effects on offshore and intertidal ornithology receptors due to interactions with impacts identified in benthic subtidal and intertidal ecology are anticipated.	Ch 13 Benthic Subtidal and Intertidal Ecology and Ch 15 Offshore and Intertidal Ornithology
Ch 13 Fish and Shellfish Ecology interactions with: Ch 14 Marine Mammals Ecology Ch 15 Offshore and Intertidal Ornithology Ch 16 Commercial Fisheries	<u>Ch 14 Marine Mammal Ecology</u> *Section 14.5.1 Construction* During construction, there is potential for offshore activities to affect marine mammal prey distribution and availability, which is assessed in Chapter 14, due to effects on fish, which are considered in Chapter 13, or the habitats that support fish species, assessed in Chapter 12. *Section 14.5.2 Operation*	Ch 13 Fish and Shellfish Ecology and Ch 14 Marine Mammal Ecology

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	There is potential for interactions of the same nature during the operational phase of the proposed development involving potential effects on marine mammal prey availability and distribution. *Section 14.5.3 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* No likely significant residual effects on fish and shellfish receptors have been concluded in Volume 3, Chapter 13: Fish and Shellfish Ecology. As such, no potential significant negative effects on marine mammals due to interactions with fish and shellfish ecology are anticipated.	
	Ch 15 Offshore and Intertidal Ornithology *Section 15.5.2 Construction* During the construction phase of the proposed development, there is the potential for offshore activities to affect the availability of prey species for ornithological receptors, assessed in Chapter 15, including fish and mobile invertebrates, which are assessed in Chapter 13. *Section 15.5.3 Operation* There is potential for interactions of the same nature during the operational phase of the proposed development involving potential effects on prey availability and distribution for ornithological receptors. *Section 15.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* No likely significant residual effects on fish and shellfish receptors have been concluded in Volume 3, Chapter 13: Fish and Shellfish Ecology. As such, no potential significant negative residual effects on birds due to interactions with fish and shellfish ecology are anticipated.	Ch 13 Fish and Shellfish Ecology and Ch 15 Offshore and Intertidal Ornithology
	Ch 16 Commercial Fisheries *Section 16.5.2 Construction* Construction activities have the potential to disturb commercially important fish and shellfish resources, as assessed in Chapter 13, through temporary habitat loss or disturbance, which is assessed in Chapter 12, increase in SSC and sediment deposition, assessed in Chapter 10, and underwater noise, leading to displacement or disruption of fishing practices. *Section 16.5.3 Operation* Operational activities may displace commercially important fish and shellfish populations from the offshore development area through temporary and permanent habitat loss, which is assessed in Chapter 12, increase in SSC and sediment re-deposition, which is assessed in Chapter 10, underwater noise and vibration, interactions of electromagnetic fields (EMF), barrier effects and introduction of hard substrate, affecting normal fishing practices. These effects on fish and shellfish receptors are considered in Chapter 13. *Section 16.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent.	Ch 13 Fish and Shellfish Ecology and Ch 16 Commercial Fisheries

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Conclusion With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 16: Commercial Fisheries, no likely significant negative residual effects are predicted on commercial fisheries as a result of interactions with the impacts identified for fish and shellfish ecology.	
Ch 17 Shipping and Navigation interactions with: Ch 16 Commercial Fisheries	<u>Ch 16 Commercial Fisheries</u> *Section 16.5.2.5 Construction* During construction, increased vessel traffic related to the proposed development and changes to shipping patterns as a result of navigational routes may lead to interference with fishing activity (i.e. reduced access) during construction. *Section 16.5.3.5 Operation* During operation, there is the potential for increased vessel traffic within fishing grounds as a result of changes to shipping routes and maintenance vessel traffic from the proposed development leading to interference with fishing activity. *Section 16.5.4.5 Decommissioning* During decommissioning, there is the potential for increased vessel traffic within fishing grounds as a result of changes to shipping routes and decommissioning vessels from the proposed development leading to interference with fishing activity. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 16 Commercial Fisheries, no likely significant negative residual effects are predicted as a result of interactions with shipping and navigation activities during the construction, operation and decommissioning of the proposed development.	Ch 17 Shipping and Navigation and Ch 16 Commercial Fisheries
Ch 19 Aviation and Radar interaction with: Ch 20 Infrastructure and Other Users	<u>Ch 20 Infrastructure and Other Users</u> *Section 20.5.2 Construction* During construction there is potential for offshore activities (the use of vessels within the offshore development area) to cause a temporary impact to activities undertaken by the Department of Defence, in particular military aviation and firing-range activities within Gormanston Danger Area 1 which is assessed in Chapter 19 for its effects on aviation and radar receptors. There is also the potential interaction for this impact to effect other activities undertaken by the DoD, which is assessed in Chapter 20. *Section 20.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 3, Chapter 20: Infrastructure and Other Users, no likely significant negative residual effects are predicted as a result of interactions with the impacts identified for aviation and radar.	Ch 19 Aviation and Radar interaction and Ch 20 Infrastructure and Other Users
Ch 21 Land, Soils, Geology and Hydrogeology interactions with: Ch 22 Water Ch 23 Biodiversity Ch 24 Traffic and Transportation Ch 27 Air Quality	<u>Ch 22 Water</u> *Section 22.5.2 Construction* During construction there is potential for accumulated excess backfill remains from onshore activities to result in an increased flood risk e.g. impounding water or changing flow paths which is assessed in Chapter 22 for its flood risk effects. Silty water runoff containing high loads of suspended solids from construction activities such as stockpiles may impact water quality which is assessed in Chapter 22.	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 22 Water

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
Ch 28 Climate Ch 30 Noise and Vibration	Re-exposure of historic contaminants within or near to waterbodies because of working within or in proximity to the waterbody may impact water quality, as a result of excavating potentially contaminated material and is assessed in Chapter 22 Increased sediment loading because of silty water runoff or dewatering activities, introducing a sediment plume, potentially leading to the smothering of bed substrate and changes to existing morphological features (i.e. changing the riverbed profile during construction can have knock on effects downstream). This will be particularly of risk at the offline cut and trench locations. This is assessed in Chapter 22. *Section 22.5.3 Operation* During the operational phase, the increase in hardstanding at the grid facility could potentially result in increased surface runoff and increase in pollution and sediment load entering surface water receptors from maintenance works. These are assessed in Chapter 22. *Section 22.5.4 Decommissioning* Decommissioning could potentially lead to water pollution during removal of items / equipment due to ground disturbance that can affect existing watercourses. These are assessed in Chapter 22. *Conclusion* With the implementation of mitigation measures as detailed in Chapters 21 and 22, no likely significant negative residual effects on water (including water quality, flood risk and hydromorphology) are predicted as a result of interactions with land and soils during of the construction, operation or decommissioning of the proposed development.	
	<u>Ch 23 Biodiversity</u> *Section 23.5.2 Construction* Surface water run-off of sediments and/or an accidental pollution spill may potentially impact important ecological habitats and aquatic species. Water quality impacts arising from hydrogeological connectivity may potentially impact important ecological features. Chapter 21 considers water quality impacts on ground water whilst Chapter 23 considers the effects of groundwater quality impacts on important ecological features/species. Potential spread of non-native invasive species as a result of ground disturbance is addressed in Chapter 23. Potential (albeit limited) hydrogeological connectivity and groundwater discharge to protected sites, e.g. to Malahide Estuary pNHA, SAC and SPA is considered in Chapter 23. *Section 23.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 22 Water and 23 Biodiversity, no likely significant negative residual effects are predicted on biodiversity as a result of interactions with land and soils during the construction or decommissioning of the proposed development.	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 23 Biodiversity

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Ch 24 Traffic and Transportation *Section 24.5.2 Construction* Excavated material will be required to be exported from the site and fill materials imported generating construction traffic. Construction traffic arising from the transportation of material volumes are considered in Chapter 24. *Section 24.5.4 Decommissioning* Similarly, during the decommissioning phase, excavated materials will be required to be exported from the site. Conclusion With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 24 Traffic and Transportation (hereafter referred to as the 'Traffic and Transportation Chapter'), no likely significant negative residual effects are predicted on traffic and transportation as a result of interactions with land and soils during the construction or decommissioning of the proposed development.	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 24 Traffic and Transportation
	Ch 27 Air Quality *Section 27.5.2 Construction* During construction of onshore works, dust emissions from site excavation and construction works (such as utility diversions, open-cut trench methods, piling and stockpiling of excavated materials) have the potential to result in negative effects on air quality. This potential effect is considered in Chapter 27. *Section 27.5.4 Decommissioning* Similarly, during the decommissioning phase, works and effects will be similar to those during the construction phase, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 27 Air Quality, no likely significant negative residual effects are predicted on air as a result of interactions with land and soils during the construction or decommissioning of the proposed development.	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 27 Air Quality
	Ch 28 Climate *Section 28.5.2 Construction* The total embodied carbon predicted to be generated during the construction phase of the proposed development was calculated in Chapter 28. This included the embodied carbon of the excavated material (e.g. topsoil, subsoil, asphalt, etc.). *Section 28.5.4 Decommissioning* The carbon emissions generated during the decommissioning phase are expected to be less than that during the construction phase. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 28 Climate, no likely significant negative residual effects are predicted on air as a result of interactions with land and soils during the construction or decommissioning of the proposed development.	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 28 Climate

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Ch 30 Noise and Vibration *Section 30.5.2 Construction* During construction there is potential for offshore activities to generate both underwater noise and airborne noise as a result of piling. Chapter 30 considered the effects of airborne noise from the piling on onshore receptors. (The impacts of underwater noise are considered in Chapter 14 Marine Mammal Ecology (see separate section above). During construction, there is potential for onshore activities to generate noise including: Site preparation works, HDD at landfall and at the railway and cable route trench excavation (at both landfall site and cable route), including breaking of the road surface. Chapter 30 considered the effects of noise from the onshore activities on onshore receptors. *Section 30.5.8 Decommissioning* Similar activities will be required during the decommissioning phase, and as such similar effects are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 30 Noise and Vibration and Vibration, no likely significant negative residual noise effects on onshore receptors are predicted as a result of interactions with land and soils during the construction or decommissioning of the proposed development. See the section on Ch 14 Marine Mammals for details on underwater noise impacts	Ch 21 Land, Soils, Geology and Hydrogeology and Ch 30 Noise and Vibration
Ch 22 Water interactions with: Ch 23 Biodiversity	Ch 23 Biodiversity *Section 23.5.2 Construction* During the construction phase of the proposed development, there is a potential for interactions between water and biodiversity as a result of water quality effects arising from surface water runoff containing sediments and/or pollutants during excavation works and storage of chemicals. The potential impacts on water quality of watercourses has been considered in Chapter 22 whilst the potential effects on sensitive aquatic receptors are considered in Chapter 23. *Section 23.5.3 Operation* Operational phase effects that could result in potential effects on biodiversity include surface water runoff of sediment and/or pollutants at hardstanding locations (i.e. at the grid facility). These are considered in both Chapters 22 and 23. *Section 23.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 22 Water and 23 Biodiversity, no likely significant negative residual effects are predicted as a result of interactions with water during the construction, operation or decommissioning of the proposed development.	Ch 22 Water and Ch 23 Biodiversity
Ch 24 Traffic and Transportation interactions with: Ch 27 Air Quality	Ch 27 Air Quality *Section 27.5.2 Construction*	Ch 24 Traffic and Transport and Ch 27 Air Quality

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
Ch 28 Climate Ch 30 Noise and Vibration Ch 32 Population and Human Health Ch 33 Socio-Economic, Tourism and Recreation	Dust and emissions from construction traffic movements (including exporting excavated material offsite, importing of fill material, and transportation of construction materials) have the potential to result in negative effects on air quality. These have been considered in Chapter 27. *Section 27.5.4 Decommissioning* Dust and emissions generated by vehicle movements during the decommissioning activities for the potential removal of a substation will be similar to many of the construction activities, although of smaller extent and intensity/duration. These have been considered in Chapter 27. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 27 Air Quality, no likely significant negative residual effects are predicted as a result of interactions with traffic and transportation during the construction, operation or decommissioning of the proposed development.	
	Ch 28 Climate *Section 28.5.2 Construction* The total embodied carbon predicted to be generated during the construction phase of the proposed development was calculated. This included the embodied carbon associated with transporting imported and exported materials to/from the construction sites. Refer to Chapter 28. *Section 28.5.4 Decommissioning* The carbon emissions generated during the decommissioning phase are expected to be less than that during the construction phase. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 28 Climate, no likely significant negative residual effects are predicted on air as a result of interactions with traffic and transport during the construction or decommissioning of the proposed development.	Ch 24 Traffic and Transport and Ch 28 Climate
	Ch 30 Noise and Vibration *Section 30.5.4 Construction* There is potential for the onshore construction vehicles along the cable route and from the diverted traffic during the cable route construction to generate noise emissions. These have been considered in Chapter 30 *Section 30.5.8 Decommissioning* It is anticipated that the decommissioning process for the remainder of the infrastructure will produce similar noise impacts and effects to that of the construction phase. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 30 Noise and Vibration, no likely significant negative residual effects are predicted on ambient noise levels as a result of interactions with traffic and transport during the construction or decommissioning of the proposed development.	Ch 24 Traffic and Transport and Ch 30 Noise and Vibration
	Ch 32 Population and Human Health *Section 32.5.2 Construction*	Ch 24 Traffic and Transport and Ch 21

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	There are likely to be negative, significant but temporary residual effects on traffic from the proposed development during the construction phase due to road closures on local and strategic diversion routes. These construction works have the potential to effect accessibility and journey patterns through partial lane closures, resulting in the requirement to change travel patterns. As a result, the residual effects of the proposed development on population and human health will range from negative temporary slight to negative temporary significant. *Section 32.5.3 Operation* During the operational phase of the proposed development, maintenance and inspection of the transition joint bay chambers and earth link boxes will be required. It is envisaged that these activities will be carried out on an ad-hoc basis or once every two years. In addition, it may transpire that the onshore cables may need to be repaired or replaced. These activities have the potential to effect accessibility and journey patters through partial lane closures, resulting in the requirement to change travel patterns. *Section 32.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* The residual effects of the proposed development on population and human health will range from negative temporary slight to negative temporary significant due to road closures on local and strategic diversion routes. No likely significant negative residual effects on population and human health are predicted as a result of interactions with traffic and transport during of the construction, operation or decommissioning of the proposed development.	Population and Human Health
	<u>Ch 33 Socio-Economic, Tourism and Recreation</u> *Section 33.5.2 Construction* During the construction phase of the proposed development, increased construction traffic during the peak tourism season has the potential to negatively impact walking and cycling routes, coastal paths, holiday parks and tourism receptors. This has the potential to have a negative effect on tourism. *Section 33.5.4 Decommissioning* The potential effects of the decommissioning traffic on tourism and recreation will be similar to that of the construction phase but the duration of works will be shorter. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 33 Socio-economic, Tourism and Recreation and the short-term nature of the proposed works, no likely significant negative residual effects on tourism and recreation are predicted as a result of interactions with traffic and transport during of the construction and decommissioning of the proposed development.	Ch 24 Traffic and Transport and Ch 33 Socio-Economic, Tourism and Recreation
Ch 26 Material Assets interactions with: Ch 27 Air Quality Ch 33 Socio-Economic, Tourism and Recreation	<u>Ch 27 Air Quality</u> *Section 27.5.2 Construction* Diesel generators may be required to supply electricity (where a connection to the existing electricity supply is not available) which has the potential to result in a negative effect on air quality. This inter-related effect has been considered in Chapter 27. *Section 27.5.3 Operation*	Ch 26 Material Assets and Ch 27 Air Quality

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	During the operational phase, two standby diesel generators will be located at the grid facility and will be used in the event that normal auxiliary supply is lost, resulting in a negative effect on air quality. However, it is expected that the usage of the generators will be limited to routine testing. This inter-related effect has been considered in Chapter 27. The operational phase of the proposed development will result in a positive impact on air quality due to the offset of emissions through the use of wind power. *Section 27.5.4 Decommissioning* Dust generated by the decommissioning activities including the potential removal of a substation will be similar to many of the construction activities, although of smaller extent and intensity/duration. The activity will be focused at the grid facility site and the impacts will be less than for construction activities. This inter-related effect has been considered in Chapter 27. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 27 Air Quality, no likely significant negative residual effects are predicted as a result of interactions with material assets during the construction, operation or decommissioning of the proposed development.	
	Ch 33 Socio-Economic, Tourism and Recreation *Section 33.5.2 Construction* Land-use at the nearshore will be changed temporarily to a construction area, thereby resulting in a negative effect on recreational amenities. This change will affect beach users who participate in water sports, members of the population who launch small vessels and engage in angling. *Section 33.5.4 Decommissioning* The decommissioning of the proposed development work may cause some minimal onshore disruption in relation to tourists' footfall, but this will be temporary and localised in nature. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 33 Socio-economic, Tourism and Recreation, no likely significant negative residual effects are predicted as a result of interactions with material assets during the construction and decommissioning of the proposed development.	Ch 26 Material Assets and Ch 33 Socio-Economic, Tourism and Recreation
Ch 27 Air Quality interactions with: Ch 32 Population and Human Health	Note Ch 27 Air Quality considers the air quality effects on people, the results of which have then been considered in Chapter 32 Population and Human Health. Ch 32 Population and Human Health *Section 32.5.2 Construction* Chapter 32 notes that Chapter 27 notes that Dust emissions will be generated from construction activities (i.e. excavation works) which could result in dust soiling. This has the potential to result in negative effects on general amenity. Furthermore, dust emissions have the potential to negatively affect human health. *Section 32.5.4 Decommissioning*	Ch 27 Air Quality and Ch 32 Population and Human Health

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of suitable mitigation measures as detailed in both Volume 5, Chapter 32 Population and Human Health and Chapter 27 Air Quality, and due to the scale of the construction works, likely significant negative residual effects on population and human health are predicted as a result of interactions with air quality during of the construction and decommissioning of the proposed development.	
Ch 29 Seascape, Landscape and Visual interactions with: Ch 25 Onshore Archaeological, Architectural and Cultural Heritage	Ch 25 Onshore Archaeological, Architectural and Cultural Heritage *Section 25.5.3.4 Operation* Chapter 25 notes that Chapter 29 SLVIA has been utilised to identify the locations inland where there may be visibility between the archaeological, architectural and cultural heritage sites and the offshore wind turbine generators. The assessment of potential negative impacts on the setting of 63 archaeological, architectural, or cultural heritage sites has been carried out by reviewing the photomontages presented in the Chapter 29 and additional wireframe modelling (Macroworks). *Conclusion* No likely significant negative residual effects on archaeological, architectural and cultural heritage are predicted as a result of interactions with seascape, landscape and visual aspects of the construction, operation or decommissioning of the proposed development.	
Ch 29 Seascape, Landscape and Visual interactions with: Ch 32 Population and Human Health Ch 33 Socio-Economic, Tourism and Recreation	Note Ch 29 Seascape, Landscape and Visual considers the effects on viewpoints, the results of which have then been considered in Chapter 32 Population and Human Health. Ch 32 Population and Human Health *Section 32.5.2 Construction* Chapter 32 notes that Chapter 29 has identified residual major-moderate adverse effects on viewpoints VP48 (the R132 east of the site) & VP53 (Flemington Lane), and moderate-slight adverse effects on VP51 and VP52 (rural hinterland setting to the northwest of Balbriggan) as a result of construction activities at the grid facility. *Section 32.5.3 Operation* Chapter 32 notes that Chapter 29 has reported no significant visual effects are predicted during the operational phase *Conclusion* No likely significant negative residual effects on population and human health are predicted as a result of interactions with seascape, landscape and visual aspects of the construction, operation or decommissioning of the proposed development.	Ch 29 Seascape, Landscape and Visual and Ch 32 Population and Human Health
	Note Ch 29 Seascape, Landscape and Visual considers the effects on viewpoints, the results of which have then been considered in Chapter 33 Socio-Economic, Tourism and Recreation. Ch 33 Socio-Economic, Tourism and Recreation *Section 33.5.2 Construction* Chapter 33 notes that Chapter 29 states that the construction of wind turbine generators could make the area less attractive to tourists by disrupting the "panoramic views to sea and land" that makes the area popular for tourism, "given the scenic views and coastal interest" as outlined within the Seascape, Landscape and Visual chapter.	Ch 29 Seascape, Landscape and Visual and Ch 33 Socio-Economic, Tourism and Recreation

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Section 33.5.3 Operation Chapter 33 notes that Chapter 29 states that there will be no significant operational phase visual, landscape or seascape effects (onshore and offshore) on tourism receptors as reported in the Seascape, Landscape and Visual chapter. It is anticipated that there may be opportunities for marine tourism which will allow tourists to visit the offshore development area. *Conclusion* No significant negative residual effects are predicted on tourism as a result of changes to seascape, landscape and visual.	
Ch 30 Noise and Vibration interactions with: Ch 23 Biodiversity, Ch 32 Population and Human Health Ch 15 Offshore Ornithology Ch 35 Offshore Bats Ch 14 Marine Mammal Ecology Ch 13 Fish and Shellfish Ecology	<u>Ch 23 Biodiversity</u> *Section 23.5.2 Construction* Onshore noise emissions during the construction phase will be generated as a result of site preparation, HDD, cable transition joint bay activities, general construction activities and vehicle movements at the landfall site and grid facility. Along the onshore cable route, noise will be generated as a result of HDD at specific locations, cable route excavation (including breaking of the road surface) and joint bay activities. Breeding birds, wintering waterbirds and otters are among the species which could potentially be affected. The effects of noise emissions from the construction works have been considered in Chapter 23. *Section 23.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of mitigation measures outlined in Chapter 30 Noise and Vibration and Chapter 23 Biodiversity, no significant negative residual effects are predicted on biodiversity as a result of changes to the existing noise baseline.	Ch 30 Noise and Vibration and Ch 23 Biodiversity
	Note Ch 30 Noise and Vibration considers the noise effects on people, the results of which have then been considered in Chapter 32 Population and Human Health. <u>Ch 32 Population and Human Health</u> *Section 32.5.2 Construction* Onshore noise emissions during the construction phase will be generated as a result of site preparation, HDD, cable transition joint bay activities, general construction activities and vehicle movements at the landfall site and grid facility. Along the onshore cable route, noise will be generated as a result of HDD at specific locations, cable route excavation (including breaking of the road surface) and joint bay activities. These noise emissions have the potential to affect amenity, business, tourism and employment and population and human health. Sensitive receptors within 150m of the proposed works will be particularly susceptible to noise effects. Additionally, noise emissions may be generated as a result of the use diesel generators in an emergency scenario. The potential noise effects on people are considered in Chapter 30. Offshore piling works were assessed for impacts on onshore sensitive receptors however the assessment concluded that the works would not result in any likely significant effects. The potential noise effects on people are considered in Chapter 30. *Section 32.5.3 Operation* During the operation of the proposed development, noise emissions from the Grid Facility have the potential to negatively affect population and human health. Under normal operating conditions, no exceedances of noise limits are predicted. Along the onshore cable route, the occasional maintenance and testing of the onshore cable may give rise to noise effects.	Ch 30 Noise and Vibration and Ch 32 Population and Human Health

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	However, modelling undertaken during emergency scenarios, such as emergency testing, indicated that noise exceedance could be experienced at nearby receptors, which implies a slight to moderate negative effect, albeit brief in duration. No noise emissions from the onshore cable route are predicted. The occasional maintenance and testing of the onshore cable will not give rise to any significant noise or vibration effects. The potential noise effects on people are considered in Chapter 30. *Section 32.5.4 Decommissioning* During the decommissioning phase, similar effects to those outlined for the construction phase are predicted, however not to the same extent. *Conclusion* With the implementation of the mitigation measures outlined in the Noise and Vibration Chapter and the design of the proposed development, no significant negative residual effects on population and human health are predicted as a result of changes to the existing noise baseline.	
	Ch 15 Offshore and Intertidal Ornithology *Section 15.5.2 Construction, Section 15.5.3 Operation and Section 15.5.4 Decommissioning* For all the phases of the proposed development, there is the potential for indirect impacts on ornithological receptors due to impacts of noise on prey species and the habitats of prey species. This is considered in Chapter 15. *Conclusion* With the implementation of the mitigation measures outlined in Chapter 15 and the design of the proposed development, no significant negative residual effects on ornithological receptors are predicted as a result of changes to the existing noise baseline.	Ch 15 Offshore and Intertidal Ornithology
	Ch 35 Offshore Bats *Section 35.5.2 Construction* Anthropogenic noise associated with offshore wind development, including noise from pile-driving, helicopter movements and construction activities, has the potential to affect offshore bats if present within the array area. This has been considered in Chapter 35. *Section 35.5.4 Decommissioning* Decommissioning would result in potential impacts similar to those outlined for the construction phase of the proposed development, including noise emissions associated with the decommissioning of the offshore infrastructure. This has been considered in Chapter 35. *Conclusion* Given the temporary and localised nature of potential noise impacts and the expected biologically insignificant response to those impacts, along with the nature of the impacts being restricted to daylight hours, and the low number of bats that may be present within the array area, no likely significant negative residual effects are predicted to occur as a result of the interaction of offshore noise associated with the construction or decommissioning of the proposed development on the offshore bats.	Ch 35 Offshore Bats
	Ch 13 Fish and Shellfish Ecology *Section 13.5.2 Construction* The offshore construction phase has the potential to generate noise emissions that may impact fish and shellfish receptors and their prey as a result of piling, UXO clearance, construction noise, vessels (e.g. for installing cables or foundations) and geophysical and geotechnical pre-construction surveys. This has been considered in Chapter 13. *Section 13.5.3 Operation*	Ch 13 Fish and Shellfish Ecology

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	There is the potential for disturbance from vessels during the operational phase. This has been considered in Chapter 13. *Section 13.5.4 Decommissioning* Potential effects from noise on fish and shellfish and their prey during decommissioning is similar to those for the construction phase. This has been considered in Chapter 13. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 13 Fish and Shellfish, no likely significant residual noise effects are predicted as a result of interactions with fish and shellfish or their prey during the construction, operation or decommissioning of the proposed development.	
	<u>Ch 14 Marine Mammal Ecology</u> *Section 14.5.2 Construction* The offshore construction phase has the potential to generate noise emissions that may impact marine mammals and their prey as a result of a disturbances or permanent threshold shift (PTS) from auditory injuries caused by UXO clearance, piling, construction noise, vessels (e.g. for installing cables or foundations). This has been considered in Chapter 14. *Section 14.5.3 Operation* There is the potential for disturbance from vessels during the operational phase. This has been considered in Chapter 14. *Section 14.5.4 Decommissioning* Potential effects from noise on marine mammals and their prey during decommissioning is similar to those for the construction phase. This has been considered in Chapter 14. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 14 Marine Mammal Ecology, no likely significant residual noise effects are predicted as a result of interactions with marine mammals or their prey during the construction, operation or decommissioning of the proposed development.	Ch 14 Marine Mammal Ecology
Ch 31 Resource and Waste Management interactions with: Ch 22 Water Ch 28 Climate Ch 24 Traffic and Transportation	<u>Ch 22 Water</u> *Section 22.5.2 Construction* During the construction phase of the proposed development, there is the potential for negative effects on water quality as a result of silty water runoff containing high loads of suspended solids from the onshore excavated material. In addition, a bentonite mixture will be used as a lubricant for the drilling head during the horizontal directional drilling (HDD). *Conclusion* With the implementation of mitigation measures outlined in the Water Chapter and Resource and Waste Management Chapter, no significant negative residual effects on water quality are predicted as a result of interactions with resource and waste management.	Ch 31 Resource and Waste Management and Ch 22 Water

Interaction	Description of potential inter-related effects identified and assessed in the below EIAR chapters	Relevant Chapters
	Climate *Section 28.5.2 Construction* The total embodied carbon predicted to be generated during the construction phase of the proposed development was calculated. This included the embodied carbon associated with material use e.g. excavated and imported materials. *Section 28.5.4 Decommissioning* The carbon emissions generated during the decommissioning phase are expected to be less than that during the construction phase. *Conclusion* With the implementation of suitable mitigation measures as detailed in Volume 5, Chapter 28 Climate, no likely significant negative residual effects are predicted on air as a result of interactions with resource and waste during the construction or decommissioning of the proposed development.	Ch 31 Resource and Waste Management and Ch 28 Climate

38.4 References

Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018.

Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (EPA 2022);

Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission 2017);

Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission 1999); and

Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Union 2017).