Supporting Information
Screening for Appropriate Assessment

NISA

North Irish Sea Array

Main Report

Statkraft

CIP
Copenhagen Infrastructure Partners

GoBe
APEM Group

ARUP

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Abbreviations

Term	Definition
AA	Appropriate Assessment
AEoI	Adverse Effect on Integrity
AHV	Anchor Handling Vessel
BTO	British Trust for Ornithology
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CIV	Cable Installation Vessel
CO	Conservation Objective
cSAC	candidate Special Area of Conservation
CTV	Crew Transfer Vessel
DAHG	Department of Arts, Heritage and Gaeltacht
DAS	Digital Aerial Survey
DCC	Dublin City Council
DDV	Drop-down Video
DECC	Department of Environment, Climate and Communications
DEHLG	Department of Environment, Heritage, and Local Government
EC	European Commission
ECC	Export Cable Corridor
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIAR	Environmental Impact Assessment Report
EMF	Electro-magnetic field
ESAS	European Seabirds at Sea
EU	European Union
FCC	Fingal County Council
FCS	Favourable Conservation Status
FPV	Fall Pipe Vessel
HDD	Horizontal Directional Drilling
HLV	Heavy Lift Vessel

Term	Definition
HVAC	High Voltage Alternating Current
HWM	High Water Mark
INNS	Invasive Non-Native Species
IOF	Important Ornithological Features
IWDG	Irish Whale and Dolphin Group
JCP	Joint Cetacean Protocol
JNCC	Joint Nature Conservation Committee
JUV	Jack Up Vessel
*LAT	Lowest Astronomical Tide
LSE	Likely Significant Effect
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MERP	Marine Ecosystem Research Programme
MMF	Mean Maximum Foraging Range
MU	Celtic and Irish Seas Management Unit
NIS	Natura Impact Statement
NISA	North Irish Sea Array
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority
O&M	Operation and Maintenance
OMF	O&M Facility
OREDP	Offshore Renewable Energy Development Plan
ORESS	Offshore Renewable Energy Support Scheme
OSP	Offshore Substation Platform
OSV	Offshore Supply Vessel
OWF	Offshore Wind Farm
PSA	Particle Size Analysis
QI	Qualifying Interest
SAC	Special Area of Conservation
SCADA	Supervisory Control And Data Acquisition
SCANS	Small Cetaceans in European Atlantic Waters and the North Sea

Term	Definition
SCI	Special Conservation Interest
SD	Standard Deviation
SEA	Strategic Environmental Assessment
SISAA	Screening for Appropriate Assessment
SMP	Seabird Monitoring Programme
SOV	Service Operational Vessel
SPA	Special Protection Area
TJB	Transition Joint Bay
TOC	Total Organic Carbon
TTS	Temporary Threshold Shift
UK	United Kingdom
UXO	Unexploded Ordinance
WFD	Water Framework Directive
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Glossary

Term	Glossary
An Bord Pleanála (ABP)	The competent authority under the Planning Acts to determine the planning application and carry out the AA of the proposed development.
Annex I Species	Annex I of the Birds Directive (Directive 2009/147/EC) lists 193 bird species and sub-species which are: i) in danger of extinction, ii) vulnerable to specific changes in their habitat, iii) considered rare because of small populations or restricted local distribution and / or iv) require particular attention for reasons of the specific nature of habitat.
Annex I Habitats	Habitat types, listed in Annex 1of the Habitats Directive (Directive 92/43/EEC), whose conservation requires the designation of Special Areas of Conservation. Priority habitats, which are in danger of disappearing within the EU territory, are highlighted with an asterisk in Annex I.
Annex II Species	Animal and plant species, listed in Annex II of the Habitats Directive, whose conservation requires the designation of Special Areas of Conservation.
Annex IV species	Animal and plant species listed in Annex IV of the Habitats Directive that are in need of strict protection from killing, disturbance or destruction of them or their habitat.
Appropriate Assessment (AA)	The statutory process as set out in Article 6 of the Habitats Directive

Term	Glossary
Array area	The area within the offshore development area within which the WTGs, the OSP and inter-array cable(s) will be located
Belcamp substation	The existing operational substation where the 220kV underground onshore cable will connect to the national high voltage electricity transmission system
Birds Directive	The Birds Directive (formally known as Council Directive 2009/147/EC on the conservation of wild birds) is a European Union directive adopted in 2009. It aims to protect all European wild birds and the habitats of listed species, in particular through the requirement for member states to designate of Special Protection Areas.
Bremore Substation	The new 220 kV substation to be constructed as part of the proposed development located adjacent to the compensation substation. Bremore substation will be connected to the compensation 220kV substation and the Belcamp substation by means of the onshore cables.
Cable Duct	The cable ducts will be durable plastic conduits into which the cables will be installed.
Clupeid	Any species of the family Clupeidae (such as herring and sprat).
Compensation substation	The compensation substation is situated within the grid facility and will be connected to the Bremore substation by means of a 220 kV underground cable.
Conservation Objective (CO)	The specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status. The National Parks and Wildlife Service (NPWS) produce the Conservation Objectives for all European sites in the Republic of Ireland.
Construction Phase	The processes and activities on or off site that contribute or are instrumental to the construction of the Proposed Development towards, and finally to, the Operational Phase
Design Flexibility Opinion (DF Opinion)	The Developer sought an opinion from An Bord Pleanála on design flexibility under section 287A of the Planning Acts. In 2024, An Bord Pleanála issued its opinion on design flexibility, (the "DF Opinion"). Full detail regarding the DF Opinion and how this is reflected in the EIAR is provided in Sections 2.7 and 2.8 of Chapter 2 (EIA and Methodology for the preparation of an EIAR).
Designated Sites	Selected sites designated with the aim to conserve habitats and species of conservation concern.
Developer	North Irish Sea Array Windfarm Limited (Ltd). The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
EirGrid Group	Transmission system operator on the Island of Ireland and transmission asset owner for offshore electrical infrastructure at transmission voltage levels in Ireland. Referred to as EirGrid.
Environmental Impact Assessment Report (EIAR)	A report of the effects if any, which the proposed development, if carried out, would have on the environment and shall include the information specified in Annex IV of the Environmental Impact Assessment Directive.
European site	European sites are defined in the Habitats Directive as Special Area of Conservation (SAC), candidate SAC (cSAC), Special Protection Area (SPA), candidate SPA (cSPA) and Site of Community Importance (SCI). 'European site' is also deemed to include possible SACs and potential SPAs.
Export Cable Corridor	Offshore export cable corridor which is the area within which the offshore export cables will travel from the offshore substation platform (OSP) to the landfall.
Favourable Conservation Condition	Favourable Conservation Condition is determined if data indicate that the conservation feature is maintaining itself on a long-term basis as a viable component of its natural habitats / species range and will continue to be maintained on a long-term basis / for the foreseeable future.

Term	Glossary
Grid Connection Point	The point where the onshore 220kV underground cable connects to the existing transmission system – at the existing Belcamp substation and the consented Belcamp extension project (F23A/0040)
Grid Facility	The grid facility comprises of the compensation substation and the Bremore substation together with ancillary infrastructure.
Habitats Directive	EU Directive on the conservation of natural habitats, wild fauna and flora (92/43/EEC), commonly known as "the Habitats Directive", was adopted in 1992, came into force in 1994 and was transposed into Irish law in 1997.
HWM	High water mark as shown on the Ordnance Survey Ireland Historic 1888 -1913 25-inch mapping
Inter-array cables	These are the subsea electrical cables that will link the wind turbine generators to each other and link the wind turbine generators to the offshore substation platform.
Invasive Non Native Species (INNS)	An invasive species is a plant, fungus, or animal species that is not native to a specific location.
Joint Bay	A joint bay is an underground chamber which facilitates the pulling-through of pre-installed cable ducts. These chambers will "joint" consecutive lengths of cables into one continuous overall circuit within a controlled environment.
Landfall site	The landfall site includes all infrastructure from where the offshore export cable comes onshore to where it connects to the compensation substation. This includes the area from where the offshore export cables are brought onshore, the relevant construction compound(s), TJB, HDD under the Irish Rail line, and where the onshore export cable connects to the compensation substation.
Likely Significant Effect (LSE)	Any effect that may reasonably be predicted as a consequence of a plan or project that would negatively and significantly affect the conservation objectives established for the habitats and species significantly present on the Natura 2000 site. This can result from either on-site or off-site activities, or through combinations with other plans or project.
MAC	Maritime Area Consent, the right to occupy a part of the maritime area, conditional on securing other necessary approvals
Maritime Area Consent Boundary	The MAC boundary is the boundary of the offshore area which the holder of the MAC has the right to occupy
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service has responsibility for the protection and conservation of Ireland's natural heritage and biodiversity at national government level.
Natura 2000 sites or European sites	Sites designated under the Habitats and Birds Directives (includes SACs and SPAs)
Natura Impact Statement (NIS)	A statement for the purposes of Article 6 of the Habitats Directive, of the implications of a proposed development, on its own or in combination with other plans or projects, for one or more than one European site, in view of the conservation objectives of the site or sites.
North Irish Sea Array (NISA) Offshore Wind Farm	The North Irish Sea Array (NISA) Offshore Wind Farm refers to the construction of the offshore wind farm and its connection into the existing substation at Belcamp.
North Irish Sea Array Windfarm Limited (Ltd)	North Irish Sea Array Windfarm Limited (Ltd) is the Developer. The Developer is a 50/50 joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.
Offshore export cable corridor	The specific corridor of seabed (seaward of high water mark) from the array area to the landfall site, in which the offshore export cable route will be located. Referred to as the ECC.

Term	Glossary
Offshore export cable(s)	Comprises of 2 No. subsea 220kV HVAC cables linking the offshore substation platform to the transition joint bay (TJB) within the landfall site.
Offshore infrastructure	This relates to the aspects of the proposed development located seaward of the HWM
Offshore development area	That area within the proposed development boundary located seaward of the HWM
Offshore substation platform (OSP)	The OSP is the offshore electrical structure which contains the equipment needed to connect the WTGs to the offshore export cables.
Onshore cable route	This is the route taken by the onshore cable(s) which links the Bremore 220kV substation to the existing Belcamp 220kV substation.
Onshore cable(s)	The onshore underground 220kV HVAC cables will connect Bremore substation to the existing Belcamp substation. This will comprise of up to 6 No. power cables and 2 No. fibre optic cables.
Operation and Maintenance Facility (OMF)	The location from where the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to operate and maintain the proposed development will be performed during its lifetime.
Onshore export cable(s)	Comprises onshore underground 220kV HVAC cables which will be routed from the transition joint bay at the landfall site connecting to the grid facility.
Onshore development area	That area within the proposed development boundary located landward of the HWM
Onshore infrastructure	This relates to the aspects of the proposed development located landward of the HWM
Operation and Maintenance Facility (OMF)	The location from where the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to operate and maintain the proposed development will be performed during its lifetime.
Operational Phase	This phase refers to the processes and activities implemented following the Construction Phase
ORESS 1	ORESS 1 Offshore Renewable Energy Support Scheme - the first Offshore Auction run under the Government of Ireland's Renewable Electricity Support Scheme and is a pivotal component of the Programme for Government and the Climate Action Plan 2024.
Qualifying Interest (QI)	Species and /or habitat types for which a European site is designated, and which are considered during the assessments under Article 6(3) and, if required, Article 6(4) of the Habitats Directive.
Planning Acts	Planning and Development Act 2000, as amended
Project Option 1	Project Option 1 consists of 49 WTGs with 250m rotor diameter
Project Option 2	Project Option 2 consists of 35 WTGs with 276 rotor diameter
Proposed development	This refers to the overall Offshore Wind Farm project, which is the subject of the planning application, and which includes all offshore and onshore infrastructure
Proposed development boundary	This is the development or red line boundary within which all of the proposed development is located.
Salmonid	Any species of the family (Salmonidae) of elongate bony fishes (such as a salmon or trout) that have the last three vertebrae upturned (i.e. ray-finned fish).
Screening for Appropriate Assessment	Assessment to determine whether the proposed development is likely to have a significant effect (either alone or in combination with other plans or projects) on the European site(s).
Zone of Influence (ZoI)	An area within which environmental impact arising from a certain activity may occur.

1. Introduction

1.1 Background

North Irish Sea Array Windfarm Limited (Ltd), hereafter referred to as the Developer, is proposing to develop the North Irish Sea Array (NISA) Offshore Wind Farm (OWF), hereafter referred to as the proposed development. The proposed development is a combination of offshore infrastructure and onshore infrastructure, other supporting infrastructure, ancillary works and activities. The proposed development, once operational, would have the capacity to provide renewable energy for 500,000 to 700,000 homes.

The proposed development boundary, within which the proposed development will be located, comprises the offshore development area off the coast of Counties Dublin, Meath and Louth and the onshore development area within County Dublin (Fingal and Dublin City Council administrative areas) with the divide between the two being the High Water Mark (HWM).

The Developer is the holder of a Maritime Area Consent (MAC)[1] Ref: 2022-MAC-005 granted for the occupation of a maritime area for the permitted maritime usage of the construction and operation of an Offshore Wind Farm and associated infrastructure of the proposed development. The Developer and proposed development was successful in the first Offshore Renewable Energy Support Scheme (ORESS) auction in May 2023.

The Developer has submitted an application for approval to An Bord Pleanála under Section 291 of the Planning and Development Act 2000, as amended (the "Planning Acts") to carry out the proposed development. A high-level overview of the proposed development is provided in Section 1.4, with further detailed description of the development provided in Section 2.

Within the offshore development area, the proposed development includes two project options for consideration within the planning application. Post consent, just one option will be chosen for detailed design and construction. This approach has been taken in accordance with the "DF Opinion" provided by the An Bord Pleanála and provides a degree of flexibility for the proposed development during the post-consent procurement phase. The project options relate to offshore infrastructure only, i.e., wind turbines, foundations, offshore substation platforms, inter-array cables and export cables seaward of the HWM (see Section 2).

Where the design details are unconfirmed, ranges of parameters (with minimum and maximum values identified) and discrete design options are provided in order to capture the design flexibility awarded to the Developer by An Bord Pleanála through the DF Opinion.

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

As part of the statutory consent application, an Environmental Impact Assessment Report (EIAR) has been compiled on behalf of the proposed Developer by a multi-disciplinary consultancy team of competent experts led by Arup with input from specialist sub-consultants including GoBe Consultants Ltd. The EIAR presents the results of a systematic analysis and assessment of the likely significant effects of the proposed development on the receiving environment.

GoBe Consultants Ltd and Woodrow have been appointed by Arup on behalf of the Developer to prepare the Supporting Information for Screening for Appropriate Assessment (SISAA) Report and Natura Impact Statement (NIS) for the statutory consent application.

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

GoBe has been at the forefront of strategic planning, consenting and Environmental Impact Assessment (EIA) for large scale offshore wind within the UK and has been actively applying this experience to the offshore wind farm market in Ireland. GoBe staff have significant experience of the preparation of information to support Appropriate Assessments and EIA in both a UK and Irish context. Woodrow is an established and accomplished environmental consultancy operating in the terrestrial ecology sector. Woodrow's team of ecologists and environmental professionals cover specialisms that include aquatic ecology, botany, habitats, ornithology, bats, mammals and invertebrates. Woodrow's team has extensive experience in delivering Appropriate Assessments and Ecological Impact Assessment for large scale projects in Ireland.

1.2 Purpose of this Document

The Habitats Directive (92/43/EEC) and the associated Birds Directive (2009/147/EC) are transposed into Irish legislation by Part XAB of the 2000 Act and the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). The legislative provisions for Appropriate Assessment (AA) for planning applications are set out in Section 177U of the 2000 Act (as amended). Having regard to the 2000 Act, it is recognised by the Developer that the public authority for carrying out AA for the proposed development (the 'competent authority') is An Bord Pleanála.

In accordance with the 2000 Act and associated guidance, a SISAA Report and a NIS have been prepared by the Developer to provide information to An Bord Pleanála, as the competent authority. This document forms the SISAA.

The SISAA Report has assessed the potential for the proposed development to have a Likely Significant Effect (LSE) on a European site, taking account of qualifying interests (QI) and site-specific conservation objectives (CO).

The NIS takes account of the QIs and COs of all relevant European sites identified within the SISAA Report, and considers whether a plan or project, alone or in combination with other plans or projects, will have an adverse effect on integrity (AEoI) of one or more European sites.

As the competent authority, An Bord Pleanála will use this information to undertake an Appropriate Assessment. The competent authority is not bound to reach the same conclusions of either the SISAA Report or the NIS.

1.3 Structure of the Document

This document comprises the SISAA for the proposed development and assesses the potential for the proposed development to have a likely significant effect (LSE) on any European site, taking account of QIs and site-specific COs.

The structure of the SISAA can be summarised as follows:

- Section 1: Introduction. An overview of the proposed development, the purpose of this document, the AA process and legislative context, and the approach to screening
- Section 2: Description of the proposed development
- Section 3: Stage 1 Screening – Alone and In-Combination. Findings of the screening exercise both alone and in-combination, including transboundary effects and
- Section 4: Summary of Screening.
- Section 5: References

Several appendices have been submitted alongside this document as follows:

- Appendix 1: Screening Matrices
- Appendix 2: Summary of Consultation
- Appendix 3: Rehabilitation Schedule

- Appendix 4: Cable Route Benthic Survey Report
- Appendix 5: Array Area Benthic Survey Report
- Appendix 6: Offshore and Intertidal Ornithology Migratory Collision Risk Modelling
- Appendix 7: Breeding bird tables and
- Appendix 8: Wintering birds tables

The screening matrices (Appendix 1) were produced upon request of the National Parks and Wildlife Service (NPWS).

1.4 Overview of the North Irish Sea Array Offshore Wind Farm

A high-level overview of the proposed development is provided below with a more detailed description provided in Section 2: Description of Development.

Offshore Infrastructure:

- Offshore wind turbine generators (WTGs) and their associated foundations
- Inter-array cables which will connect the WTGs to the Offshore Substation Platform (OSP)
- An OSP and associated foundations and
- Offshore export cable(s) which will deliver the generated power from the OSP to HWM as defined by Ordnance Survey Ireland mapping, (HWM being the transition point between the offshore and onshore infrastructure).

Onshore Infrastructure:

- Offshore export cable(s) from the HWM to the landfall transition joint bays (TJBs)
- Transition joint bays (TJBs) where the offshore and onshore export cables are joined
- Onshore export cable(s) from the TJBs to the grid facility
- A Grid Facility, comprising a compensation substation and Bremore substation, together within ancillary infrastructure
- Onshore cable(s) from the grid facility to the Belcamp Substation and
- A connection from the onshore cable(s) to the national electricity transmission network at Belcamp Substation

The landfall will comprise both onshore and offshore infrastructure, with the HWM being the point of transition between the two. The export cables come ashore and transition to onshore cables at the TJB close to the shoreline in Bremore, north or Balbriggan, Co. Dublin.

The proposed development boundary is the area within which all offshore and onshore infrastructure will be located and is the ‘red line’ boundary for the purposes of the consent application. For ease of reference, within this NIS, the area within the proposed development landward of the HWM associated with onshore infrastructure is referred to as the ‘onshore development area’ and the area within the proposed development boundary seaward of the HWM associated with offshore infrastructure is referred to as the ‘offshore development area’.

1.5 Appropriate Assessment Process

The European Commission's methodological guidance (EC, 2021) promotes a progressive three-stage process, the outcome of each stage determining whether the next stage in the process is required. This process is detailed within the 2009 guidance from the Department of Environment, Heritage and Local Government (DEHLG, 2009, amended 2010). In summary, the three stages of the process are (also see Figure 1.1):

- Stage 1: Screening
- Stage 2: Appropriate Assessment
- Stage 3: Alternative Solutions and Statement of Imperative Reasons of Overriding Public Interest (IROPI)
- Note that the DEHLG 2010 guidance refers to a four-stage process; Stage 3 of the EC 2021 guidance now covers Stages 3 and 4 of the original guidance

Figure 1.1: Stages in the AA process

1.5.1 Stage 1: Screening for Appropriate Assessment

Screening is the first stage of the 'AA Process'. AA screening undertaken by the competent authority, identifies the potential for LSE on a European site (alone or in-combination with other projects or plans); it is an iterative process and considers an initial evaluation of a project to assess its predicted impacts against the COs of relevant European sites. AA screening should be undertaken without the inclusion of mitigation.

The DEHLG (2010) guidance states that screening determines whether AA is necessary by examining:

- Whether a plan or project is directly connected to or necessary for the management of the site, and
- Whether a plan or project, alone or in combination with other plans or projects, is likely to have a significant effect on a Natura 200 site in view of conservation objectives

Sites are identified for AA screening with reference to the Zone of Influence (ZoI) which is the geographical scale over which effects could arise.

On a precautionary basis, where effects are deemed to be potentially significant, the process moves to Stage 2: Appropriate Assessment. Stage 1: Screening is satisfied through the provision of this SISAA Report.

1.5.2 Stage 2: Appropriate Assessment

The next stage, Appropriate Assessment, considers whether the plan or project, alone or in combination with other projects or plans, will have an AEoI of a Natura 2000 site, and includes the consideration of any mitigation measures necessary to avoid, reduce or offset negative effects.

The Appropriate Assessment Stage provides information to enable the competent authority to carry out an appropriate assessment in accordance with Part XAB of the Planning Acts. Information pertaining to the Appropriate Assessment Stage is detailed within an NIS. The Developer has prepared a report to enable the competent authority to carry out its Stage 2: Appropriate Assessment. This report is known as the NIS Report.

1.5.3 Stage 3: Alternative Solutions and Statement of IROPI

The potential need for Stage 3 is informed by the conclusions of Stage 2. Stage 3 examines any alternative solutions or options that could enable the plan or project to proceed without an AEoI of a European site, while still meeting the objectives of the plan or project. The process must return to Stage 2 if an alternative is identified.

Where it can be demonstrated that there are no alternative solutions to the proposed development, the proposed development may still be carried out if the competent authority is satisfied that the scheme must be carried out for imperative reasons of overriding public interest (IROPI). The final part of Stage 3 is the consideration of whether adequate compensatory measures can be secured.

Should An Bord Pleanála agree to the proposal to undertake a plan or project where an adverse effect on a Natura site cannot be ruled out, they have the duty to secure compensatory measures to ensure that the overall coherence of the Natura 2000 network is maintained. In practice, practical, implementable, proportionate and enforceable compensatory measures must be proposed and assessed by the proposed development's proponent.

1.6 The Birds and Habitats Directives

The Habitats Directives (92/43/EEC) provide the legislative framework for the protection of a wide range of rare, threatened, or endemic animal and plant species throughout the European Union (EU). The Birds Directive (Conservation of Wild Birds Directive (2009/147/EC) aims to protect listed wild bird species naturally occurring in the European Union. Together, the two Directives have also created the Natura 2000 protected areas network.

The overall objective is to ensure the maintenance or restoration to a Favourable Conservation Status (FCS) of habitats and species designated within protected areas, known as European sites: Special Areas of Conservation (SAC) which protect terrestrial and marine habitats and Special Protection Areas (SPA) which protect birds. These sites provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

The requirement for AA is set out in Article 6(3) of the Habitats Directive (92/43/EEC).

Article 6(3) of the Habitats Directive requires "Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 site) but likely to have a significant effect thereon, either individually or in-combination with other plans or projects, shall be subject to AA of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only having ascertained that it will not have an adverse effect on the integrity (AEoI) of the site concerned".

Should the conclusion of the AA be that AEoI cannot be ruled out beyond reasonable scientific doubt, Article 6(4) goes on to state: "*If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for environment or, further to an opinion from the Commission to other imperative reasons of overriding public interest*".

1.7 Relevant Guidance and Legislation

This report has been produced in accordance with the following key guidance:

- Appropriate Assessment Screening for Development Management-OPR Practice Note PN01 (Office of the Planning Regulator, 2021)
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment Heritage and Local Government (DEHLG, 2009, revised 11/02/10)

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Chartered Institute of Ecology and Environmental Management (CIEEM 2018, updated 2022)
- Offshore Renewable Energy Development Plan II: Strategic Environmental Assessment Report. Department of Environment, Climate and Communications & Sustainable Energy Authority Ireland (DECC, 2023)
- Offshore Renewable Energy Development Plan II: Principles Report. Department of Environment, Climate and Communications & Sustainable Energy Authority Ireland (DECC, 2022).
- Department of Environment Heritage and Local Government Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010); Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 and PSSP 2/10 (DEHLG, 2010)
- Guidance on EIS and NIS preparation for Offshore Renewable Energy Projects. Department of Communications, Climate Action and Environment (DCCAE, 2017)
- Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission (EC 2021)
- Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011)
- Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. European Commission (EC, 2007)
- Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC (EC 2018)
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document. Prepared by National Parks and Wildlife Service. Department of Arts, Heritage and Gaeltacht (DAHG 2012)
- Guidance to Manage the Risk to Marine Mammals from Manmade Sound Sources in Irish Waters. Prepared by National Parks and Wildlife Service. Department of Arts, Heritage and Gaeltacht (DAHG 2014)
- Managing Natura 2000 Sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission (EC, 2021)
- Wind energy developments and Natura 2000. European Commission (EC, 2020)
- The Guiding Principles for Cumulative Impact Assessments in Offshore Wind Farms, (Renewable UK, 2013) as presented in the Guidance on EIS and NIS Preparation for Offshore Renewable Energy Projects. Department of Communications, Climate Action, and Environment (DCCAE, 2017)
- Interpretation line suggested by the Commission as regards the application of Directive 85/337/EEC to associated/ancillary works

1.8 Case Law

This screening for AA has been undertaken with consideration of case law, including judgments of the Irish and European Courts.

No measures intended to avoid or reduce harmful effects on any European Site have been taken account of as part of this SISAA.

1.9 Data Collection

1.9.1 Coastal and Marine Habitats

Information on the coastal and marine communities and habitats within the proposed development boundary was collected through a detailed desktop review of existing literature and data sources and site-specific surveys. This information provides comprehensive coverage of the proposed development boundary.

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

Table 1.1: Site-specific survey data used to inform the coastal and marine habitats assessment.

Title	Summary
NISA Benthic Ecology Baseline Cable Route Benthic Survey Report (Appendix 4).	An Intertidal Phase I walkover survey was undertaken on the 26th of September 2022 and was carried out between High Water Mark (HWM) and Low Water Mark (LWM) to determine the composition and distribution of intertidal biotopes and the extent of sub-features. In areas of soft substrate, sediment characteristics were assessed with material collected from eight sites for particle size analysis (PSA) and total organic carbon (TOC) content determination. Sediment samples were also collected from ten sites for infaunal analysis with sediment taken to a depth of 20-25cm and washed over a 1mm sieve with all retained fauna identified and enumerated. Biotopes/habitats were assigned and mapped by reference to the benthic community data collected and by reference to aerial imagery. The subtidal benthic survey campaign was carried out between the 27th of September – 1st October 2022 with 30 sites surveyed, of which 24 were within the ECC with the remainder directly to the south. Drop Down Video (DDV) transects were conducted at all sites to inform seabed habitat classification. Similarly, samples for infaunal analysis were collected at all 30 sites using a 0.1m^2 Day Grab. Material was washed over a 1mm sieve with all retained fauna identified and enumerated. Additional sediment was collected at ten sites for PSA and TOC determination while surficial sediments were collected for chemical analyses. Turbidity measurements were collected at various depths at three sites, one measurement per site; located near shore, mid-way along the ECC assessment area and near the array area.
NISA Benthic Ecology Baseline Array Area Benthic Survey Report (Natural Power Consultants Ltd, 2022).	A total of 40 sampling stations were selected in the vicinity of the array area and the adjacent subtidal environment, of which 11 sites were within the array area itself. Sites were selected with reference to existing habitat and geophysical data to ensure that all habitats present within the survey area were represented. At each station, sediment was collected for physiochemical analyses (PSA, TOC, chemistry) and a single 0.1m^2 Day Grab sample was taken for faunal analysis. DDV samples were collected from 12 sampling stations, five of which were within the array area distributed throughout the array. In addition, DDV data were acquired at 20 sites located to the southwest of the array area where historical data indicated the prevalence of hard substrate unsuitable for grab sampling. All survey sites were within the area covered by the MAC for the proposed development, which has been refined since the survey was undertaken in 2022 through design development to the offshore development area.

A detailed desktop review was also carried out to establish a baseline of information describing the offshore development area. The baseline characterisation utilises a broad combination of datasets and provides a robust temporal analysis and validation of regional monitoring datasets. The key desk-based data sources used in the assessment are shown in Table 1.2.

Table 1.2: Desk-based data sources used to inform the coastal and marine habitats assessment

Data sources / publications	Reference / source location, data type and summary	Temporal coverage
EMODnet broad-scale seabed habitat map of Europe (EUSeaMap, 2021).	https://www.emodnet-seabedhabitats.eu/ Interactive map of benthic data and habitat maps.	Latest data from 2021
Integrated Mapping for the Sustainable Development of Ireland's Marine Resources (INFOMAR, 2021).	https://www.infomar.ie/maps/interactive-maps/seabed-and-sediment A joint project between the Marine Institute and Geological Survey of Ireland using multibeam echosounder and seabed survey data providing sediment mapping.	2006-2016
Habitats Directive Annex I habitat maps.	https://www.emodnet-seabedhabitats.eu/access-data/launch-map-viewer/ Habitat data from EMODnet Seabed Habitat maps that contains data on habitats described in Annex I of the EU's Habitats Directive.	2016
JNCC Mid Irish Sea Reefs habitat mapping report (Dalkin, 2008).	https://data.jncc.gov.uk/data/c74e7820-b959-4d2a-b235-a2a187a5fbae/JNCC-Report-411-FINAL-WEB.pdf Report written with the aim of improving the understanding of the benthic habitats and communities within the Irish Sea.	2006 – 2007
Distribution of Coastal Habitats in Ireland 2013-2018 (Marine Institute, 2019).	https://data.marine.ie/geonetwork/srv/eng/catalog.search#/metadata/ie.marine.data:dataset.3993 Specific habitats identified in the EU Habitats Directive including subtidal sandbanks, sea cliffs, estuaries and sand dunes.	1983 – 2018
Offshore Benthic Communities of the Irish Sea. In: The Irish Sea: An Environmental Review, Part 1 (Mackie, 1990).	https://gis.ices.dk/geonetwork/srv/api/records/4908b026-1ee4-4921-9a9c-ce53f802864e Data collected for Irish Sea benthic habitats were digitised into a map by JNCC. Specific habitats identified in the EU Habitats Directive including subtidal sandbanks, sea cliffs, estuaries and sand dunes.	1990
Dublin Port Maintenance Dredging 2022 – 2029 Benthic and Fisheries Assessment (Aquatic Services Unit, 2020)	https://www.dublinport.ie/information-centre/dredging/ Data and information on Maintenance Dredging campaigns. Benthic and fisheries assessment of the subtidal area of Dublin Port to support the ongoing maintenance dredging operations of the port from 2022 to 2029.	2020
Greater Dublin Drainage Scheme: Hydrographic Survey Report GEO13_GDD (Tech Works Marine, 2013)	https://assets.gov.ie/109918/2501a74e-c4af-48a9-a598-44d9026d7355.pdf Near-shore seabed surveys in two areas North of Dublin to investigate the seabed properties to ascertain their suitability for location of a marine to serve the new waste water treatment plant (WWTP) of the greater Dublin area.	2013

1.9.2 Migratory Fish

A detailed desktop review has been carried out to inform the baseline characterisation of fish resources within the offshore proposed development area. Information was sought on fish ecology in general and on migration, spawning and nursery behaviour and habitats of key species. The baseline characterisation utilises a broad combination of existing literature and site-specific and regional monitoring datasets. Regional monitoring datasets were used to describe the distribution of fish assemblages within the wider western Irish Sea and to characterise the receiving seabed environment. In addition, regional datasets were used to identify spawning and nursery grounds within the study area. Data collected during site-specific benthic ecology surveys undertaken across the offshore proposed development area were used to complement the characterisation. The key data and information sources used to inform the baseline characterisation for migratory fish are listed in Table 1.3.

Table 1.3: Data sources used to inform the fish assessment

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

1.9.3 Marine Mammals

The baseline characterisation and assessment for marine mammals has been informed by numerous data sources through desk-based review, together with consideration of site-specific surveys, as detailed in Table 1.4.

Site-specific surveys for the proposed development included a combination of vessel-based and digital aerial surveys (DAS). Vessel surveys began in November 2019 and were conducted through to March 2020. For the remainder of the surveys, due to the COVID-19 pandemic, the primary survey method switched to DAS which were conducted monthly from May 2020 to October 2022 (29 surveys). Vessel-based surveys were also conducted again in August 2020 and June/July 2021 to help apportion the unidentified individuals sighted during the DAS. All surveys (vessel and aerial) covered the original MAC boundary plus a 4km buffer area.

Additional baseline data were available from a variety of sources, including previous baseline surveys ObSERVE, Irish Whale and Dolphin Group (IWDG) surveys, Small Cetaceans in European Atlantic waters and the North Sea (SCANS), Irish marine mammal atlas, survey information (available in the public domain) from other wind farm areas in close proximity, Marine Ecosystem Research Programme (MERP) maps, aerial seal surveys and seal telemetry data. These data are limited by the lack of fine spatial and temporal scales surveyed, with many of the areas surveyed not directly overlapping with the offshore development area. However, they do provide a good indication of the species present in the vicinity of the proposed development and are complemented by the proposed development's site-specific surveys which provide a more contemporary estimate at both fine temporal and spatial scale.

Table 1.4: Data sources used to inform the marine mammals assessment

Data source	Type of data	Temporal and spatial coverage
Site-specific surveys	Combination of visual boat-based surveys and digital aerial surveys	November 2019-October 2020: original NISA OWF array area (from the foreshore licence, excluding the seabed beyond 12nm) plus 4 km buffer. November 2020 onwards: MAC area (includes the seabed beyond 12nm) plus 4km buffer.
ObSERVE (Rogan et al. 2018)	Visual aerial surveys	4 surveys: summer 2015, winter 2015, summer 2016 and winter 2016. The offshore development area is entirely located within ObSERVE survey Stratum 5. Offshore waters around Ireland, within and beyond Ireland's continental shelf.
SCANS III & IV (Hammond et al. 2017, Hammond et al. 2021, Lacey et al. 2022, Gilles et al. 2023)	Aerial and vessel visual surveys	All European Atlantic waters. CWP Project located in block E (western Irish Sea) for SCANS III surveys. This block was renamed to block CS-D for SCANS IV.
SCANS II (Hammond et al. 2013)	Aerial and vessel visual surveys	June & July 2005. All European Atlantic waters. Proposed development located in block O (entire Irish Sea).
Distribution and abundance of cetaceans Wales and its adjacent waters (Evans and Waggitt 2023)	Maps of sighting rates and indicative density surface maps from aerial and vessel survey data	1990 – 2020. Wales and adjacent seas.
Irish marine mammal atlas (Wall et al. 2013)	Collation of data from IWDG, the ISCOPE I and II projects, ferry survey programme and the PReCAST surveys.	2005-2011. Irish Exclusive Economic Zone (EEZ).
IWDG Irish Sea surveys (Berrow et al. 2011)	Visual and acoustic survey	2 surveys in August 2011. Inshore surveys in 2 blocks: Block A (northern Irish Sea – including the proposed development) and Block B (southern Irish Sea).
IWDG SAC surveys (Berrow and O'Brien 2013, O'Brien and Berrow 2016, Berrow et al. 2021)	Visual and acoustic line transect surveys	1 survey in 2013. 4 surveys in 2016. 6 surveys in 2021. Rockabill to Dalkey Island SAC.
IWDG Irish coastal water surveys (Berrow et al. 2008)	Vessel based visual line transect surveys and T-POD acoustic monitoring	6 survey days between July-September 2008. 5 sites (North County Dublin, Dublin Bay, Cork coast, Roaringwater Bay SAC and Galway Bay).
IWDG Greater Dublin Drainage Project surveys (Meade et al. 2017)	Land based observations, vessel-based surveys and C-POD acoustic monitoring	24 surveys: March 2015-March 2017. Land: North-eastern cliffs of Howth Head. Vessel: waters off Loughshinny and Portmarnock area. CPODs: 3 sites: East of Loughshinny, North of Lambay Island and off Portmarnock.

Data source	Type of data	Temporal and spatial coverage
MERP maps (Waggitt et al. 2020)	Collation of data from Joint Cetacean Protocol (JCP) (aerial and vessel)	1980 and 2018. European Atlantic waters.
Seal counts 2017-2018 (Morris and Duck 2019)	Aerial survey	August 2017 and 2018. Entire coastline of Ireland.
Seal at-sea density (Carter et al. 2020)(Carter et al. 2022)	Seal habitat-use derived from telemetry data	2005 – 2019 UK and Ireland
Seal telemetry (Cronin et al. 2016)	Telemetry tags	Strangford Lough: 33x harbour seals (2006, 2008 & 2010). Raven Point: 19x grey seals 2013 & 2014. Great Blasket Island: 8x grey seals 2009.
Seal counts 2005 (Ó Cadhla et al. 2007)	Aerial survey	Spring & summer 2005. Entire coastline of the Republic of Ireland.
Seal counts 2017-18 (Morris and Duck 2019)	Aerial survey	August 2017 and 2018. Entire coastline of Ireland.
Seal telemetry (Cronin et al. 2016)	Telemetry tags	Strangford Lough: 33x harbour seals (2006, 2008 & 2010). Raven Point: 19x grey seals 2013 & 2014. Great Blasket Island: 8x grey seals 2009.
Codling surveys (Codling Wind Park Limited 2020)	Visual vessel surveys	April 2013 – March 2014 and again in Oct 2018 – Oct 2019. Codling Wind Park array area.
Arklow surveys (GoBe 2023)	Visual vessel surveys Digital aerial surveys	Monthly vessel surveys: July 1996 and March 1997, and June 2000 and June 2009. Arklow Bank wind farm array area plus a 5km buffer. Monthly aerial surveys between March 2018 and February 2020. Lease Area plus a 4km buffer.

1.9.4 Ornithology

A range of data sources was used to characterise the onshore and offshore development area in terms of offshore and intertidal ornithology. To inform this assessment a number of site-specific surveys were undertaken as outlined in Table 1.5 below.

Table 1.5: Site-specific survey data used to inform the ornithological assessment

Source	Date	Summary
Digital aerial survey (DAS) data	2020-2022	The original site-specific DAS survey extent mirrored the array area within the foreshore licence plus a 4km buffer. The DAS survey extent was updated in November 2020 to include the entire MAC boundary (which included the small area beyond 12nm that was not within the original DAS survey extent).
Boat-based survey data	2019 – 2020	Vessel surveys were conducted by in November 2019, January 2020, March 2020, August 2020, June 2021, July 2021, and July 2022. Initial baseline characterisation was undertaken using vessel-based surveys; however, these were then succeeded by DAS data collection as the main form of data collection with supplementary vessel-based surveys.
Landfall surveys	2021 – 2022	Intertidal bird surveys were conducted at the selected landfall site to characterise the baseline environment in terms of ornithological receptors.

Source	Date	Summary
Coastal vantagepoint surveys	2019 – 2021	Vantagepoint surveys conducted at two locations to better quantify the movements of migratory species and to supplement DAS data collection
Breeding bird surveys	2021 – 2023	To provide information on the distribution of breeding birds within or close to the onshore development area, walkover and point count surveys were undertaken at the landfall site, grid facility, Blakes Cross North and South, M1 crossing, Malahide Estuary and the existing Belcamp substation.
Wintering waterbird surveys	2021 – 2022	To determine density of use by wintering bird populations, and especially to identify any important foraging or roosting sites within sensitive locations, Irish Wetlands and Birds Survey (I-WeBS) style surveys were undertaken at the landfall site, grid facility and at Malahide Estuary.

A detailed desktop study was also undertaken to inform this assessment, covering a wide variety of published literature, including both peer reviewed scientific literature and 'grey literature' such as other offshore wind farm project submissions and reports. The key desktop sources are outlined in Table 1.6 below.

Table 1.6: Desk-based data sources used to inform the ornithological assessment

Source(s)	Date	Summary
Relevant literature on seabird distribution, population sizes, migration routes and foraging ranges		
JNCC Report No. 267 (Pollock et al. 1997)	1997	European Seabirds at Sea (ESAS) survey data collected between 1980 and 1997 in Irish waters, including a period of intensive surveys between 1994 and 1997, which targeted areas around Ireland with poor survey coverage. Used to provide historic context for the wider Irish Sea.
ObSERVE (Jessop et al. 2018)	2018	Visual aerial surveys of the western Irish Sea. Four surveys: summer 2015, winter 2015, summer 2016 and winter 2016. . This dataset was used to classify and inform a baseline for the assessment of the offshore ECC.
Designated sites	Various dates	Information of Special Protection Areas (SPAs) and other designations relevant to Important Ornithological Features (IOFs) with potential connectivity to the proposed development. Key source of information will be Natural England designated sites portal.
Seabird Monitoring Programme (SMP) (BTO, 2023)	2015-2020	Online database of seabird colony counts in Ireland and UK – most recent data from Seabirds Count national census 2015-2020. Used to provide SPA reference populations for the EIAR.
NPWS Published Report (Cummins et al. 2019)	2019	The Status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Used to provide SPA reference populations for this assessment.
Birdwatch Ireland Irish Wetland Bird Survey (I-WEBS)	Annual Reports	Annual survey reports of wetland waterbirds and intertidal birds throughout the Republic of Ireland.
Regional and national bird reports and atlases	Various	Atlases covering breeding and non-breeding birds within relevant areas, e.g. Birds in Ireland (Hutchinson, 2010), North-west European waters (Stone et al., 1995) and in Europe (BirdLife international, 2004).
Review of seabird foraging ranges – Woodward et al., (2019)	2019	British Trust for Ornithology (BTO) report updating foraging ranges of seabirds. These are used to consider connectivity with both designated sites and other OWFs. This report provides an update from previous information on foraging ranges from Thaxter et al., (2012).
Literature on seabird foraging movements	Various	Various sources on seabird foraging (e.g. tracking data), including the FAME Project (Baer & Newton, 2012) and tern tracking data at Rockabill Island (Perrow et al., 2019)

Source(s)	Date	Summary
Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (regional population) – Furness (2015)	2015	Furness 2015 provides regional non-breeding season population sizes for relevant offshore ornithological receptors. Though focussed on UK waters, population sizes in UK Western Waters are considered relevant to Ireland.
The status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018 – Cummins et al (2019)	2019	NPWS commissioned report providing data on breeding seabird population sizes and trends of Ireland's breeding seabird species.
Literature on migratory bird populations and movements relevant to the proposed development	Various	Various sources on migratory birds and movements, including 'The Migration Atlas: Movements of the birds of Britain and Ireland' (Wernham et al., 2002), and literature on the risk of OWF developments to migratory birds (Wright et al., 2012).
Bird breeding ecology	Various dates	Information on the breeding ecology of various bird species e.g., Cramp and Simmons, 1977-94; Del Hoyo et al., 1992-2011; Robinson, 2005.
JNCC review of seabird demographic rates (Horswill and Robinson 2015)	2015	Information on demographic rates of seabirds, used to inform the assessment.
eBird2 citizen science data	Various dates	Information on bird observations in relevant areas was used to supplement vantagepoint surveys (e.g., data from Clogher Head3 to compare recorded species distributions)/
Relevant literature on the vulnerability of birds to OWFs		
Potential impacts of offshore windfarms on birds	Various dates	Various peer reviewed scientific literature regarding the potential impacts from OWF e.g. (Garthe and Hüppop, 2004; Drewitt and Langston, 2006; Stienen et al., 2007; Speakman et al., 2009; Langston, 2010; Band, 2012; Cook et al., 2012; Furness and Wade, 2012; Wright et al., 2012; Furness et al., 2013; Johnston et al., 2014; Cook et al., 2014; Dierschke et al., 2017; Jarrett et al., 2018; Leopold & Verdaat, 2018; Mendel et al., 2019);
Potential impacts resulting from highly pathogenic avian influenza (HPAI)	Various	Various literature regarding the impacts of HPAI on seabird species is considered in relation to potential additional impacts on ornithological receptors assessed in this NIS. These include: Paradell et al., (2023), Lane et al., (2023), Pearce-Higgins et al., 2022). Available information on HPAI from sources such as Birdwatch Ireland and the BTO is also considered wherever relevant.

1.10 Consultation

Consultation by the Developer has been ongoing since 2021 and will continue after the planning application submission stage.

At a very early stage in the design of the proposed development, the Developer initiated a stakeholder engagement campaign with prescribed bodies, the public and other relevant bodies and organisations. The Developer has been committed at an early stage to provide information throughout all development phases of the proposed development. To this end, the Developer established a systematic, documented process to manage the stakeholder consultation requirements from the outset of the development process to bring forward proposals that are suitable and appropriate in the context of the local area.

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

The proposed development team have conducted wider stakeholder consultation throughout the development process to include NPWS, Fingal, Dublin City, Meath and Louth County Councils, relevant statutory bodies, fisheries organisations and other interested coastal and marine bodies, utility and service providers, landowners as well as residents and business within proximity to the proposed development.

Where practicable and appropriate, the information and advice received from the consultation process was subsequently incorporated into the design of the proposed development.

A summary of consultation undertaken to date for the proposed development relevant to the receptor groups is provided in Appendix 2.

1.11 Transboundary Consultation

It is anticipated that An Bord Pleanála will undertake transboundary consultation. It should be noted that in terms of transboundary European site consideration, the SISAA includes a screening assessment for all European sites and QIs within the Zone of Influence (ZoI) for the proposed development, which includes transboundary sites. Where transboundary sites are screened in for LSE, these are included within the NIS. During the pre-application period, notifications of the Developer's intent to submit a planning application were issued on 27th February 2024 to the following transboundary consultees:

- The Isle of Man – The Department of Infrastructure
- Northern Ireland – The Department for Infrastructure Planning
- Wales– Planning Directorate
- Scotland – Strategic Environmental Assessment Gateway and Database and
- The United Kingdom–- Department for Levelling Up, Housing and Communities–- Environmental Assessment, Planning Reform and Housing Quality

1.12 Approach to Screening

The screening stage has been characterised by the 'European Commission Guidance' (EC, 2021) as a four-step process. These steps are:

- Step 1: Ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site
- Step 2: Describe the plan or project and its impact factors
- Step 3: Identify which Natura 2000 sites may be affected by the plan or project
- Step 4: Assess whether likely significant effects can be ruled out in view of the site's conservation objectives
- Conclusions: decision based on the outcome of the screening

When each of these steps has been worked through there are three potential outcomes:

- The proposed development is directly connected with or necessary to the management of a European site(s) and therefore there is no requirement for AA (Stage 2)
- One or more LSEs on designated features of European sites are identified and the proposed development requires an AA
- No LSEs on designated features of European sites are identified as there is no pathway by which such effects could occur, or they can be excluded on the basis of objective information, and therefore there is no requirement for an AA

In order to determine whether the proposed development is capable of resulting in one or more LSEs on a European site(s) it is necessary to understand the activities associated with the construction, operation and decommissioning of the proposed development (e.g. the use of piling hammers during monopile installation), the potential changes that may occur in the environment as a result (e.g. the production of construction noise), and the effects that this may have on designated features of European sites (e.g. disturbance of marine mammals resulting in increased energy expenditure and reduced energy intake resulting in potential lower survival and productivity rates).

1.13 Identifying European Sites with the Potential to be Affected by the Proposed Development

Screening is undertaken pursuant to the precautionary principle and is therefore a 'light trigger' assessment which identifies those European sites and qualifying features with connectivity to the proposed development for which an LSE cannot be discounted. In order to screen for LSE, the following three aspects have been considered:

- Connectivity
- Route to impact and
- Non-trivial abundance

Connectivity is defined as the presence of the qualifying feature of an SPA or SAC in the zone of influence (ZoI) of a project (see 1.13.2). If a qualifying feature has no connectivity to the proposed development, it leads to the conclusion of no LSE. No LSE can also be concluded if there is robust evidence that there is insubstantial connectivity i.e. limited abundance would indicate there is limited connectivity. Where connectivity cannot be objectively ruled out for any one qualifying feature, it is necessary to proceed to consider whether there is the potential for a route to impact.

Where connectivity is identified, the source-pathway-receptor approach (s-p-r) is followed to assess if there is a route to impact (see 1.13.1). If it is determined that there is no route to impact on a QI then a conclusion of 'no LSE' is reached and the QI is screened out at this stage. If, however, a route to impact exists, then a conclusion of 'LSE cannot be ruled out at this stage' is reached. Site-specific receptor ranges are identified that assist with this part of the appraisal (Table 1.7).

Following confirmation of potential for connectivity and route to impact, the abundance of a QI within the ZoI may be deemed trivial. This means that the quantity or number of examples of the QI within the ZoI is considered to be very low. If this is the case, a conclusion of no LSE can be reached as the quantity of the QI within the ZoI is so minimal that it will not impact the COs of the relevant sites. The classification of trivial abundance is considered on a case-by-case basis and will vary between features, based on habitat extent or population size.

Following the above process, for each European site (and their QIs) considered within the AA screening it will be concluded that either:

- There are no LSEs on the European site(s) and their QIs, and therefore no further assessment is required or
- The potential for LSEs on the European site(s) and their QIs cannot be discounted and therefore an AA is necessary

A precautionary approach is applied and so if the potential for LSE cannot be excluded beyond reasonable scientific doubt, then the relevant site and QI will be screened into the subsequent stages of the NIS process.

1.13.1 Source – Pathway – Receptor Approach

The s-p-r approach is the standard conceptual model that is used across a number of European Directives to characterise the means (pathways) via which impact sources (such as the works being proposed) could be experienced by receptors (sensitive QI of a European site). Only where there is an identifiable source, a pathway and a sensitive receptor, is there likely to be a significant effect.

The s-p-r framework refers to its three comprising elements that must all be present to identify a likely significant effect-pathway.

The ZoI is defined by the guidance (DCCAE, 2017) as the potential geographic area that could be affected by the implementation of the proposed development with the boundaries determined, having regard to the s-p-r risk assessment concept. The most obvious extent of the ZoI is within the 'footprint' of an effect where exposure might provide a direct pathway to a receptor. S-p-r relationships are not always linear, and effects might be transmitted beyond the 'footprint' e.g., via hydrological pathways or enabled by impacts on another receptor (indirect effects). Notwithstanding this, how an effect might progress from its source along pathways to a particular European site can easily be discerned with reference to the receiving environment. Consideration of supporting habitat (defined as areas that can be used by a species, in particular those which may be listed as a feature of a designated site, to support that species survival and/or reproduction) is also important.

Species mobility should also be considered, and pathways will change between mobile receptor type. The primary mobile receptors of concern for the proposed development are marine mammals, migrating fish and ornithological receptors. Due to the large area/ range covered by some of these receptors and the large scale of the proposed development, there is a risk of mobile species moving into/ through the site or being excluded from the area. The nature of these receptors often leads to precautionarily large ZoIs and pathways to cover this potential risk.

1.13.2 Zone of Influence

For many types of development, it is relatively simple to define the ZoI because the developments are geographically discrete, and the number of receptors and types of impact are low. Generally, a single search (typically distance) parameter can be applied to determine the extent of a project's effects.

For offshore wind developments, however, numerous effect-pathways can arise due to species mobility. These pathways are complex and potentially distributed across a vast spatial scale.

The method to identify the ZoI must be appropriate for offshore wind developments and the consideration of European sites for highly mobile species in this context. It is fundamental that the method is able to define all components of the ZoI, these being:

- The area over which direct impacts could occur (and direct, or indirect effects could result)
- The area of indirect impact surrounding the proposed development footprint
- The area that captures remote sites where species distribution / ranges provide connectivity

Following the descriptions above, different ranges have been identified for each receptor group and are presented in Table 1.7. The receptor ranges identified represent the ZoI that has been applied for each receptor. Table 1.8 then provides the ranges for specific ornithology species. Where a site has been identified as within the ZoI for impact on one Qualifying Interest (QI) and outside of the ZoI for others which are present within the site, only the QI within the ZoI has been considered as the other QIs are outside of the scope of the report (these features however are fully listed within Appendix 1: Screening Matrices)

Table 1.7: ZoI applied to identify European sites for mobile species consideration at screening

Receptor	Range applied	Source / reference
Coastal and Marine Habitats	20km from the proposed development boundary	The range applied for coastal and marine receptors is based on the maximum potential range for any impacts caused by the proposed development on sites with benthic subtidal and intertidal habitats as features, in this case due to changes in suspended sediment concentrations and deposition. The range of effect for suspended sediment is determined by the maximum tidal range which, following standard practice on other offshore wind

Receptor	Range applied	Source / reference
		farm (OWF) projects, is considered to be 20km on a highly precautionary basis.
Otter (Lutra lutra)	10km	As set out in 'Guidelines for the treatment of otters prior to the construction of national road schemes' (National Roads Authority (NRA), 2008), the average distribution density of otters is approximately one otter per 10km on many Irish watercourses. On this basis it is considered appropriate that the ZoI of otter extend to 10km from the onshore development area.
Terrestrial Habitats	Dependent on connectivity via hydrology or hydrogeology, over land or by air	There is no set distance which defines the ZoI of the proposed development on terrestrial habitats. Connectivity between terrestrial habitats and the proposed development may occur via hydrology, e.g. downstream terrestrial habitats such as alluvial woodland, via hydrogeology with groundwater-dependent terrestrial ecosystems, e.g. raised bog, or via air-borne particles arising from the proposed development and reaching a near-by terrestrial habitat (i.e. within a few hundred meters). Outside of these means of connectivity, the ZoI of the proposed development on terrestrial habitats is via direct overlap.
Harbour porpoise	Celtic and Irish Seas Management Unit (MU) for harbour porpoise	MU boundaries are based on the best understanding of the structure of biological populations and ecological differentiation within such populations, also taking into account political boundaries and the management of human activities. The mUs therefore provide an indication of the spatial scales at which impacts of plans and projects alone, and in-combination need to be assessed for the key cetacean species in Irish waters (IAMMWG, 2023).
Bottlenose dolphin	Irish Sea MU for bottlenose dolphin	MU boundaries are based on the best understanding of the structure of biological populations and ecological differentiation within such populations, also taking into account political boundaries and the management of human activities. The mUs therefore provide an indication of the spatial scales at which impacts of plans and projects alone, and in-combination need to be assessed for the key cetacean species in Irish waters (IAMMWG, 2023).
Harbour seal	50km	Typical harbour seal foraging distances from haul outs based on analysis of seal telemetry data (Carter et al., 2022).
Grey seal	100km	Typical grey seal foraging ranges from haul outs based on analysis of seal telemetry data by Carter et al., 2022).
Migratory fish species	100km	Reasonable objective range for the identification of risks to migratory fish with reference to the location of designated estuaries. Following the standard approach adopted by other OWF developments in the UK, a highly precautionary range of 100km from the offshore development area has been considered for the site selection process. Underwater noise is considered to be the impact with the largest range affecting migratory fish and a screening distance of 100km is considerably greater

Receptor	Range applied	Source / reference
		than the potential noise footprint of the proposed development (Subacoustech, 2023). The Temporary Threshold Shift (TTS) of the most sensitive fleeing fish receptor group (Group 3) is anticipated to occur up to 69km from the noise source (Subacoustech, 2023); therefore, 100km is considered a precautionary and inclusive range for the screening process.
Ornithological receptors	Breeding bio-season: Mean Maximum Foraging range (MMF) plus one standard deviation (SD) for breeding seabirds (refer to Table 1.8). Non-breeding bio-seasons: regional population for Irish Sea and UK western waters. Migratory waterbirds and seabirds from SPAs with high connectivity to the array area. This was quantified using the Migropath tool facility, with high connectivity being defined as SPAs where at least 10% of calculated migration paths from the SPA intersect with the array area, and species only screened in where at least 1% of the Irish population is expected to pass through the array area (Appendix 6: Offshore and Intertidal Ornithology Migratory Collision Risk Modelling). A maximum of 20km range applied for wintering waterbirds that travel between roosting and feeding sites and use intertidal and inland habitats outside the SPA for which they are associated. As such they are at risk to disturbance and displacement effects from the onshore works.	MMF ranges during the breeding season, based on seabird tracking data, are used to highlight potential connectivity between breeding colonies and the OWF and, therefore, the potential for any negative population-level effects. The use of foraging ranges presented in Woodward et al. (2019) are currently considered the most robust and representative for UK and Irish populations. This method, which captures sites within MMF+1SD, as shown in Table 1.8, has been presented to NPWS and is consistent with the approach taken for UK offshore wind projects. Where multiple foraging ranges are available, the largest range was used as a precautionary approach. Tracking data referred to for the Northern gannet (Morus bassanus) and Manx shearwater (Puffinus puffinus) in relation to certain sites below was obtained from Wakefield et al., (2013) and Dean et al., (2015), respectively. To identify migratory or over wintering species (non-breeding) that originate from a designated site outside the breeding season, those species which have been recorded during the site specific surveys for the proposed development might be breeding at SPAs to the north of the proposed development boundary and pass through the area on migration or reside in the area during the winter. Many wintering waterbirds are known to use inland feeding sites and can occur a distance from the SPA designation. For example, golden plover are known to move significant distances of up to 12km between fields during the winter period4. While greylag goose foraging range from night roosts during the winter period can extend up to 20km5. As such these species are at risk to disturbance and displacement effects occurring outside the SPA for which they are associated.

[4] Gillings, S. and Fuller, R.J. (1999) Winter ecology of golden plovers and lapwings: A review and consideration of extensive survey methods. British Trust of Ornithology (BTO) Research Report No. 224.

[5] Scottish Natural Heritage (SNH) Guidance: Assessing connectivity with Special Protection Areas (SPAs). Version 3, June 2016.

Table 1.8: Mean-max foraging range, SD, and mean-max foraging range +1SD of UK breeding seabird species (Woodward et al., 2019)

Where no SD is available, the maximum foraging range is used instead of mean-maximum.

Species	Mean-maximum foraging range and maximum foraging rage where mean-maximum is not available (km)	Standard deviation (SD) (km)	Mean-max + 1SD (km)
Black-legged kittiwake (Rissa tridactyla)	156.1	144.5	300.6
Black-headed gull (Chroicocephalus ridibundus)	18.5	-	18.5
Mediterranean gull (Larus melanocephalus)	20	-	20
Common gull (Larus canus)	50	-	50
Great black-backed gull (Larus marinus)	73	-	73
Herring gull (Larus argentatus)	58.8	26.8	85.6
Lesser black-backed gull (Larus fuscus)	127	109	236
Sandwich tern (Sterna sandvicensis)	34.3	23.2	57.5
Little tern (Sterna albifrons)	5	-	5
Roseate tern (Sterna dougallii)	12.6	10.6	23.2
Common tern (Sterna hirundo)	18.0	8.9	26.9
Arctic tern (Sterna paradisaea)	25.7	14.8	40.5
Great skua (Stercorarius skua)	443.3	487.9	931.2
Common guillemot (Uria aalge)	73.2	80.5	153.7
Razorbill (Alca torda)	88.7	75.9	164.6
Atlantic puffin (Fratercula arctica)	137.1	128.3	265.4
European storm-petrel (Hydrobates pelagicus)	336	-	336
Northern fulmar (Fulmarus glacialis)	542.3	657.9	1200.2
Manx shearwater	1346.8	1018.7	2365.5
Gannet	315.2	194.2	509.4

Species	Mean-maximum foraging range and maximum foraging rage where mean-maximum is not available (km)	Standard deviation (SD) (km)	Mean-max + 1SD (km)
Great Cormorant (Phalacrocorax carbo)	25.6	8.3	33.9
European shag (Phalacrocorax aristotelis)	13.2	10.5	23.7

1.14 Identifying and Assessing In-combination Effects

Article 6(3) of the Habitats Directive requires that in-combination effects with other plans or projects are also considered. As set out in the European Commission's 2021 Notice (EC, 2021), "*significance of the effects will vary depending on factors such as magnitude of impact, the type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned*".

In line with guidance outlined in Section 1.7, plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2021) specifically advises that "*as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced*".

In line with this guidance, the NIS includes a detailed in-combination assessment specifically for the proposed development. This SISAA does not consider LSE in-combination, but defers the in-combination assessment to the NIS with the following methodology used to determine which of the sites considered for LSE alone would require further assessment in-combination:

Any sites that have been screened in for further assessment alone have also been screened in for in-combination consideration; and

Any sites that have been screened out for further assessment alone have been screened in for in-combination consideration with the exception of those screened out alone on the basis of no connectivity or likely trivial effects.

The in-combination assessment within the NIS considers all other plans as per the EC 2021 guidance whether already completed, approved but uncompleted, or proposed (i.e. plans for which an application for approval has been submitted). This SISAA report identifies and lists (Table 3.6 through Table 3.9) the categories of plans and projects for consideration within the NIS in-combination assessment.

2. Description of Development

2.1 The proposed development

The proposed development comprises both offshore and onshore elements.

The offshore elements of the proposed development comprise the following:

- Array area - where the following infrastructure will be located:
  - Offshore WTGs
  - OSP

  - Substructures and associated seabed foundations (for WTGs and OSP)
  - Offshore inter-array cables
  - The array area covers approximately 89km^2. At its closest point, the array area is located approximately 11.3km from land in water depths of approximately 30m to 63m below lowest astronomical tide (LAT), with the closest WTG situated approximately 12.3km from the coastline.
- Offshore Export Cable Corridor (ECC): where the offshore export cables will be routed from the OSP to landfall. The ECC covers an area of approximately 36km^2.
- Landfall site (in part): the proposed development at the landfall site traverses the HWM and consists of both onshore and offshore infrastructure. The offshore infrastructure consists of the transition of the two offshore export cables coming ashore to the onshore export cables.

The onshore elements of the proposed development comprise the following:

- Landfall site (in part): this is where the 220 kV high voltage alternating current (HVAC) offshore export cables come onshore. The landfall site will be in the townland of Bremore, north of Balbriggan, Co. Dublin. In terms of onshore infrastructure, the landfall will comprise of infrastructure landward of the HWM as follows:
  - Offshore export cables from the HWM to the transition joint bays (TJBs)
  - TJBs, which are the point at which the offshore (subsea) export cables transition to the onshore export cables
  - Onshore export cables from the TJBs to the grid facility
- Grid facility: The onshore export cables terminate at the grid facility, which is located in Bremore, just north of Balbriggan and is comprised of two distinct substations on the same site: the compensation substation and the Bremore substation. When the onshore export cables enter the grid facility, they are connected to the compensation substation. A connection is then made between the compensation substation and the Bremore substation. Power leaves the Bremore substation via the onshore cable route.
- Onshore cable route: 220kV HVAC cables (in two cable circuits) will be laid underground from the grid facility to the grid connection point at the existing substation at Belcamp. Each cable circuit will comprise the electrical cables, earthing and communications cables. The onshore cable route is approximately 33-35km in length.

Figure 2.1 illustrates the offshore and onshore infrastructure of the proposed development and their interface.

Figure 2.2. shows the location and boundaries of the proposed development.

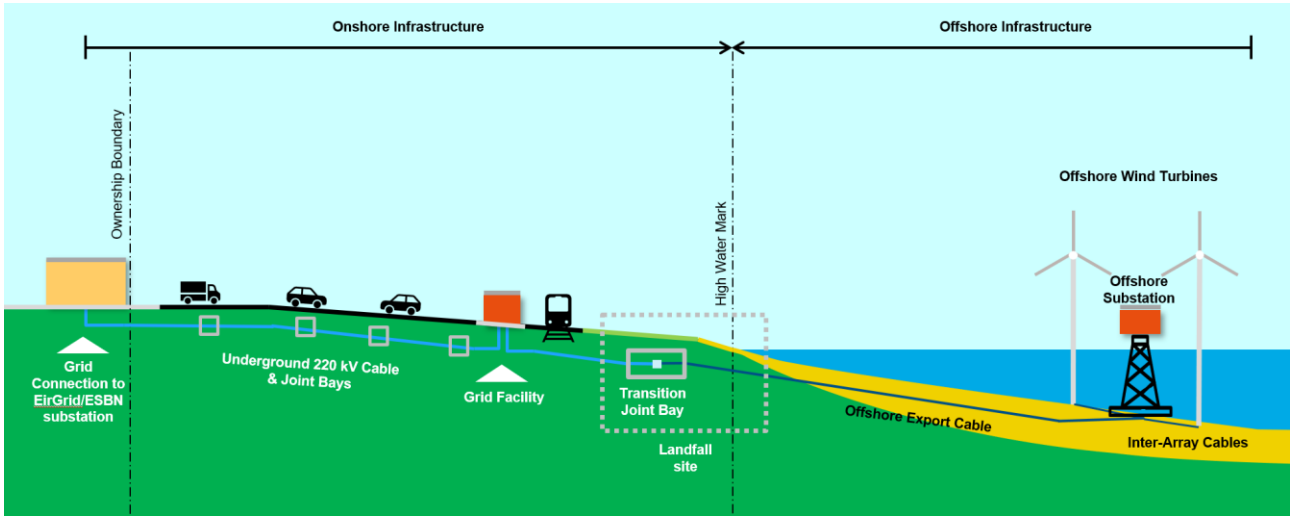

Figure 2.1: Infrastructure of the onshore and offshore elements of the proposed development.

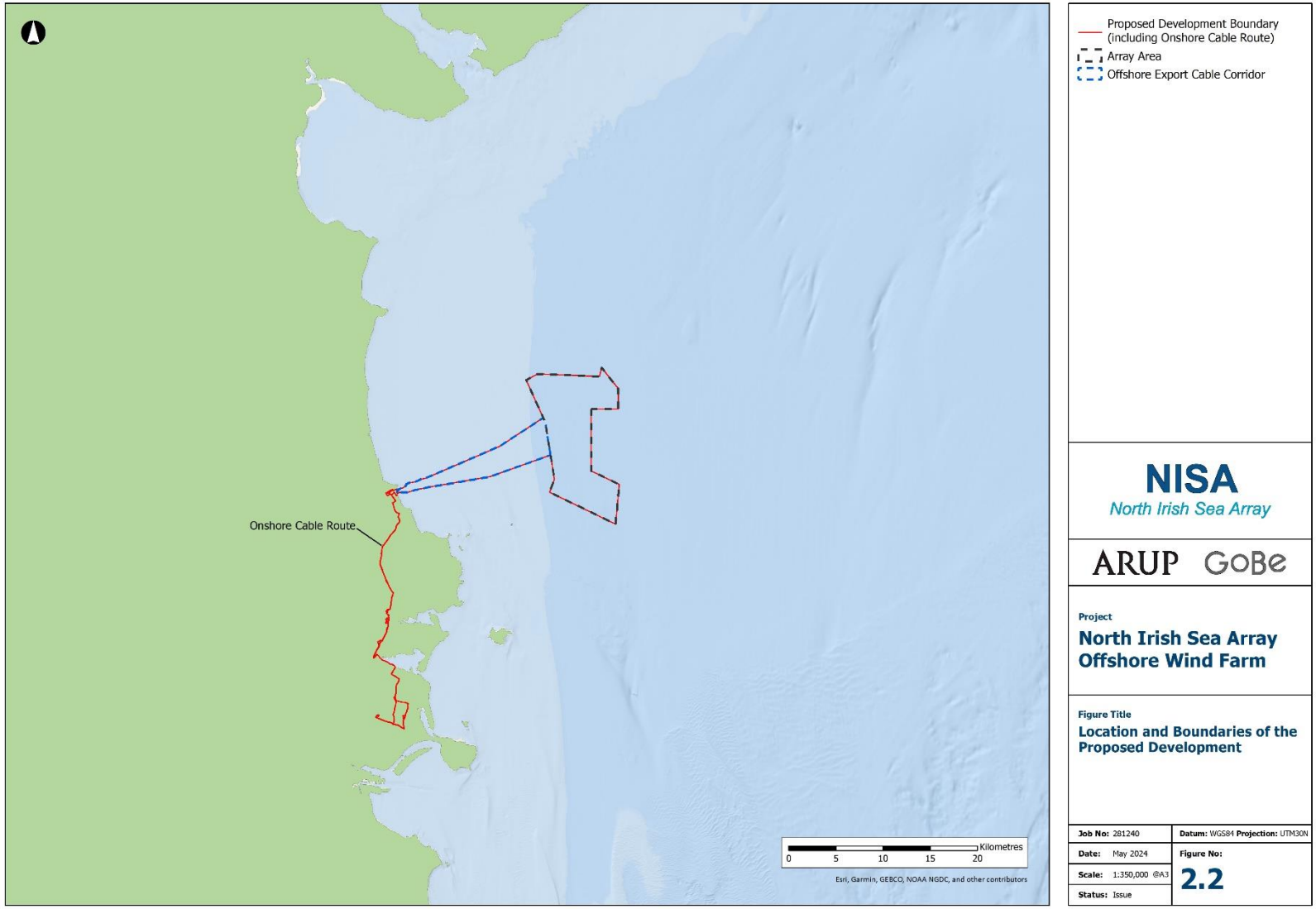

Figure 2.2: Location and boundaries of the proposed development

2.2 Offshore Infrastructure

2.2.1 Design Flexibility Options

On 2 February 2024, the Board issued its opinion on design flexibility, signed 30 January 2024 (the "DF Opinion"). The DF Opinion was issued pursuant to section 287B of the Planning Acts, following conclusion of the Developer's pre-application consultations with the Board. This DF Opinion was subsequently clarified by way of letter dated 4 April 2024 and updated by way of decision pursuant to Section 146A of the Planning Acts on 16 April 2024.

The DF Opinion confirms the details of the proposed development which design flexibility has been accepted and may therefore be confirmed after the Developer's proposed application has been made. The DF Opinion confirmed flexibility for the following aspects of the proposed development:

- Turbines – model, number, and dimensions (tip height, rotor diameter, rotor swept areas, nacelle height and hub heights)
- Turbine foundations – type and pile dimensions
- Offshore substation platform – foundation type and dimensions (height above sea level, length and width)
- Siting of infrastructure – fixed location with limit of deviation (turbines, foundations, export cable and offshore substation platform location)
- Offshore cabling – subsea cable size and subsea cable length

To enable this flexibility, the proposed development is including two project options for consideration in relation to offshore infrastructure: Project Option 1 and Project Option 2.

At detailed design post-consent stage, just one option will be chosen as the preferred option and subsequently constructed. An overview of the key parameters of the two project options is provided in Table 2.1.

Table 2.1: High level overview of the two project options for the proposed development.

Parameter	Project Option 1	Project Option 2
Number of WTGs	49	35
WTG tip height (m above LAT)	290	316 outside aviation restricted zone 311 inside aviation restricted zone*
Rotor Diameter (m)	250	276
Foundation type	Monopiles	Monopiles or multi-leg pin piled jackets (hereafter referred to as 'jackets')
Number of OSPs	1	1
Offshore export cable length (km)	18	18
Inter-array cable length (km)	111	91

*An aviation restricted zone (of 312m LAT) has been identified by the Developer due to the partial overlap of the array area with a Dublin Airport controlled airspace meaning 13 turbines will have a 5m reduction in tip height due to being within the aviation restricted zone.

2.2.2 Offshore Wind Turbine Generators (WTGs)

The offshore elements of the proposed development will comprise one of the following two project options:

- Project Option 1: 49 WTGs with 250m rotor diameter or

- Project Option 2: 35 WTGs with 276m rotor diameter

For both project options, the WTGs considered will follow the traditional offshore WTG design with three blades and a horizontal rotor axis. The blades will be connected to a central hub, forming a rotor which turns a shaft connected to the generator or gearbox. These are connected to the nacelle situated adjacent to the rotor hub, supported by a tower structure affixed to the transition piece or foundation. The nacelle will rotate or 'yaw' on the vertical axis in order to face the oncoming wind direction.

The design parameters for the two WTG models are outlined in Table 2.2.

Table 2.2: WTG design parameters

Parameter	Project Option 1	Project Option 2
Number of WTG	49	35
WTG tip height at LAT (m above lowest astronomical tide (LAT))	290	316 outside aviation restricted zone 311 inside aviation restriction zone
Hub height (m above LAT)	165	178
Rotor diameter (m)	250	276
Blade tip clearance (m above LAT)	40	40 outside aviation restricted zone 35 within aviation restricted zone
Blade Width (m)	7	7.5
Pitch (degrees)	3.6-5.6	3.6-5.6
Operational time (%)	95	95
Total swept area (m^2)	49,087	59,828
Nacelle and Hub		
Length (m)	31	35
Breadth (m)	15	18
Height (m)	15	18
Tower Diameter (m)	9	10
Rotor rotational speed (rpm)	3 – 8.3	3 – 7.5
Foundation type (See sections 2.2.3 and 2.2.4 below for further details)	Monopiles	Monopiles or jackets

2.2.3 Offshore Substation Platform

An OSP is a hub where all the energy produced by the WTG is brought together via 66kV or 132kV inter-array cables and stepped up by transformers to a high voltage transmission of 220kV High Voltage Alternating Current (HVAC) for export onshore via the offshore export cables.

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

Table 2.3: OSP design parameters

Item	Parameter
Number of OSP (s)	1
Height of Topside above sea level (m above lowest astronomical tide)	47
Height of Communications Mast above sea level (m above lowest astronomical tide)	67
Topside dimensions (m)	45 x 45
Foundation Option 1: Jacket	
Number of Jacket Legs	4
Jacket Footprint, centre distance between legs at seabed level (m)	40 x 40
Number of Piles per Jacket	4
Pile Diameter (m)	6
Seabed Penetration (m)	60
Foundation Option 2: Two Monopile	
Number of Monopiles	2
Pile Diameter (m)	12.5
Seabed Penetration (m)	60
Foundation Option 3: One Monopile	
Number of Monopiles	1
Pile Diameter (m)	10–12.5
Seabed Penetration (m)	60

2.2.4 Substructures and Foundations

Foundations are required to support WTGs and the OSP. These structures are fixed to the seabed and are required to withstand wave and wind forces and a wide range of meteorological conditions in the offshore environment.

The foundation types that are being considered include:

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

As outlined in the DF Opinion, the final selection of foundation type will depend on detailed design.

Table 2.4: Monopile design parameters

Item	Parameter	
	Project Option 1	**Project Option 2**
Number of WTG Monopiles	49	35
Number of OSP Monopiles	1 or 2	1 or 2
Monopile Diameter (m)	12.5	
Seabed penetration (m) (WTG)	50	
Seabed Penetration (m) (OSP)	60	
Scour Protection diameter (m) (WTG)	56.25	56.25
Scour Protection diameter (m) (OSP)	78	78

Table 2.5: Jacket design parameters (applicable to Project Option 2 for WTG and both project options for OSP)

Item	WTG parameter	OSP parameter
Number of Jackets	35	1
Number of Legs per Jacket	3 or 4	4
Jacket Footprint, centre distance between legs at seabed level (m)	40 x 40	40 x 40
Number of Piles per Jacket	3 or 4	4
Pile Diameter (m)	6	6
Sub-Seabed Penetration (m)	60	60
Scour protection diameter (m)	77	78

2.2.4.1 Foundation Installation

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

Project Option 1 (monopiles):

- All monopiles at all locations are fully driven
- 25% of monopiles are fully driven and 75% of monopiles are a) fully drilled or b) driven until refusal then drilled and driven

Project Option 2 (monopiles):

- All monopiles at all locations are fully driven
- 100% of monopiles are a) fully drilled or b) driven until refusal then drilled and driven

Project Option 2 (jacket foundations):

- All jackets at all locations are fully driven
- All jackets at all locations are fully drilled

2.2.5 Scour Protection

If left unprotected, scouring of the seabed may occur which can reduce the effectiveness of the foundation. To prevent scouring of the seabed, scour protection may be required to be installed around the base of the foundation.

Scour protection is laid around the base typically in the form of rock, with a filter layer of smaller graded rocks sometimes placed underneath, to reduce any seabed erosion caused as water current passes around the foundation structure. Whilst rock is the most common form of scour protection, concrete mattresses can also be used. A description of the two types of scour protection being considered for both project options is provided below:

- Rock placement: This would comprise a single layer or double layer of graded stone placed on and/or around structures to inhibit erosion. Alternatively, rock filled mesh fibre bags may be used which adopt the shape of the seabed/structure as they are lowered on to it.
- Concrete mattresses: These are typically several metres wide and long and comprise of articulated concrete blocks which are linked by a polypropylene rope lattice. These prefabricated components are then placed on and/or around structures to stabilise the seabed and inhibit erosion.

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

2.2.6 Navigation, Colour, Marking and Lighting

The proposed development will be designed and constructed as per International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), Irish Aviation Authority (IAA), Commissioners of Irish Lights (CIL) (in line with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)) and Irish Coastguard requirements. These will consist of navigation aids such as buoys, markers, navigation lights and sound signals in addition to aviation warning and search and rescue (SAR) lights.

Navigation for marine traffic will be permitted across the offshore development area with 50m advisory safety zones around fixed assets.

During the construction phase, temporary lighting will be used to mark any sea surface piercing structures.

The colour scheme for nacelles, blades and towers is generally RAL 7035 (light grey) or similar and foundation steelwork is generally in RAL 1023 (traffic light yellow) or similar above the waterline. All structures will also be equipped with relevant aviation SAR lights and blade markings.

Lighting will comply with the requirements of the authorities named above. During operation, lighting on the WTG and OSP will be installed for use when personnel need to access the WTG in low light conditions. When not being accessed, the only lights visible will be navigation lights. The lighting regime will vary depending on the location of periphery structures in line with IALA and IAA guidelines.

All structures will also be equipped with relevant aviation Search and Rescue lights and blade markings.

2.2.7 Offshore Inter-Array Cables

In order to carry the electricity generated by the WTGs, inter-array cables will link a group of WTGs together into strings within the array area and connect these strings to the central OSP. Inter-array cables will have a nominal operating voltage of between 66kV and 132kV between WTGs. In total, the inter-array cables are 111km in length for Project Option 1 and 91km for Project Option 2 and will link the WTGs within the array area in strings with connect with the OSP.

Cables will be buried in a trench, where practicable, to protect them. Burial depth will be determined on a risk-based approach using a Cable Burial Risk Assessment which will be available post consent once detailed cable routes are known. Assumed burial depths are between 1m and 3m.

Where burial is not practicable additional cable protection techniques will be used, such as concrete mattressing and/or rock armour protection. It is anticipated that approximately 20% of the cable may require additional cable protection while the rest will be buried to the design burial depth or deeper. Cable protection will be 5m wide and 2m high, with a sloped profile across the seabed. Assumed rock size of 450mm is anticipated in the instances where rock armour protection is utilised.

No third-party cabling or pipelines are charted or identified within the offshore development area in the surveys conducted to date. The inter-array cable layout will be designed to avoid cable crossing where practicable. However, if inter-array cable crossing is unavoidable cable crossing protection measures will be implemented, involving the use of a pre-lay and post lay berms. The pre-lay berm will be 5m wide, 15m in length and 0.5m in depth. The cable to cross will then be laid across this, at an angle of 90 degrees. This cable will then be covered by a second post lay berm of 5m width and 2m height, over a length of 100m. The post lay berm ensures that the cable remains protected and in place.

The inter-array cables will transition from the buried trench to WTG and OSP foundations via J-Tubes or I-Tubes (hollow steel tubes that hang from the substructures in the shape of a "J" or "I") or an aperture in the monopile wall and an assortment of bend stiffeners, outer shells known as a Cable Protection System. The Cable Protection System may be supported with additional placement of rock to protect and support the system and prevent against cable movement and potential damage.

2.2.8 Offshore Export Cables

In order to bring electricity ashore, two 220kV HVAC offshore export cables will be routed from the OSP to the landfall site. The offshore export cables will be located within the ECC. The cables will be brought to the shoreline at the landfall site where they will connect to the onshore export cables at the TJBs. The length of the offshore export cables from the OSP to the landfall site is 18km and the separation distance between the two offshore cables is assumed to be between 50m and 200m. The flexibility in the final selection of cable size and route for these offshore export cables within the ECC is part of the DF Opinion as described in Section 2.2.1.

The offshore export cables will be buried where practicable to protect them. The offshore export cables are buried in a trench with a design burial depth between 1 and 3m. Cable installation methodology, as well as burial depth and any requirement for cable protection measures, will be defined by a Cable Burial Risk Assessment (CBRA). The installation techniques will consist of one or a combination of trenching, dredging, jetting, ploughing, vertical injection, and rock cutting.

When burial is not practicable, additional cable protection techniques will be applied. No third-party cabling, pipelines or subsea infrastructure are charted or identified within the offshore development area in the surveys conducted to date. Therefore, no crossing of third-party assets is anticipated. However, if cable crossing is unavoidable, cable protection measures will be implemented. For both project options, approximately 43,200m^3 of cable protection will be required for the offshore export cables.

The proposed construction method for connection of the two 220kV offshore export cables to the two onshore TJBs will be via HDD. The principle of HDD is to drill a bore underground between two points, into which an electrical cable can be installed without needing to excavate an open trench along the route. The HDD will require a drilling fluid or 'mud', to cool and lubricate the drill head. Drilling muds are typically bentonite based, and generally comprise of 92% water and 8% bentonite powder. Bentonite drilling muds are non-toxic, inert substances, with widespread use across drilling operations in the marine environment.

The subtidal HDD exit pits will be at least 20m wide, 30m long orientated perpendicular to the coastline. Each exit pit is 2.5 m at the seaward end reducing to 1.5m at the landward end.

2.2.9 Landfall Site

The offshore export cables will come ashore within the offshore part of the landfall site.

2.3 Onshore Infrastructure

2.3.1 Landfall Site

The onshore infrastructure of the proposed development within the landfall site includes:

- An underground crossing of the offshore export cables underneath the beach via a Horizontal Direct Drilling (HDD) technique
- Transition Joint Bays (TJBs) – located close to the shoreline and installed once the offshore export cable HDD has been completed – which will contain the connections between the offshore export cables and the onshore export cables
- From the TJBs, the onshore export cables will be trenched through agricultural fields, cross under the Dublin-Belfast railway line (via HDD) to the R132 and then trenched onwards to connect to the grid facility

2.3.2 Onshore Export Cables

Two 220kV HVAC underground onshore export cables (comprising of 3 cores each) will connect the TJBs to the compensation substation within the grid facility. The cables will be contained within protective ducting. Each onshore export cable will also include a fibre optic cable to support the operation and control of the electrical infrastructure, and an earthing cable contained within the same ducting.

The onshore export cable route commences at the TJBs with the cables routed through private lands including an underground HDD crossing of the Dublin-Belfast railway line and an open cut trench crossing of the R132 to connect to the compensation substation within the grid facility. This section of the cable route, from the TJBs to the compensation substation is approximately 1km to 1.5km long, depending on the final landfall TJBs location.

2.3.3 Grid Facility

The grid facility will be located across two fields currently under agricultural use, in the townland of Bremore, Co. Dublin. The function of the grid facility will be to receive power delivered from the offshore substation platform via the offshore and onshore export cables and process it so that it is suitable for feeding into the electricity grid.

The grid facility will be comprised of two separate elements as follows:

- The compensation substation will be contained within a rectangular compound approximately 100m by 190m.
- The Bremore substation will be contained within a smaller adjacent rectangular compound approximately 50m by 115m.

Both the compensation and Bremore substation compounds will include a building of approximately 17m in height (plus 3m lightning rods).

2.3.4 Onshore Cable Route

From the proposed grid facility, two 220kV HVAC cable circuits will be laid underground from the proposed Bremore substation to the existing substation at Belcamp, in either a single trench arrangement (one trench accommodating all electrical cables, fibre-optic and earthing cables) or in twin-trench arrangement (with each cable circuit contained within its own trench). Joint bays will be required to be installed along the cable route to facilitate cable pulling through pre-installed ducts. These will be underground chambers which will "joint" consecutive lengths of cables into one continuous overall cable.

The onshore cable route runs for approximately 33-35km; the majority of the route – approximately 29km out of the 33km – is contained within the footprint of existing roads including the R132, the R106 and other local roads. The cable route will cross a number of watercourses, as well as the M1 Motorway and various utilities along its length.

2.3.5 Connection to the existing substation at Belcamp

The two 220 kV HVAC onshore cable circuits will connect to the existing transmission network at Belcamp 220kV substation. The connection will be made to either/both of the existing substation or the consented substation extension (a planning application from EirGrid to expand the existing substation at Belcamp was granted in 2023 which includes an expansion of the substation infrastructure into land to the north of the existing substation).

The onshore cable route into the substation will follow the existing access road and will connect to a spare 220kV bay within either/both of the existing substation compound and the planned the Belcamp extension.

2.4 Construction

2.4.1 Offshore Construction Programme

Subject to obtaining statutory consent (i.e., planning approval) and the relevant permits and licences, construction of the offshore elements of the proposed development is expected to commence in 2027, with completion expected in 2029, as demonstrated in Table 2.6 below. The contracting and delivery of specific work packages may differ between the two project options however, the overall programme of construction will remain the same.

Construction offshore will take place up to 24 hours per day, 365 days per year. Commissioning and pre-commissioning may also take place 24 hours per day, seven days per week. The overall duration of construction is dependent on factors such as supply chain, including fabricators and component suppliers, port and vessel availability, weather conditions and progress made throughout.

Table 2.6: Construction Timeline

Activity Name	Year 1 – 2027				Year 2 – 2028				Year 3 - 2029			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Pre construction activities												
Landfall												
Offshore Export Cables Installation Period												
Foundation Piling (WTG and OSP) (monopile)												
Foundation pre-piling (WTG and OSP) (jackets) Substructure Installation (WTG and OSP) (jackets)												
Offshore Substation Topside Installation												
Array Cable Installation Period												
WTG Installation period												

Offshore construction is assumed to be undertaken following the indicative sequence below, although it should be noted that some activities may be undertaken simultaneously. The sequence is as follows:

- Detailed site investigations
- Pre-construction surveys
- Seabed preparation
- Landfall Horizontal Direction Drilling (HDD) for export cable
- Offshore export cable installation and cable protection installation
- Foundation installation and scour protection installation
- Inter-array cable installation and cable protection installation
- OSP installation and
- WTG installation

2.4.2 Offshore Construction Vessels

Construction will require a variety of different vessels dependent on the final WTG, foundation, construction port, and construction strategy adopted. Vessels will generally use Dynamic Positioning (DP) to maintain their location, thus avoiding any disturbance of the seabed. Vessels used will comprise:

- Jack Up Vessels (JUV) to install the foundations, transition pieces, tower, nacelle, and blades
- Heavy Lift Vessels (HLV) typically used for transportation and installation of jackets and monopiles for offshore wind turbines
- Service Operational Vessels (SOVs) used for crew transfers, offshore accommodation, commissioning, and safety monitoring
- Crew Transfer Vessels (CTV) used to transfer the crew from shore to wind turbine or between vessels
- Transportation barges and towing vessels used to transport foundations, transition pieces, tower, nacelle, and blades to site
- Dredging vessels used to excavate or move sediments like silt, sand, rocks, dirt, and other debris from the seabed with a dredger. Dredging vessels are also used for flattening of sand waves and levelling of seabed
- Fall Pipe Vessels (FPV) used for installing scour protection and other rock armour protection (e.g. cable protection)
- Cable Installation Vessels (CIV) used for inter-array and export cable installation. The vessels are optimised for the cable lay operation as well as the burial of the cable in the seabed
- Offshore Supply Vessels (OSV) used for grouting, towing and equipment transfer
- Support Vessels used to support a range of other activities, including surveys, diving activities, Anchor Handling Vessels (AHV) and guard vessels

The maximum number of vessels and return trips are shown in Table 2.7.

Table 2.7: Maximum construction vessel traffic numbers

Vessel/Helicopter Requirements for WTG Installation			
Vessel / Helicopter type	**Number of vessels / helicopters**	**Number of return trips per vessel / helicopter type (Project Option 1)**	**Number of return trips per vessel / helicopter type (Project Option 2)**
Installation vessel (e.g. JUV, HLV)	2	15	10
Personnel support vessels (e.g. CTV)	6	90	70
Component transport vessels (e.g. barges, towing vessel)	2	45	30
Helicopter support	1	10	7
Vessel Requirements for Foundation Installation			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Installation vessels (e.g. JUV, HLV)	2	8	6
Personnel support vessels (e.g. CTV, SOV)	3	49	35
Component transport vessels (e.g. barges, towing vessel)	3	8	6
Scour protection vessels	2	75	50
Dredging vessels (Project Option 2 only)	1	0	9
Vessel for placing template for pre-piling (Projec Otion 2 only)	1	0	35
OSP Installation Vessel Requirements			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Installation vessels (e.g. JUV, HLV)	1	2	2
Component transport vessels (e.g. barges, towing vessel)	2	2	2
Personnel support vessels (e.g. CTV, SOV)	2	250	250
Transport vessel	1	50	50
Vessel Requirements for Inter-Array Cables			
Vessel Type	**Number of vessels**	**Number of return trips per vessel (Project Option 1)**	**Number of return trips per vessel (Project Option 2)**
Main laying vessels	1	4	3
Main burial vessels	1	7	6
Personnel support vessels (e.g. CTV, SOV)	1	120	100

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

2.4.3 Offshore Construction Ports

The WTG and foundation components described above will be brought to site via a construction port. All components are anticipated to be transported via sea transport and delivered to the construction port. Transportation and delivery of large components (e.g. WTG blades) to the construction port via roads is not anticipated. At the construction port, the components will be stored and, in some instances, assembled before being transferred to the offshore development area using the vessels described above.

There are a number of suitable ports under consideration by the proposed development, both on the island of Ireland and Great Britain. A multi-port approach may be taken to remove the risk of a single point of failure to the proposed development. Development of Irish ports targeting the offshore wind industry will be considered.

2.4.4 Onshore Construction Programme

Subject to obtaining planning consent and the relevant permits and licences, construction of the onshore elements of the proposed development is anticipated to commence in 2026/27, with completion expected in 2028/29 (circa 24 months of construction).

Onshore construction activities will comprise:

- Horizontal directional drilling (HDD) of the offshore export cables from the HWM (transition between offshore and onshore) to the location of the landfall transition joint bays (TJBs), including HDD contractor compounds and associated works

- Construction of the landfall TJBs and the jointing of the offshore and onshore export cables; and ancillary infrastructure such as an access track, entrance and marker posts
- Laying of the onshore export cables via open cut trench from the location of the TJBs to the grid facility, including a HDD crossing of the Dublin-Belfast railway line, joint bays, HDD contractor compounds and associated works
- Construction and commissioning of the grid facility (including landscaping)
- Cable trenching, duct laying and reinstatement for the onshore cables, including HDD / open cut trenching at watercourses and road crossings
- Onshore cable installation and jointing
- Connection to the Belcamp substation, including duct laying and cable jointing

2.5 Operation and Maintenance

2.5.1 Offshore Operation and Maintenance

The operation strategy will commence following commissioning. It is proposed that the proposed development will be managed from a local onshore facility for the lifecycle of the proposed development.

The operational lifespan of the proposed development is anticipated to be 35 years. Asset condition and operation will be monitored remotely from the control room at the operation and maintenance facility via the SCADA and condition monitoring systems. The SCADA system will enable the remote control of individual WTGs, the offshore infrastructure in general, as well as remote interrogation, information transfer, storage and the shutdown or restart of any WTG if required. The Operation and Maintenance Facility (OMF) will also provide a base for parts, storage, and crew transfer for maintenance activities (Section 2.5.3).

The operation and maintenance strategy proposes the following types of maintenance:

- Regularly scheduled monitoring and maintenance: The inspection, testing, investigation, and rectification of any minor faults to prevent major faults. This primarily applies to inspection and work on parts susceptible to failure or deterioration in between scheduled system overhauls. Scheduled maintenance is likely to occur annually, bi-annually, or quarterly as necessary.
- Scheduled system overhauls: These are carried out in accordance with the turbine manufacturer's instructions or warranties. They are scheduled in advance and planned for appropriate periods of the year primarily during suitable weather conditions such as the summer months.
- Unscheduled maintenance: Works required outside of the planned maintenance strategy, in response to unforeseen issues or breakdowns. These maintenance activities can range from small defects to the replacement of main components.

The overall operation strategy will be finalised once the OMF location and technical specifications of components are known, such as WTG model and number, foundation type, cable type and final layout.

Once operational, it is anticipated that the inter-array and export cables will require minimal maintenance, if any. As with any OWF, unplanned remedial works (e.g. cable repairs) are sometimes required in the event of an unforeseen fault or defect in components. If a cable defect were to occur, an isolated portion of the cable would be cut, lifted to the surface for repair, and replaced in or on the seabed. Reburial is-the preferred option once repaired, but placement of cable protection materials (e.g. rock armour) would be used where burial is not practicable. Operation and maintenance activities will require similar vessels and machinery to that used for the installation works.

Anticipated O&M activities are provided in Table 2.8.

Table 2.8: Anticipated outline of O&M activities

Activity	Description	Methodology	Frequency
WTG Foundations			
Routine Inspections	Inspection of the WTG foundation, including the ancillary structures and transition pieces, both above and below sea level	2-3 technicians accessing the WTG by CTV.	Twice yearly for 2 years then annually for remaining lifetime.
Replacement of corrosion protection anodes	Remove and replace the anodes used for corrosion protection of the foundations	Divers or ROV from support vessel (e.g., DP vessel)	Four per year per windfarm
Modification or replacement of ancillary structures	Remove and replace or modify the ancillary structures, such as J-tubes, ladders etc, where required	Divers or ROV usually deployed from a DP vessel	Once every 5 years
Scour protection repair and maintenance	The repair, maintenance and/or replacement of scour protection, where required	Same as installation methodology	Once every 10 years
Painting	The preparation of the surface and application of coatings (such as paint), to protect the WTG foundation from both internal and external corrosion	2-3 Technicians accessing WTG by CTV	Once every 3 years per WTG
Removal of guano	Removal of guano from the foundation, transition piece, and access ladders	Pressure washer from CTV /support vessel	Every two years per WTG
Removal of marine growth	Removal of marine growth from the foundation, transition piece, and access ladders	Pressure washer from CTV /support vessel	Every two years per WTG
Repairs and/or replacement of navigation equipment	Repairs and/or replacement of the electrical equipment used for navigation, such as transponders, fog horns, and lighting	2-3 Technicians accessing WTG by CTV	Every two years for the proposed development lifecycle
Geophysical surveys	Geophysical survey to monitor the position and condition of the assets and seabed	Survey vessel or Unmanned Surface Vessels	Twice yearly for 1st year then annually for remaining lifetime.
OSP Foundations			
Routine Inspections	Inspection of the OSP foundation, including the ancillary structures and transition pieces, both above and below sea level	2-3 technicians accessing the WTG by CTV.	Twice yearly for 2 years then annually for remaining lifetime.
Replacement of corrosion protection anodes	Remove and replace the anodes used for corrosion protection of the foundations	Divers or ROV usually deployed from a DP vessel	1 every 5 years
Modification or replacement of ancillary structures	Remove and replace or modify the ancillary structures, such as J-tubes, ladders, boat landings etc, where required	Divers or ROV usually deployed from a DP vessel	1 every 5 years
Scour protection repair and maintenance	The repair, maintenance and/or replacement of scour protection, where required	Same as installation methodology	1 every 10 years

Activity	Description	Methodology	Frequency
Painting	The preparation of the surface and application of coatings (such as paint), to protect the OSP foundation from both internal and external corrosion	2-3 Technicians accessing WTG by CTV	Every year
Removal of guano	Removal of guano from the foundation, transition piece, and access ladders	Pressure washer from CTV /support vessel	Every 2 years
Removal of marine growth	Removal of marine growth from the foundation, transition piece, and access ladders	Adhoc pressure washer from CTV/SOV	Estimated removal occurring on every OSP twice over the lifecycle of the project
Geophysical surveys	Geophysical survey to monitor the position and condition of the assets and seabed	Survey vessel or Unmanned Surface Vessels	Twice yearly for 1st years then annually for remaining lifetime.
WTGs			
Routine Inspections	Inspections of the WTGS (both internal and external)	2-3 technicians accessing the WTG by CTV.	Twice yearly per WTG
Minor repairs and replacements	Minor repairs and/or replacements of internal equipment, such as circuit breakers, pumps, fuses etc)	2-3 technicians accessing the WTG by CTV.	Twice yearly per WTG
Major component replacement	Remove and replace the major WTG components, such as the gearbox, blades, yaw rings etc	Jack-Up vessel or floating crane vessel	Once every 5 years per WTG
Painting	The preparation of the surface and application of coatings (such as paint), to protect the WTG from both internal and external corrosion	2-3 technicians accessing the WTG by CTV.	Yearly
Replacement of consumables	The replacement of the consumables used within the WTG, such as oil, lubricants, filters etc	2-3 technicians accessing the WTG by CTV.	Twice yearly per WTG
OSP			
Routine Inspections	Inspections of the OSP (both internal and external)	2-3 technicians accessing the WTG by CTV.	Monthly
Minor repairs and replacements	Minor repairs and/or replacements of internal equipment, such as circuit breakers, pumps, fuses etc	2-3 technicians accessing the WTG by CTV.	4 times per year
Major component replacement	Remove and replace the major OSP components, such as the switchgear, transformers etc	Jack-Up vessel or floating crane vessel	Once every 5 years
Painting	The preparation of the surface and application of coatings (such as paint), to protect the OSP from both internal and external corrosion	2-3 technicians accessing the WTG by CTV.	Once per year

Activity	Description	Methodology	Frequency
Inter-array cables			
Routine Inspections	Inspections of both the inter-array cables and cable protection including inspection at the J-tube entry point.	Survey vessel or Unmanned Surface Vessels	Annually for first 3 years then every 3 years
Geophysical surveys	Geophysical survey of the inter-array cable, cable protection, and seabed	Survey vessel or Unmanned Surface Vessels	Annually for first 3 years then every 3 years
Repair and/or replacement	The repair and/or replacement of the inter-array cable	Cable Vessel	Once every 5 years
Reburial	The reburial of any section of the inter-array cable which has become exposed.	Cable vessel or support vessel	Once every 5 years
Cable protection replacement/reinstatement	The reinstatement and/or replacement of any cable protection that may have been disturbed due to external factors (such as third-party damage, or seabed mobility)	Cable vessel or support vessel	Once every 5 years
Offshore Export Cable			
Routine Inspections	Inspections of both the offshore export cable and cable protection including inspection at the J-tube entry point.	Survey vessel or Unmanned Surface Vessels	Annually for first 3 years then every 3 years
Geophysical surveys	Geophysical survey of the offshore export cable, cable protection, and seabed	Survey vessel or Unmanned Surface Vessels	Annually for first 3 years then every 3 years
Repair and/or replacement	The repair and/or replacement of the offshore export cable	Cable Vessel	Once every 5 years
Reburial	The reburial of any section of the offshore export cable which has become exposed.	Cable vessel or support vessel	Once every 5 years
Cable protection replacement/reinstatement	The reinstatement and/or replacement of any cable protection that may have been disturbed due to external factors (such as third-party damage, or seabed mobility)	Cable vessel or support vessel	Once every 5 years

2.5.2 Onshore Operation and Maintenance

The onshore infrastructure will require ongoing maintenance during the operational lifetime of the proposed development.

Maintenance of the cables at the landfall will comprise an inspection, typically once every year, by means of the link box and communication chambers located at the TJBs and any other joint bays on the onshore export cable. Maintenance / repairs of cables will be required on an ad-hoc basis in the event of a cable fault occurring.

Both substations at the grid facility will be unmanned and operated remotely. It is expected that one or two vehicles may attend each substation every four weeks for an inspection.

Each inspection will be approximately four hours and will occur within normal working hours, however it may be necessary for maintenance personnel to access the site on an ad-hoc basis if required, for example in the event of an electrical fault or outage. Additional annual maintenance will be required throughout the operational phase of the proposed development.

Maintenance of the onshore cables will comprise an inspection, approximately once every two years or ad-hoc whenever needed in response to a cable fault or issue, by means of the link box and communication chambers, which will be located at every joint bay. Where joint bays are located off road a permanent access track to the joint bay will be provided. Where possible, permanent access tracks will utilise existing access points from the public road. Two new permanent access points are required, at the gird facility and at Blakes Cross. Where existing access points are being used for the operational phase, the use during the operational phase will be minimal, and will not exceed the existing use of the access points.

While there will be an increased presence of machinery and personnel, operational maintenance works will not cause intrusive works or involve any excavation. In addition, emergency repair works may be required at any time and would involve a similar process and include artificial lighting if emergency works occur at night.

2.5.3 Operation and Maintenance Facility

An OMF will be required to service the proposed development throughout the operational phase of the proposed development. The OMF option being considered involves the adaption and leasing part of an existing port facility at Greenore. Whilst the OMF will be subject to separate planning/permitting consents and is not included within this planning application for consent, it is considered within the in-combination assessment.

The OMF being considered is in the vicinity of the proposed development and will comprise an OMF building and associated storage facilities as well as a number of berths, for the vessels required to access the wind farm.

2.6 Decommissioning

2.6.1 Offshore Decommissioning

The Maritime Area Planning Act 2021 sets out an obligation for the holder of a MAC to decommission or re-use offshore infrastructure as part of its rehabilitation of the maritime area that is the subject of the MAC, once the proposed development has reached the end of its operational life. It is anticipated that all structures above the seabed will be completely removed.

The exact approach to decommissioning will meet any statutory requirements or guidance set out in the forthcoming Maritime Area Planning Act secondary legislation. The approach to decommissioning has been documented in a Rehabilitation Schedule (Appendix 3) which will be subject to consultation with the Maritime Area Regulatory Authority and relevant stakeholders as required. The Rehabilitation Schedule will also form part of the MAC for the proposed development following the grant of development permission. The Rehabilitation Schedule will be prepared taking into consideration the latest technological advances as well as legislative and environmental requirements at the time of decommissioning. Any licences or authorisations that might be required would be identified and obtained prior to decommissioning.

2.6.2 Onshore Decommissioning

The infrastructure from the Bremore substation to the existing Belcamp substation will be under the ownership of ESB Networks and operated by EirGrid, forming part of the Transmission System, and therefore will not be decommissioned.

The compensation substation at the grid facility will be decommissioned when the proposed development ceases operation: however, the Bremore substation will not as it will form part of the wider transmission network owned by EirGrid.

When it becomes appropriate to decommission the proposed development, all above ground structures (i.e. access track, marker posts, link) between the TJBs at the landfall and the grid facility will be removed, and the sites will be returned to their previous state.

It is not proposed to remove any planting. The cabling of the onshore export cable between the TJBs and the grid facility will be removed but below ground ducting will remain in place.

Items/equipment which are decommissioned will be removed for appropriate management, based on the waste regulations at the time of decommissioning.

3. Screening for Appropriate Assessment – Alone and In-combination

3.1 Introduction

This section presents the sites to be considered in the screening assessment, as identified using the selection criteria described in Section 1.13 and provides a determination of LSE.

The screening assessment is undertaken with consideration of the receiving environment description and connectivity of sites and features to identify potential impacts, and LSE is considered both alone and in-combination with other projects or plans.

As set out above, the proposed development comprises the offshore development area and the onshore development area with the interface between the two being the HWM. The screening assessment considers the potential impacts on receptors and pathways to European sites that may originate from both the offshore development area and the onshore development area.

3.2 Relationship of the proposed development to the Conservation Management of European Sites

The European Commission Guidance (2021) states that a plan or project that is directly connected or necessary for the management of a European site must directly relate to conservation actions and must not be the direct or indirect consequence of other actions.

The proposed development is not directly connected to or necessary to the conservation management of any European site.

3.3 Description of the Receiving Environment

This section presents a summary of the baseline environment in respect to each receptor group. The areas described are defined following the ZoIs presented in Table 1.7 within Section 1.13.2.

3.3.1 Coastal and Marine Habitats

Coastal and marine habitats are subject to potential impacts and pathways that may originate from both the offshore development area and the onshore development area. The latter may result from an impact that originates above the HWM, e.g., water quality impacts affecting downstream coastal and marine habitats.

This section describes the baseline conditions of coastal and marine habitats which occur with the ZoI of the proposed development.

Site specific surveys for the proposed development have been undertaken to provide an up-to-date characterisation of the habitats and species occurring within the array and ECC areas.

All survey methodologies were in line with the relevant guidance documentation (Cefas, 2002; Cefas et al., 2004; Davies et al., 2001; Ware and Kenny, 2011). None of the surveys of the proposed development carried out to-date have indicated the presence of any rare or unusual species, or benthic species of conservation importance (Volume 9 Appendices 12.1: Array Area Benthic Survey Report and 12.2: Cable Route Benthic Survey Report).

The subtidal benthic ecology study area is characterised by muddy sands and sandy muds typical of the northern Irish sea. The BIOMÔR 2 study, which coincides with the south of the subtidal benthic ecology study area, reported habitats ranging from very fine sand to muddy sand, with communities characterised by Mollusca (*Gari, Venus, Dosinia, Dentalium* and *Nucula* spp.), Echinodermata (Echinoidea and Ophiuroidea), and Annelida (*Nephthys* and *Glycera* spp. and Spionidae) (Wilson *et al*., 2001).

Site-specific surveys identified predominantly sands and muddy sands across the subtidal benthic ecology study area which support communities characterised by polychaetes, molluscs and echinoderms (Volume 9 Appendices 12.1: Array Area Benthic Survey Report and 12.2: Cable Route Benthic Survey Report).

Eleven biotopes were identified with the most common being '*Owenia fusiformis* and *Amphiura filiformis* in offshore circalittoral sand or muddy sand' (SS.Ssa.Osa.OfusAfil/ EUNIS Code MD5212) and 'Burrowing megafauna *Maxmuelleria lankesteri* in circalittoral mud' (SS.Smu.CfiMu.MegMax / EUNIS Code MC6217) which were recorded from the offshore portion of the study area and '*Amphiura filiformis* and *Nuculoma tenuis* in Atlantic circalittoral and offshore muddy sand' (SS.Smu.CsaMu.AfilEten / EUNIS Code MC6213) which was identified within the inshore portion of the study area.

No Annex I or protected species or habitats were recorded within the footprint of the proposed development, although the biotope 'Seapens and burrowing megafauna in circalittoral fine mud' (SS.Smu.CfiMu.SpnMeg / EUNICCode MC6216) which is included in the OSPAR List of Threatened and/or Declining Species & Habitats was recorded in the wider subtidal benthic ecology study area.

The intertidal benthic ecology study area encompassed the area of the shore between HWM and LWM within the ECC. Site-specific surveys (Natural Power Consultants Ltd, 2023) indicate that much of the substrates here consist of boulders and rocky outcrops with shingle and sand towards the top of the shore. For much of the intertidal study area, the top of the shore is characterised by a band of coarse material which was assigned the biotope 'Barren littoral shingle' (LS.LCS.Sh.BarSh /EUNIS Code MA3211 which supported virtually no macrofauna, while in sandy sediments lower down the shore the biotope 'polychaetes in littoral fine sand' (LS Lsa.FiSa.Po./EUNIS Code MA5241) was identified which was characterised by Spionid and Capitellid polychaetes with Amphipod species such as *Gammarus* spp. and *Corophium volutator* also present.

The hard substrates in the intertidal ecology study area were characterised by macroalgae with the boulders and exposed bedrock supporting the biotope 'Ascophyllum nodosum on full salinity mid eulittoral mixed substrata' (LR.LLR.F.Asc.X /EUNIS CodeeMA123E2) where the macroalgae *Ascophyllum nodosum* and *Fucus vesiculosus* were common.

Most of the low shore supported a mosaic of Fucoid dominated biotopes, the most common of which was '*Fucus vesiculosus* and barnacle mosaics on moderately exposed mid eulittoral rock' (LR.MLR.BF.FvesB/EUNIS Code MA1243), '*Fucus vesiculosus* on full salinity moderately exposed to sheltered mid eulittoral rock' (LR.LLR.F.Fves.FS /EUNIS Code MA123D1) and '*Fucus serratus* and under-boulder fauna on exposed to moderately exposed lower eulittoral boulders' (LR.MLR.BF.Fser.Bo/EUNIS Code MA12442); dogwhelks, limpets, and periwinkles were common underneath the algae.

The top of the shore over much of the offshore development area is characterised by a band of coarse material which was assigned the biotope 'Barren littoral shingle' (MA3211); this habitat was absent from the Coney Hill Bay Beach. Typically, this habitat supports virtually no macrofauna due to the mobile and freely draining nature of the substrate with the few individuals that may be present are likely to have been stranded by the ebbing tide such as the occasional amphipod or small polychaete.

At the landfall site within the onshore development area, and where the cable comes on onshore via HDD, three coastal habitats have been identified: Annex I vegetated sea cliffs of the Atlantic and Baltic coasts (1230); embryonic shifting dunes (2210); perennial vegetation of stony banks (1220). These coastal Annex I habitats do not occur within any European site and are, therefore, not relevant to the assessment.

Whilst no intertidal or estuarine habitat occurs within the footprint of the proposed development, three significant estuaries are located downstream of the onshore development area and are hydrologically connected via several watercourses. These estuaries are Malahide Estuary, Rogerstown Estuary and Baldoyle Bay and are designated SACs for their Annex I intertidal and estuarine habitats; mudflats and sandflats not covered by seawater at low tide (1140), *Salicornia* and other annuals colonizing mud and sand (1310), Atlantic salt meadows (1330), mediterranean salt meadows (1410) and estuaries (1130).

There are a number of designated intertidal and subtidal habitats that are associated with European sites that fall within the ZoI for marine and coastal habitats (Figure 3.1). Relevant designated sites are provided in Appendix 1 and include:

- Baldoyle Bay SAC (mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and Mediterranean salt meadows (*Juncetalia maritimi*)) (IE0000199)
- Boyne Coast and Estuary SAC (estuaries, mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), embryonic shifting dunes, shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (IE0001957)
- Lambay Island SAC (reefs) (IE000204)
- Malahide Estuary SAC (mudflats and sandflats not covered by seawater at low tide, and *Salicornia* and other annuals colonising mud and sand) (IE0000205)
- North Dublin Bay SAC (mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and Mediterranean salt meadows (*Juncetalia maritimi*)) (IE0000206)
- South Dublin Bay SAC (Mudflats and sandflats not covered by seawater at low tide, Annual vegetation of drift lines; Salicornia and other annuals colonising mud and sand; and Embryonic shifting dunes) (IE00210)
- Rockabill to Dalkey Island SAC (reefs) (IE0003000)
- Rogerstown Estuary SAC (estuaries, mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) and Mediterranean salt meadows (*Juncetalia maritimi*) (IE000208)

Of these sites North Dublin Bay SAC and South Dublin Bay SAC are not considered further as they are located further than the screening range of 20km from both the array and ECC and while both are within the screening range for the onshore development there is no hydrological, or other, connectivity between the onshore development area and the sites. Other coastal SACs within the screening range are designated for QIs above HWM and are therefore screened out for coastal and marine assessments.

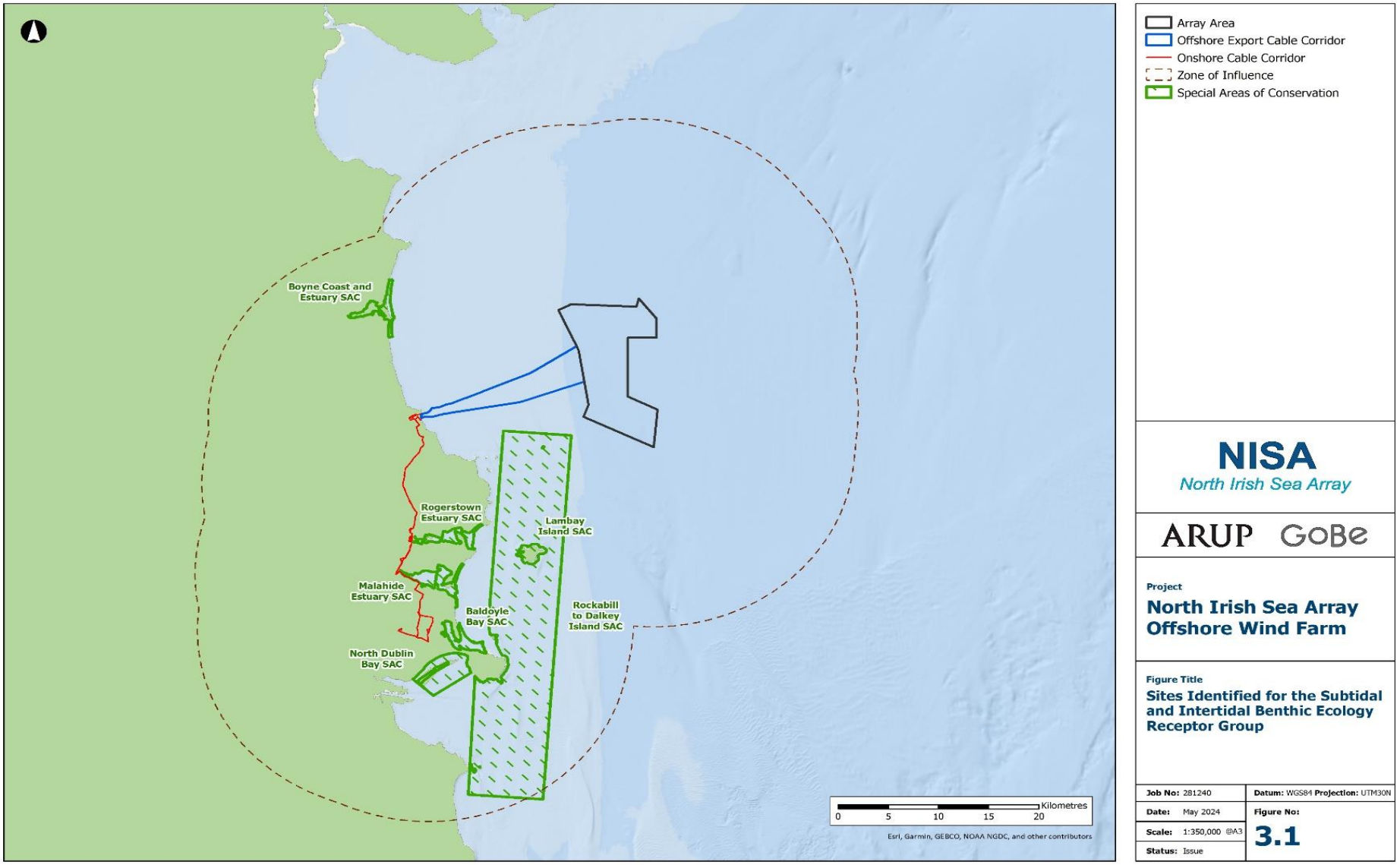

Figure 3.1: SACs identified for the subtidal and intertidal benthic ecology receptor group

3.3.1.1 Hydrology and Hydrogeology

Downstream European sites that are considered to be hydrologically and/or hydrogeologically connected to the onshore elements of the proposed development, and are at risk of downstream water quality effects, include the following: Malahide Estuary SAC, Rogerstown Estuary SAC, Baldoyle Bay SAC.

The overall hydrology of the onshore elements within the proposed development boundary lies within the Nanny-Delvin (Hydrometric Area (HA) 08) and Liffey and Dublin Bay (HA 09) Catchments. The 2016-2021 Water Framework Directive (WFD) status of the water bodies within the onshore development boundary show that the watercourses along the onshore cable route and onshore infrastructure at the grid facility have 'poor' WFD status apart from one stream. All watercourses crossed by the onshore cable route and onshore infrastructure flow into the Northwestern Irish Sea (HA 08).

The hydrogeological and geological conditions of the onshore development boundary can be described in the following way: the bedrock geology of the region is predominantly underlain by Lower Carboniferous limestones, Silurian sedimentary rocks and Ordovician Volcanics. The aquifers (groundwater bearing bodies) within the area of the onshore development boundary have been classified by Geological Society of Ireland (GSI) as Locally Important Aquifer and Poor Aquifer. The regional Groundwater Bodies (GWB) overlapping with the onshore development boundary are Dublin GWB, Swords GWB, Lusk-Bog on the rig GWB, Balrothery GWB and Balbriggan GWB. The WFD status for the groundwater bodies within the onshore development area is 'good' and some of the area is currently under 'review' regarding the risk of not maintaining that status.

Additionally, the regional groundwater vulnerability varies significantly across the onshore development area, ranging from areas of extreme vulnerability, which correspond to areas of bedrock outcrop, to low vulnerability where there are thicker deposits of moderate to low permeability subsoil. In general, the majority of the onshore development area is underlain by low groundwater vulnerability with areas of higher and extreme groundwater vulnerability present in areas of higher ground. Aquifer vulnerability of a groundwater body is the term used to describe the intrinsic geological and hydrogeological characteristics which determines the ease with which a groundwater body may be contaminated by human activities, an important consideration when considering ecological impacts and connectivity to European sites.

3.3.2 Migratory Fish

Annex II migratory species of fish designated as features of European sites within 100km of the proposed development are Atlantic salmon (*Salmo salar*) and River lamprey (*Lampetra fluviatilis*). Both species begin their live in freshwater and migrate to the sea at points in their life cycle before returning to freshwater to spawn. They can therefore be present in the offshore development area at times when migrating to and from rivers and transitional water bodies in the area, and they may therefore be affected by impacts arising from the development.

Atlantic salmon are of great biological, conservation and economic importance. Most populations have an anadromous life history, beginning their life in freshwater and then migrating to sea to feed and grow, before periodically returning to their home rivers to spawn. The strong homing behaviour of salmon has resulted in a vast amount of genetically distinct salmon stocks across their distributional range (Gilbey et al., 2021). The marine phase of Atlantic salmon begins between spring and early summer when large numbers of young salmon (smolts) leave Irish rivers to migrate into the rich feeding grounds of the Norwegian Sea and the greater expanse of the north-east Atlantic Ocean (e.g., Gilbey et al., 2021; Holm et al., 2000). On leaving natal rivers, it has been reported that salmon undertake a rapid and active migration away from their river of origin (Holm et al., 2000; Jonsson et al., 1993). The return migration of salmon into their native rivers mainly takes place during spring and summer, and spawning occurs during the following autumn and winter (Finstad et al., 2005).

The migratory routes of Atlantic Salmon away from coastal waters to their oceanic feeding grounds are generally poorly understood. Experimental post-smolt trawls in the Norwegian sea and Western Scotland have provided evidence for a northerly migration route for Irish salmon stocks in the early months of their long migration. Recent acoustic telemetry data suggest that young salmon (smolts) from the River Boyne and other rivers along the east coast of Ireland move north upon leaving their home rivers (Barry et al., 2020).

The tracking data further suggest that on leaving their natal rivers, smolts move rapidly away from the coast towards the deep waters of the Irish Sea, possibly to take advantage of the northwards flowing surface currents, which can assist their journey to the oceanic feeding grounds in the north-east Atlantic (Barry et al., 2020). There is therefore high potential that migratory smolts from the River Boyne and its tributaries pass through the offshore development area. No information is available on the movement patterns of returning salmon; however, a similar pathway to that of outward moving smolts may be assumed.

River lamprey begin their lives as young larvae, known as ammocoetes, buried in freshwater sediments before undergoing metamorphosis into free-swimming adults. The young post-larval lampreys travel downstream to the sea, where they live several years before returning to their riverine spawning grounds (Kurz and Costello, 1999). Most research on lamprey species to date has focussed on the freshwater portion of their life cycle, while the distribution and habitat requirements of adult lamprey at sea is poorly documented. River lamprey are reported to typically remain in estuarine areas during their marine stage, where they spend about one to two years feeding on a variety of fishes including herring, sprat, smelt and flounder (Kelly and King, 2001; Maitland, 2003). In northwest Europe, the upstream migration of mature river lampreys from the sea to freshwater spawning streams typically begins in late summer and autumn (Kelly and King, 2001), and spawning takes place the following spring throughout March and April (Maitland, 2003). Newly metamorphosed young adults migrate downstream into estuaries between summer and late autumn/early winter (Kelly and King, 2001; Maitland, 2003).

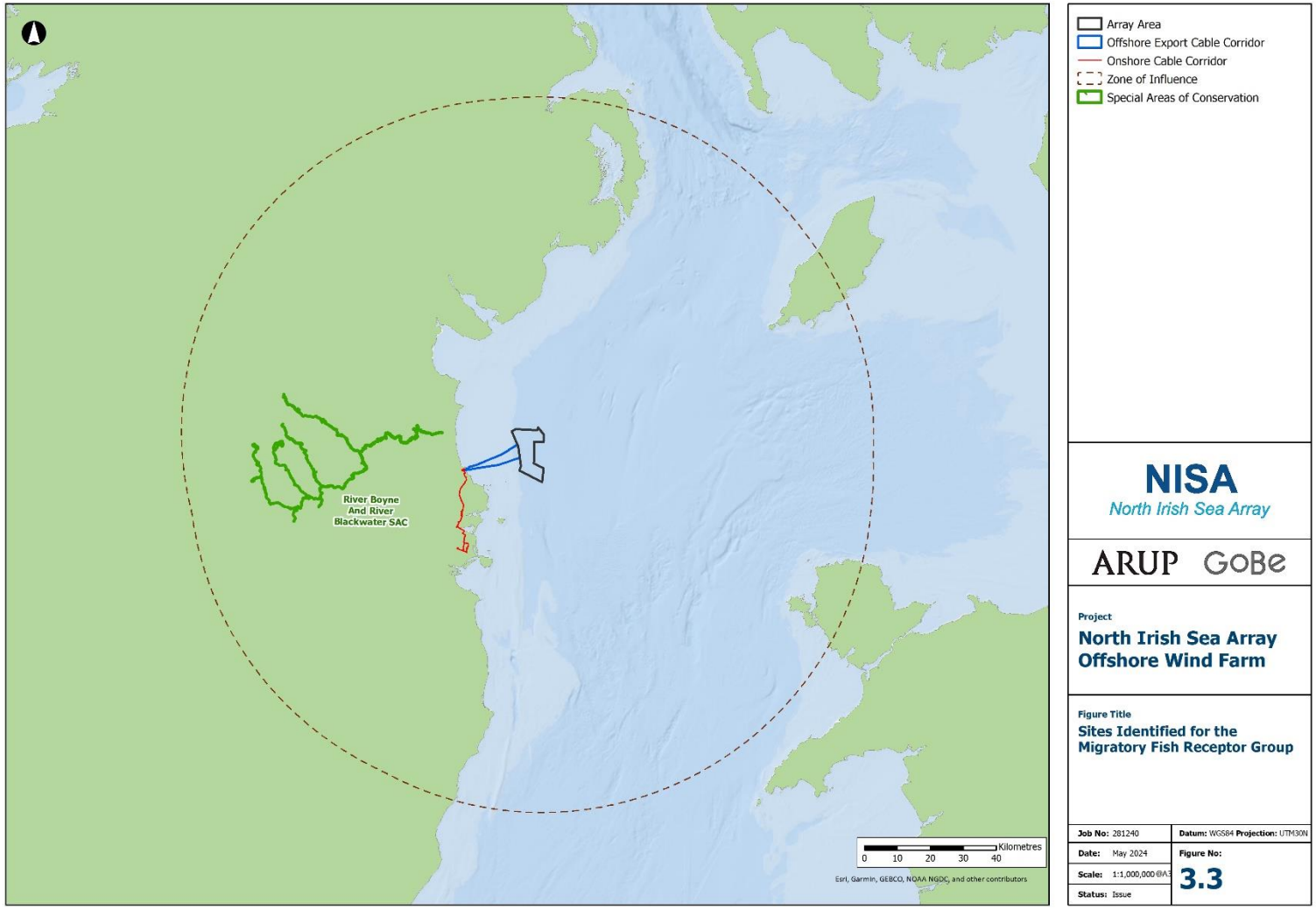

Figure 3.2: SACs identified for the migratory fish receptor group

3.3.3 Marine Mammals

Annex II marine mammal species present within Irish water are harbour seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*), bottlenose dolphin (*Tursiops truncatus*), and harbour porpoise (*Phocoena phocoena*). Site specific surveys were undertaken between November 2019 and October 2022 beginning with vessel-based surveys through to July 2021 and moving to aerial surveys due to Government Covid-19 guidance continuing to October 2022. These surveys, along with the broad-scale SCANS-III and SCANS-IV surveys (Gilles et al., 2023; Hammond et al., 2021), the sightings data used in a density modelling study (Evans and Waggitt, 2023) and seal telemetry data (Carter et al., 2022) provided evidence that all Annex II marine mammal species (harbour porpoise, bottlenose dolphin, grey seal and harbour seal) occur regularly within their respective ZoIs (which are defined by the species-specific MU for cetaceans, and the species-specific foraging ranges for seals, see Table 1.7).

The offshore development area is located 2.4km north of Rockabill to Dalkey Island SAC, designated for reefs and harbour porpoise, see Figure 3.2. For this SAC, harbour porpoise density and abundance estimates were obtained in 2013, 2016 and 2021 (Berrow and ''Brien 2013; O'Brien and Berrow, 2016; Berrow et al., 2021). A significant decline (>40%) in harbour porpoise density was found in 2021 (0.83 individuals per km^2, CV=0.17) compared with 2016 (1.55 individuals per km^2, CV=0.10) and 2013 (1.44 individuals per km^2, CV=0.09). This does not necessarily imply a decline in the overall number of harbour porpoise using the SAC but does show changes in their distribution and habitat use at a local scale. Harbour porpoises were found to be distributed throughout the SAC survey area as per the 2021 visual surveys (Berrow et al., 2021), suggesting that use within the SAC has not been constrained or changed over time. Dedicated boat-based line-transect surveys covering the SAC between Howth Head and Lambay Island for the Greater Dublin Drainage Project identified this smaller region to be more favourable for harbour porpoises between April 2015 and January 2017. Harbour porpoise sightings in the outer Dublin Bay area also varied between surveys but were generally low compared to other sites surveyed within the SAC.

Bottlenose dolphins are recorded infrequently off Co Dublin, with most sightings occurring along the western seaboard (Berrow et al., 2010; Rogan et al., 2018). The closest SAC is Pen Llŷn a'r Sarnau/ Lleyn Peninsula and the Sarnau SAC, 100.3km away in Welsh waters.

Grey and harbour seal are also understood to be present in low numbers across the study area (Carter et al., 2022), with Dalkey Island and Lambay Island being the closest haul out and breeding sites (Ó Cadhla et al., 2007; NPWS, 2009). The Rockabill to Dalkey Island SAC lists grey and harbour seals as present but does not list them as a QI for the site. Harbour seal forms part of the mixed colony (with grey seals) around Dalkey Island and Dublin Bay. Lambay Island SAC designated for both grey and harbour seal, is located 18km to the north of the proposed development. The site synopsis for the SAC states that Lambay supports the principal breeding colony of grey seal on the east coast of Ireland, numbering 196 to 252 seals, across all ages (NPWS, 2014). It also contains regionally significant numbers of harbour seals, of which up to 47 individuals have been counted at the site (NPWS, 2014). Grey seals and harbour seals occur year-round, and the island's intertidal shorelines, coves and caves are used by resting and moulting seals (DAHG, 2014).

There are a number of designated sites identified within the species-specific ZoI for the four marine mammal species as shown in Figure 3.2. The identified designated sites identified for consideration are:

- Celtic and Irish Seas Management Unit (MU) for harbour porpoise:
  - Abers – Côtes des légendes SAC (FR5300017)
  - Anse de Vauville SAC (FR2502019)
  - Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC (FR5300012)
  - Baie de Morlaix SAC (FR5300015)
  - Baie de Saint-Brieuc – Est SAC (FR5300066)
  - Baie du Mont Saint-Michel SAC (FR2500077)
  - Banc et récifs de Surtainville SAC (FR2502018)

  - Belgica Mound Province SAC (IE00002327)
  - Blackwater Bank SAC (IE00002953)
  - Blasket Islands SAC (IE0002172)
  - Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK0030396)
  - Bunduff Lough and Machair / Trawalua / Mullaghmore SAC (IE00000625)
  - Carnsore Point SAC (IE00002269)
  - Chausey SAC (FR2500079)
  - Chaussée de Sein SAC (FR5302007)
  - Codling Fault Zone SAC (IE00003015)
  - Côtes de Crozon SAC (FR5302006)
  - Hook Head SAC (IE0000764)
  - Inishmore Island SAC (IE00000213)
  - Kenmare River SAC (IE00002158)
  - Kilkieran Bay and Islands SAC (IE00002111)
  - Mers Celtiques – Talus du golfe de Gascogne SAC (FR5302015)
  - Nord Bretagne DH SAC (FR2502022)
  - North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398)
  - North Channel SAC (UK0030399)
  - Ouessant-Molène SAC (FR5300018)
  - Récifs et landes de la Hague SAC (FR2500084)
  - Roaringwater Bay and Islands SAC (IE0000101)
  - Rockabill to Dalkey Island SAC (IE0003000)
  - Tregor Goëlo SAC (FR5300010)
  - West Connacht Coast SAC (IE00002998)
  - West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)
- Irish Sea MU for bottlenose dolphin:
  - Cardigan Bay/ Bae Ceredigion SAC (UK0012712);
  - Hook Head SAC (IE00000764)
  - Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC (UK0013117)
- Sites with grey seal as a designated feature within 100km (average foraging range):
  - Glannau Ynys Gybi/ Holy Island Coast SAC (UK0013046)
  - Lambay Island SAC (IE0000204)

- Sites with harbour seal as a designated feature within 50km (average foraging range):
  - Lambay Island SAC (IE0000204)
  - Murlough SAC (UK0016612)

3.3.3.1 Otter

While signs of otter, an Annex II species, were not recorded during surveys, they are likely to use watercourses occurring along the onshore cable route for commuting and foraging and could use the coastal stretch at the landfall site. Typically, otter do not forage greater than 80m from the coastline and, in Ireland, along freshwater river systems, female territories have been found to be 7.5 ± 1.5km in length, while male territories have been found to be 13.2 ± 5.3km in length (Reid et al, 2013). It is unlikely however that any otter using lands within close proximity to, or downstream of, the onshore development area are associated with European sites, for which they are designated, given the nearest SAC with otter as a QI falls outside of the 10km average distribution range for otter (National Roads Authority, 2008) and therefore is outside of the onshore infrastructure ZoI for otter. Otter have therefore been screened out from any further assessment.

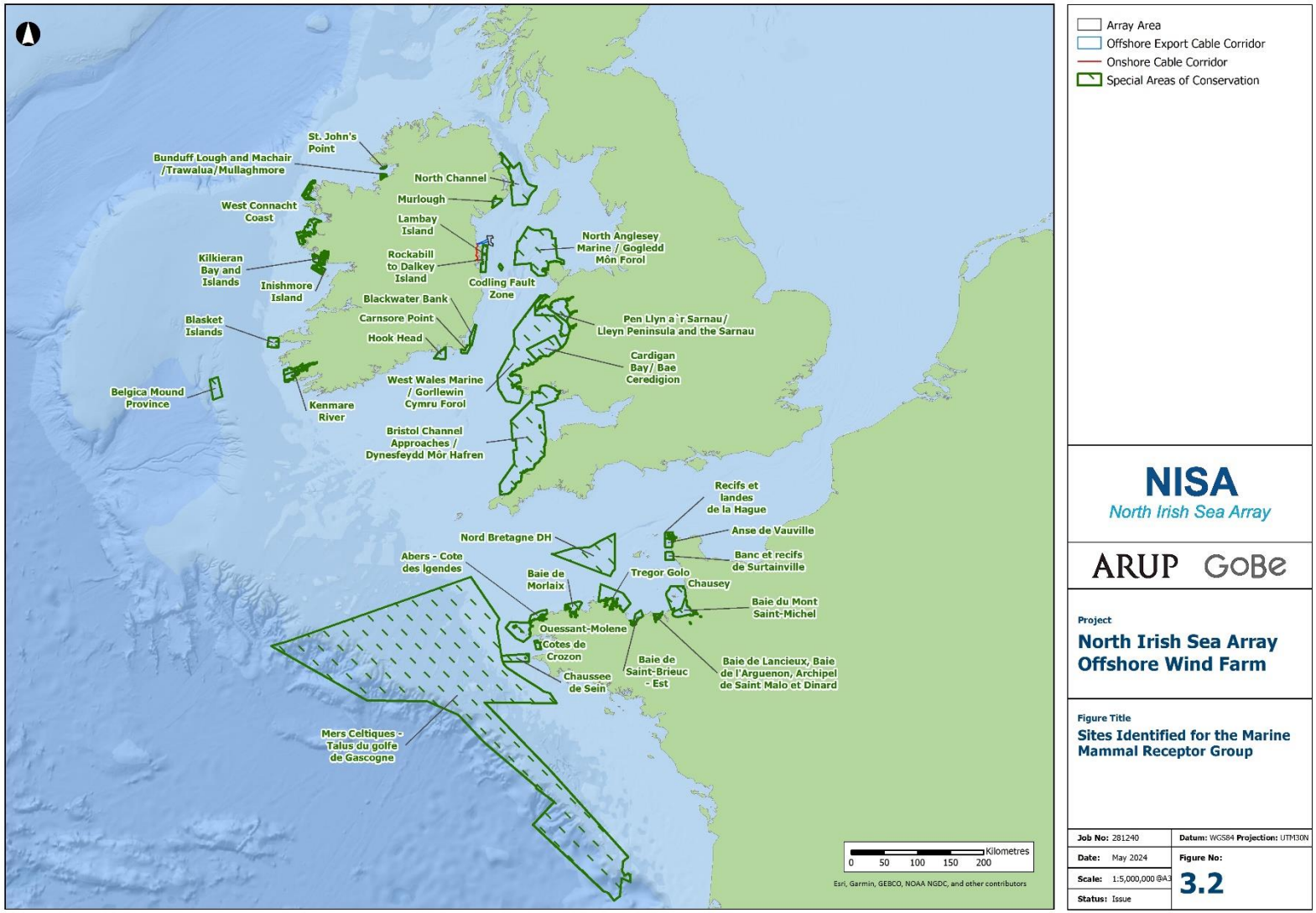

Figure 3.3: SACs identified for the marine mammal receptor group

3.3.4 Ornithology

Extensive ornithological surveys (details below) have shown that Irish waters and the Irish Sea provide key foraging habitat for birds. There is a mix of bird populations present at different times including breeding and non-breeding seabirds, wintering birds, such as seaducks, divers and grebes and various non-seabird migrants (e.g. wildfowl, waders and passerines) passing through the area between the UK and Ireland. For breeding seabirds, the coastal cliff and offshore islands provide valuable nesting habitat within foraging distance to these productive seas. For many species, a considerable proportion of the bio-geographic population breed in Ireland making it internationally important for breeding bird populations. For example, Ireland is home to more than 10% of the biogeographical population of European storm-petrel and roseate tern and hosts greater than 1% of the bio-geographic population for a further 13 species, including Manx shearwater.

3.3.4.1 Existing Data Sources

The following regional datasets provide the existing baseline for ornithology. For an exhaustive list please see the NIS Section 1.9.4:

- Periodic surveys of bird populations within the Irish Sea organised by National Organisations such as BirdWatch Ireland and the British Trust for Ornithology (BTO) and the resultant web-based databases and atlases of bird distribution.
- Peer reviewed scientific papers
- Literature reviews including the baseline reports of other OWF developments within the Irish Sea (Gwynt-y-Mor; Rhyl Flats; North Hoyle; Burbo Bank; Burbo Bank Extension; Wanlney Phase 1, Phase 2 & Extension; West of Duddon Sands; Ormonde; Barrow; and Awel-y-Mor)

Intertidal birds may be disturbed by the construction and maintenance of the export cable and on the construction of the onshore infrastructure. The main sources of information on intertidal ornithology receptors drawn on for this report comprise:

- Periodic surveys of bird populations along the coast as part of national programmes organised by the BirdWatch Ireland, i.e. iWeBS surveys, and the resultant web-based databases and atlases of bird distribution
- Peer reviewed scientific papers

3.3.4.2 Site Specific Surveys

The baseline was supported by 29 months of site-specific DAS data, surveys for which commenced in May 2020 through to October 2022. This was supplemented by seven vessel-based surveys conducted between November 2019 and July 2022, and four vantage-point surveys conducted between September 2019 and May 2021. Intertidal bird surveys were also undertaken at the landfall site, with 24-months of data collected between January 2021 and December 2022. Several species which have been identified from site-specific surveys and considered as key species for other offshore impact assessments elsewhere in Ireland and the UK due to their sensitivity to the likely significant effects of plans and projects are displayed in Table 3.1. An overview of species recorded during site-specific surveys is presented in Table 3.2 and Table 3.3.

During breeding bird surveys undertaken for the onshore development area, typically species recorded were passerines that are associated with terrestrial habitats and are not associated with any SPA. At the landfall site, small numbers of seabirds were recorded and at Malahide Estuary, small numbers of waders were intermittently observed. See Appendix 7 for full breeding bird survey results undertaken for the onshore development area.

Table 3.1: Summary of key ornithological species

Species	Key season(s) relevant to the proposed development
Kittiwake	Year round, with peak abundance in Spring migration season.
Common gull	Predominantly breeding season, with most birds migrating south during the non-breeding season.
Great black-backed gull	Year round, with peak abundance in the nonbreeding season.
Herring gull	Year round, with peak abundance in the nonbreeding season.
Lesser black-backed gull	Predominantly breeding season, although some birds present all year.
Roseate tern	Breeding and post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Common tern	Breeding and post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Arctic tern	Breeding and post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Guillemot	Year round, with peak abundance in the non-breeding bio-season. Birds are predominantly coastal during the breeding season and more dispersed during the non-breeding season.
Razorbill	Year round, with peak abundance in the autumn migration bio-season. Birds are predominantly coastal during the breeding season and more dispersed during the non-breeding season.
Puffin	Year round. Birds disperse further afield during the non-breeding season.
Manx shearwater	Breeding season and post-breeding migration – birds migrate south for non-breeding season, travelling through the Irish Sea.
Gannet	Predominantly breeding season, with most Gannets migrating south in non-breeding season.
Shag	Predominantly breeding season.

Table 3.2: Birds recorded during site-specific surveys

Species recorded during site-specific surveys (1=DAS, 2=Vessel, 3=Vantage-point, 4=Landfall		
Arctic skua (Stercocarius parasiticus) [1,2,4]	Grey heron (*Ardea cinerea*)[3,4]	Puffin[1,2]
Arctic tern[1,2,4]	Grey plover (Pluvialis squatarola) [4]	Purple sandpiper (*Calidris maritima*)[4]
Bar-tailed godwit (*Limosa lapponica*)[3,4]	Greylag goose (*Anser anser*)[3]	Razorbill[1,2,4]
Black guillemot (*Cepphus grille*)[1,2,4]	Guillemot[1,2,4]	Red-breasted merganser (*Mergus serrator*)[3,4]
Black-headed gull[1,2,4]	Hen harrier (*Circus cyaneus*)[4]	Redshank (*Tringa tetanus*)[3,4]
Black-tailed godwit (*Limosa limosa*) [3,4]	Herring gull[1,2,4]	Red-throated diver[1,2,3,4]
Brent goose[3,4]	House martin (*Delichon urbicum*)[3]	Ringed plover (Charadrius hiaticula)[3,4]
Buzzard[4]	Kestrel (Falco tinnunculus)[4]	Roseate tern[1,2,4]
Commic tern[1,2]	Kingfisher (*Alcedo atthis*)[4]	Ruff (Calidris pugnax)[3]
Common gull[1,2,4]	Kittiwake[1,2,4]	Sand martin (*Riparia riparia*)[4]
Common scoter[2,3,4]	Knot (Calidris canutus)[3,4]	Sanderling (*Calidris alba*)[3,4]
Common tern[1,4]	Lapwing (Vanellus vanellus)[4]	Sandwich tern[1,2,4]
Cormorant[2,4]	Lesser black-backed gull[1,2,4]	Shag[1,2,4]
Curlew sandpiper (*Calidris Ferruginea*)[3]	Linet (Linaria cannabina)[3]	Shelduck (*Tadorna tadorna*) [3,4]

Species recorded during site-specific surveys (1=DAS, 2=Vessel, 3=Vantage-point, 4=Landfall		
Curlew (Numenius arquata)[3,4]	Little egret (*Egretta garzetta*)[4]	Skylark (Alauda arvensis)[3,4]
Dunlin (Calidris alpina)[3,4]	Little grebe (Tachybaptus ruficollis)[4]	Snipe (Gallinago gallinago)[4]
Eider (Somateria mollissima)[3,4]	Little gull (*Larus minutus*)[1]	Sooty shearwater (*Ardenna grisea*)[1]
European storm petrel (*Hydrobates pelagicus*)[2]	Long-tailed duck (*Clangula hyemalis*)[3,4]	Swallow (Hirundo rustica)[3]
Forsters tern (*Sterna forsteri*)[4]	Mallard (Anas platyrhynchos)[3,4]	Teal (Anas crecca)[3,4]
Fulmar[1,2]	Manx shearwater[1,2]	Tufted duck (*Aythya fuligula*)[3]
Gannet[1,2,4]	Meadow pipit (*Anthus pratensis*)[2,3]	Turnstone (Arenaria interpres)[3,4]
Golden plover[3,4]	Mediterranean gull[4]	Velvet scoter (*Melanitta fusca*)[3,4]
Great black-backed gull[1,2,4]	Merlin (Falco columbarius)[4]	Whimbrel (Numenius phaeopus)[1,4]
Great crested grebe[3,4]	Mute swan (*Cygnus olor*)[3,4]	White wagtail (*Motacilla alba*)[1,2]
Great northern diver (Gavia immer)1,2,3,4	Oystercatcher (Haematopus ostralegus)3,4	Whooper swan (*Cygnus cygnus*)[3,4]
Great skua1[2]	Passerine sp.[2]	Wigeon (Anas penelope)[2,4]
Greenshank (*Tringa nebularia*)[3,4]	Pink-footed goose (*Anser brachyrhynchus*)[3]	Yellowhammer (Emberiza citrinella)[4]

3.3.4.3 Wintering Waterbirds

Baseline surveys undertaken for the onshore development area between October 2021 and March 2022 identified fauna and for which European sites are designated include wintering waterbirds. The wintering waterbird assemblage recorded was typical of estuarine and coastal habitats that occur immediately adjacent to the onshore cable route specifically at the subtidal HDD and at Malahide Estuary. Of the species recorded, 31 are listed as SCIs of European sites that have been identified with potential connectivity to the onshore development area. Six of the species recorded occurred in numbers greater than 1% of the national population and are golden plover (*Pluvialis apricaria*), common scoter (*Melanitta nigra*), light-bellied brent goose (*Branta bernicla hrota*), great crested grebe (*Podiceps cristatus*), great northern diver (*Gavia immer*) and red-throated diver (*Gavia stellata*). All other species recorded occurred in numbers lower than 1% of the national population. Refer to Table 3.3 for a summary of the survey results and Appendix 8 for full monthly wintering waterbird survey results for the landfall site and Malahide Estuary.

Table 3.3: Peak count and distribution of wintering waterbirds recorded during high and low-tide count surveys at the proposed landfall, and Malahide Estuary during winter 2021-22

Common name	Peak count at landfall	Peak count at Malahide Estuary	1% of national population [3],[4]	1% of international population	Occurrence within the intertidal zone of the proposed development	SCI of SPA within ZoI
Bar-tailed godwit	3	38	150	1200	Three birds recorded foraging at Bremore Point beach, along the onshore development area at the landfall site, and a flock of 38 birds recorded foraging.	Yes
Black-headed gull	275	1510	78 pairs	20000	Widespread and numerous along the coastline and in arable fields at the landfall site and at Malahide Estuary.	Yes

Common name	Peak count at landfall	Peak count at Malahide Estuary	1% of national population [3],[4]	1% of international population	Occurrence within the intertidal zone of the proposed development	SCI of SPA within ZoI
Black-tailed godwit	7	156	190	610	Small numbers recorded flying off Gormanston Beach north of the landfall site, and north of the Delvin River. Flocks recorded foraging at roosting at Malahide Estuary.	Yes
Brent goose	131	1560	360	400	Widespread and numerous along coastline at the landfall site and at Malahide Estuary. Numbers of up to 79 were recorded in arable fields at the landfall site.	Yes
Common gull	197	224	19 pairs	16400	Widespread and numerous along coastline at the landfall site and at Malahide Estuary. Small numbers, up to 8, were recorded in arable fields at the landfall site.	Yes
Common scoter	1660	-	110	7500	Large flocks recorded swimming off the coast of the landfall site.	Yes
Cormorant	105	44	110	1200	Widespread and numerous along coastline at the landfall site and at Malahide Estuary.	Yes
Curlew	156	33	350	8400	Flocks recorded foraging in fields at the grid facility and landfall site, and at Malahide Estuary. A maximum of 91 curlew were recorded roosting/feeding in arable fields at the landfall site.	Yes
Dunlin	259	241	570	13300	Flocks observed on rocks at Bremore Bay Beach directly adjacent to proposed development boundary at the landfall site and foraging/roosting at Malahide Estuary.	Yes

Common name	Peak count at landfall	Peak count at Malahide Estuary	1% of national population [3],[4]	1% of international population	Occurrence within the intertidal zone of the proposed development	SCI of SPA within ZoI
Golden plover	281	1000	920	9300	Foraging within fields at the landfall site, and foraging/roosting at Malahide Estuary and surrounding fields. Golden plover were recorded roosting/feeding in arable fields at the landfall site in numbers ranging between 17 and 58.	Yes
Goldeneye	-	26	-	11400	Recorded within the outer Malahide Estuary during high-tide surveys.	Yes
Great crested grebe	40	39	30	6300	Recorded swimming off the coast of the landfall site and within the outer Malahide Estuary. Not recorded within close proximity to the onshore development area.	Yes
Great northern diver	6	38	20	50	Recorded swimming off the coast of the landfall site.	Yes
Grey plover	27	2	30	2500	Flocks recorded foraging/roosting on rocks at Bremore Bay Beach directly adjacent to the proposed development boundary. Two birds seen roosting at Malahide Estuary.	Yes
Guillemot (Common)	14	-	1773 pairs	-	Recorded swimming off the coast of the landfall site.	Yes
Herring gull	644	317	103 pairs	10200	Widespread and numerous along coastline at the landfall site and at Malahide Estuary. Up to 80 herring gull were recorded in arable fields at the landfall site.	Yes
Kittiwake	2	-	247 pairs	-	Small numbers recorded flying off Gormanston Beach north of the landfall site and north of the Delvin River. Not recorded within or in close proximity to the onshore development area.	Yes

Common name	Peak count at landfall	Peak count at Malahide Estuary	1% of national population [3],[4]	1% of international population	Occurrence within the intertidal zone of the proposed development	SCI of SPA within ZoI
Knot	5	-	280	4500	Small numbers recorded roosting at Bremore Bay Beach directly adjacent to the proposed development boundary. No birds observed at Malahide Estuary.	Yes
Lapwing	61	148	850	72300	Recorded foraging in fields within proposed development boundary at the landfall site and during high/low tide counts at Malahide Estuary. Lapwing were recorded roosting/feeding in arable fields at the landfall site in numbers of up to 60 birds.	Yes
Lesser black-backed gull	11	11	71 pairs	-	Small flocks recorded at Gormanstown Beach, north of the landfall site and north of the Delvin River. Recorded within the inner Malahide Estuary.	Yes
Oystercatcher	151	106	690	8200	Widespread and numerous along the coastline at the landfall site and at Malahide Estuary.	Yes
Purple sandpiper	11	-	20	710	Recorded at Bremore Bay Beach directly adjacent to the proposed development boundary.	Yes
Razorbill	10	-	336 pairs	-	Small numbers recorded off the coast of Bremore Point at the landfall site. Not recorded within or in close proximity to the onshore development area.	Yes
Red-breasted merganser	1	-	25	860	One bird recorded swimming off the coast of the landfall site. Larger numbers recorded within the inner and outer Malahide Estuary.	Yes
Redshank	60	99	300	3900	Widespread and numerous along coastline at landfall site and at Malahide Estuary. Three recorded in an arable field at the landfall site on one occasion.	Yes

Common name	Peak count at landfall	Peak count at Malahide Estuary	1% of national population [3],[4]	1% of international population	Occurrence within the intertidal zone of the proposed development	SCI of SPA within ZoI
Red-throated diver	35	-	20	3000	Recorded swimming off the coast of the landfall site.	Yes
Ringed plover	80	-	120	-	Flocks observed on rocks at Bremore Bay Beach directly adjacent to proposed development boundary. No flocks observed at Malahide Estuary.	Yes
Shag	45	-	-	-	Birds present on rocks adjacent to the proposed development boundary and offshore of the landfall site.	Yes
Shelduck	1	9	120	3000	One bird recorded flying out to sea at the landfall site and small numbers recorded within the inner Malahide Estuary.	Yes
Teal	17	96	340	5000	Three birds recorded swimming at Gormanston Beach, north of the landfall site and north of the Delvin River. Widespread and numerous within the inner Malahide Estuary.	Yes
Turnstone	56	16	95	-	Widespread and numerous along coastline at the landfall site and at Malahide Estuary.	Yes

As set out in Table 1.7, mobile SCI species can occur a distance from the SPA designation and many wintering waterbirds are known to use inland feeding sites. For example, golden plover are known to move significant distances of up to 12km between fields during the winter period (Gillings and Fuller, 1999) whilst goose foraging range from night roosts during the winter period can extend up to 20km (SNH, 2016). As such these species are at risk to disturbance and displacement effects occurring outside the SPA for which they are associated.

SPAs designated for wintering waterbirds that have been identified with potential connectivity to the onshore development area and with SCI species recorded during surveys for the onshore development area include: North-West Irish Sea cSPA, Malahide Estuary SPA, Rogerstown Estuary SPA, Baldoyle Bay SPA, North Bull Island SPA, River Nanny Estuary and Shore SPA, South Dublin and River Tolka Estuary SPA, Skerries Islands SPA, Rockabill SPA, Lambay Island SPA and Boyne Estuary SPA.

While SCIs of Ireland's Eye SPA and Howth Head Coast SPA were recorded during baseline wintering waterbird surveys, these SPAs are designated for breeding seabird colonies and so have been screened out for onshore impacts based on this.

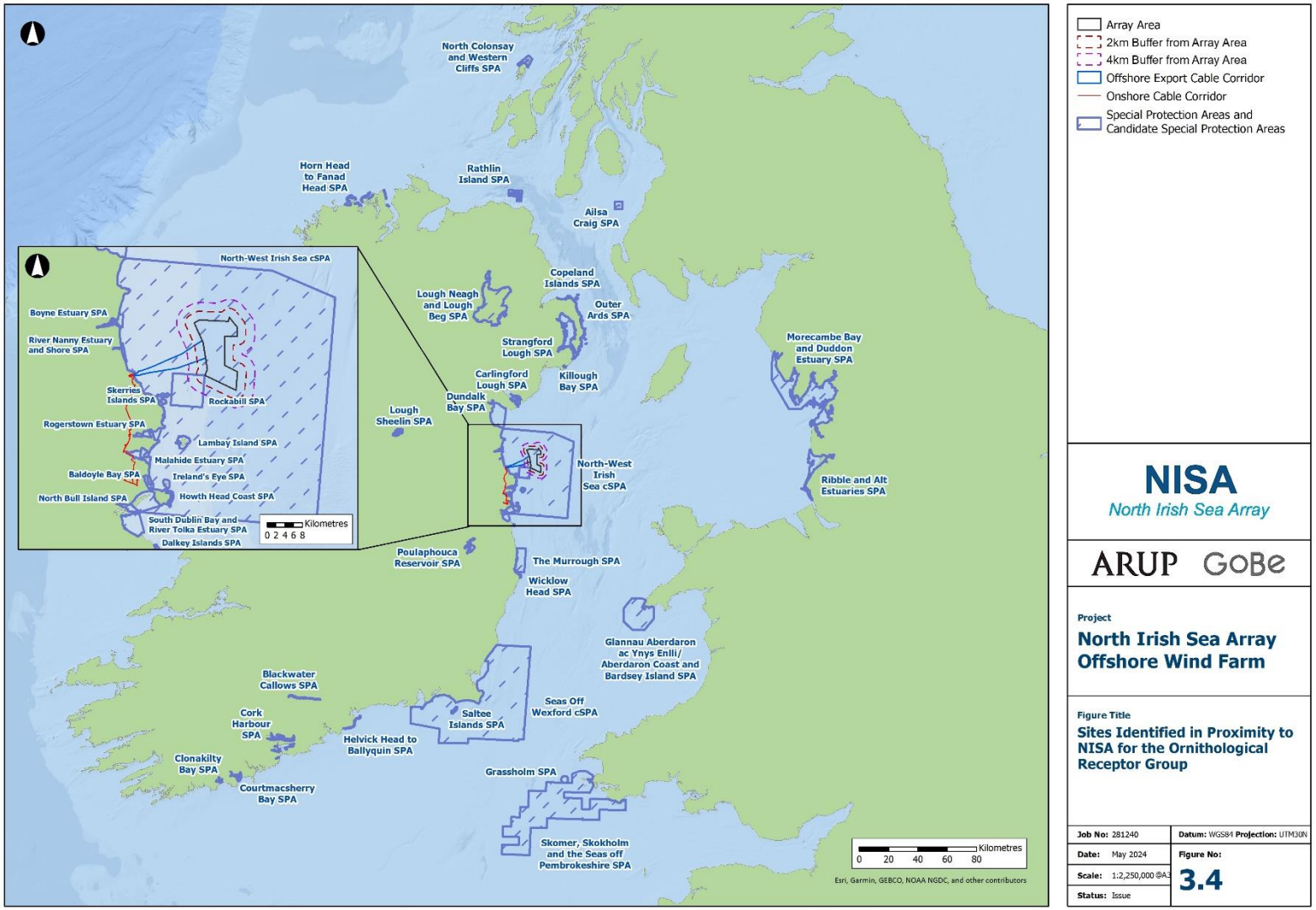

Figure 3.4: SPAs and cSPAs identified for the ornithological receptor group

3.4 Identification of Sites and Features with Connectivity and Potential Impacts

3.4.1 Potential Impacts

Based on the description of the proposed development (Section 2), the potential impacts from the construction, operation and decommissioning have been identified. The Strategic Environmental Assessment (SEA) for the Offshore Renewable Energy Development Plan (OREDP) (Department of Environment, Climate and Communications (DECC), 2018) which identifies potential impacts on biodiversity relevant to offshore renewable energy projects, was also reviewed when identifying these potential impacts. In addition, considerable experience and knowledge exists from existing OWF projects across the UK and Europe, with regard to the potential impacts that may result from the construction, operation and decommissioning of an OWF, with studies such as Mapping seabird sensitivity to offshore wind farms (Bradbury, G., et al. 2014), Seabirds and offshore wind farms in European waters: Avoidance and attraction (Dierschke, V., et al. 2016) and The global impact of offshore wind farms on ecosystem services (Watson, C. S. L., et a*l.* 2024) considered.

The pathways associated with the potential impacts vary depending on the receptor. Direct pathways include any potential ways for impacts from the proposed development to physically effect a designated site, QI or their COs. These pathways include having a close proximity with/ direct overlap between the proposed development and the site and being within the maximum tidal extent range from the proposed development. Indirect pathways are those that do not physically interact with a site or feature but may impact them nonetheless, for example impacts on prey resources. For mobile receptor groups, such as offshore and intertidal ornithology, the pathways that inform the ZoI (as defined in Section 1.13.2) will capture remote sites where species distribution / ranges provide connectivity. Theoretical connectivity to potential sites for mobile species that use or traverse the area within the ZoI are typically defined by relevant foraging ranges, distribution or migratory corridors.

The potential impacts and pathways associated with each receptor group are presented in Table 3.4.

Table 3.4: Potential impacts and pathways associated with each receptor group

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
Coastal and Marine Habitats				
Physical habitat loss/ disturbance (temporary or permanent)	Physical interaction between the development and the proposed site (direct)	Installation of structures; Seabed preparation; Seabed dredging; Sediment disposal; and Vessel movements/ anchoring.	Physical presence of structures; and Maintenance of structures.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Suspended sediment/ deposition (temporary)	Effect travelling through the water column to reach the site/ feature (direct)	Installation of structures; Seabed preparation; Seabed dredging and sandwave clearance; and Sediment disposal.	Physical presence of structures; and Maintenance of structures.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Accidental pollution (temporary)	Effect travelling through the water column to reach the site/ feature (direct)	Release of contaminants; and Release of sediment (via all activities listed for suspended sediment/ deposition above).	Release of contaminants; and Release of sediment (via all activities listed for suspended sediment/ deposition above).	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Marine Invasive Non-Native Species (Marine INNS) (Permanent)	Presence of the works/ structures allowing non-native species to travel between sites and features (indirect)	Vessel movements on and off site; and Installation of solid structures.	Vessel movements on and off site; Maintenance Activities; and Physical presence of structures.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Changes to physical processes (Permanent)	Effects on sites and features from changes to water movements and transitional rates (indirect)	Installation of structures.	Physical presence of structures.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
Dust deposition (temporary)	Physical interaction airborne particles (i.e. dust) (indirect)	Ground investigation surveys; Enabling works and site clearance; and Excavation and groundworks; HDD.	N/A	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Migratory Fish				
Underwater Noise (temporary or permanent)	Effects of mortality, potential mortal injury, temporary threshold shifts (TTS) and behavioural responses as a result of noise propagating through the water column to reach the site and feature, including migrating individuals at sea (direct)	Piling; Acoustic/ geophysical surveys; UXO detonation; Construction vessel noise; Noise associated with other construction activities (e.g., dredging, trenching); Acoustic/ geophysical surveys.	Operation of maintenance vessels; Noise emitted during maintenance activities (e.g., cable re-burial) Operational WTGs.	Operation of decommissioning vessels; Noise emitted during decommissioning activities (e.g., removal of WTG foundations); and The above activities cumulatively. Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Suspended Sediment/ deposition (temporary)	Effects on supporting habitats and behavioural responses as a result of sediment plumes travelling through the water column to reach the site and feature, including migrating individuals at sea (direct)	Seabed preparation (e.g., seabed dredging and pre-lay grapnel runs); Installation of foundations e.g. drilling); Sediment disposal; Cable installation.	Maintenance of structures and cables.	Removal of infrastructure. Impacts have been assessed to be similar to construction on a precautionary basis, but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Accidental Pollution (temporary)	Effects of contamination as a result of accidental release or res-suspension of contaminated sediments travelling through the water column to reach the site/ feature, including migrating individuals at sea (direct)	Release of contaminants; Release of sediment (via all activities listed for suspended sediment/ deposition).		Impacts have been assessed to be similar to construction on a precautionary basis, but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
EMF (permanent)	Effects of behavioural disturbance as a result of artificial Electro-magnetic fields (EMF) along cable routes propagating through the water column to reach migrating individuals at sea (indirect)	N/A	Generation of EMF from installed cables.	N/A
Marine INNS (permanent)	Effects on site and feature through the release of INSS s into the environment (direct)	Vessel movements on and off site; Installation of solid structures.	Vessel movements on and off site; Maintenance activities; Presence of solid structures.	Vessel movements on and off site; Decommissioning activities; and The above activities cumulatively. Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Physical habitat loss/ disturbance (temporary or permanent)	Effects of reduced foraging area, and/or reduced quality of foraging areas impacting site and feature (direct and indirect)	Seabed preparation (e.g., dredging); Installation of foundations and scour protection; Installation of cables and cable protection; Sediment disposal; Vessel movements/ anchoring.	Maintenance of structures and cables.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Changes to prey (temporary or permanent)	Effects of reduced food availability to migrating fish feature as a result of habitat loss and/or disturbance of prey species(indirect)	Generation of underwater noise from construction, maintenance activities; Loss of supporting habitats (via all activities listed for physical habitat loss/ disturbance listed above); Vessel movements; EMF.		Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Vessel collision risk (temporary)	Effect of physical injury as a result of collision of migrating feature at sea with vessels along vessel routes (direct)	Operation of construction and survey vessels.	Operation of maintenance and survey vessels.	Operation of decommissioning vessels.

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
				Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Non-physical disturbance (light, visual) (permanent)	Effect of non-physical disturbance as result of visual effects on migrating feature at sea.	N/A	Operation of WTGs.	N/A
Marine Mammals				
Underwater noise (temporary)	Effect of auditory injury and disturbance as a result of noise travelling through water column to reach the site/marine mammal feature (direct)	Acoustic/ geophysical surveys (pre-construction); Piling; Unexploded Ordnance (UXO) clearance; Operation of construction and survey vessels; and Other construction activities.	Operation of maintenance vessels	Decommissioning activities; UXO clearance; and Operation of decommissioning vessels.
Vessel disturbance (temporary)	Effect of behavioural disturbance as a result of vessel presence and movement along vessel routes, and can potentially impact connected site and marine mammal feature (direct)	Operation of construction and survey vessels.	Operation of maintenance and survey vessels.	Operation of decommissioning vessels.
Vesel collision risk (temporary)	Effect of physical injuries as a result of collision of marine mammal feature with vessels (direct)	Operation of construction and survey vessels.	Operation of maintenance and survey vessels.	Operation of decommissioning vessels.
Increased concentration of suspended sediment (temporary)	Effect of foraging behavioural hindered by reduced underwater visibility as a result of suspension and/or redistribution of surface sediment which travels through water column to reach the site/ marine mammal feature (direct and indirect)	Installation of structures; Seabed preparation; Seabed dredging and sandwave clearance; and Sediment disposal.	Maintenance of structures; and In-combination effects of all maintenance activities.	Decommissioning of structures; and In-combination effects of all decommissioning activities.

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
Accidental pollution (temporary)	Effect of toxic contamination as a result of accidental release/spill or re-suspension of contaminants which travel through water column to reach the site/marine mammal feature (direct and indirect)	Release of contaminated substances via construction activities; Release of contaminated sediment (via all construction activities listed for "increased concentration of suspended sediment", above).	Release of contaminated substances via maintenance activities; Release of contaminated sediment (via all maintenance activities listed for "increased concentration of suspended sediment", above).	Release of contaminated substances via decommissioning activities; Release of contaminated sediment (via all decommissioning activities listed for "increased concentration of suspended sediment", above).
Changes to prey (temporary or permanent)	Effects of changes to prey availability and/or distribution (indirect)	All construction activities listed for Subtidal and Intertidal Benthic receptors, above; All construction activities listed for Migratory Fish receptors below.	All maintenance activities listed for Subtidal and Intertidal Benthic receptors, above; All maintenance activities listed for Migratory Fish receptors below.	All decommissioning activities listed for Subtidal and Intertidal Benthic receptors, above; All decommissioning activities listed for Migratory Fish receptors below.
Habitat loss/disturbance (temporary or permanent)	Effects of changes to habitat, and/or changes in quality of habitat (direct and indirect)	Changes to supporting habitat during installation of structures; Seabed preparation; Seabed dredging; Sediment disposal; Vessel anchoring.	Maintenance of structures; Use of jack-up vessels.	Changes to supporting habitat during removal of structures; Seabed dredging; Sediment disposal; Vessel anchoring..
Ornithology Receptors				
Direct disturbance and displacement (permanent)	Effect is a result of physical structures present within the movement/ migratory zones for features (direct)	Construction activity; Vessel movements.	Maintenance activity; Physical presence of turbines; Vessel movements.	Impacts have been assessed to be similar to construction on a precautionary basis but are anticipated to be less due to the potential for infrastructure to be left in situ (e.g. subsea cables) post-decommissioning.
Collision risk (permanent)	Effect is a result of physical structures present within the movement/ migratory zones for features (direct)	N/A	Physical presence of turbines.	N/A

Potential impact	Pathway	Activities potentially resulting in effect		
		Construction	Operation	Decommissioning
Barrier effects (permanent)	Effect is a result of physical structures present within the movement/ migratory zones for features (direct)	N/A	Physical presence of turbines.	N/A
Indirect effects (temporary or permanent) (e.g habitat loss/disturbance and changes to prey).	Effects of changes to habitat, and/or changes in quality of habitat (direct and indirect) and effects of changes to prey availability and/or distribution (indirect)	Effects on habitats; Changes in prey species availability and behaviour.	Effects on habitats; Changes in prey species availability and behaviour.	Effects on habitats; Changes in prey species availability and behaviour.

3.4.2 Impacts Not Included within Assessment for LSE

This section discusses the impacts that have been discounted and are no longer considered within this report. For migratory fish, no impacts have been screened out.

3.4.2.1 Coastal and Marine Habitat receptors

For coastal and marine habitat receptors the following impacts were screened out and are not considered further in this report:

- Visual / noise disturbance
- EMF
- Barrier effects

Visual disturbance

The introduction of artificial light or visual disturbance is unlikely to be relevant for most benthic invertebrates. Visual disturbance is only relevant to species that respond to visual cues, for hunting, behavioural responses, or predator avoidance, and that have the visual range to perceive cues at distance. It is particularly relevant to species that depend on sight but less relevant to benthic invertebrates. Although benthic invertebrates are likely to be present within the sites designated for coastal and marine habitats, there are no QIs for benthic invertebrates specifically, only designated habitats. In addition, there are no SACs designated for coastal and marine habitats that overlap with the proposed development boundary where visual disturbance would take place, therefore there is no impact pathway, and this impact can be discounted for coastal and marine habitats.

Noise disturbance

The evidence on the effects of underwater noise on marine benthic species is limited. The majority of benthic invertebrates (and, hence their communities) have limited or no known response to noise, although vibrations in the water column at close proximity may result in an avoidance response. Therefore, this pressure is considered to be 'Not relevant' to benthic species and habitats, unless specific evidence to the contrary is found (Tyler-Walters et al, 2018). Further studies investigating the impacts of the noise generated by wind turbine operation on marine fauna concluded no significant injuries on benthic invertebrates (Pearson, 2010; Sigray and Andersson, 2011). Although benthic invertebrates are likely to be present within the sites designated for coastal and marine habitats, there are no QIs for benthic invertebrates specifically, only designated habitats which will not be impacted by noise. Therefore, there is no impact pathway, and this impact can be discounted for coastal and marine habitats.

EMF

Indirect disturbance of benthic species from electromagnetic fields (EMF) generated by inter-array and export cables–- EMFs are likely to increase above background levels in close proximity to the cables only. As the cable will be buried or protected across most of the array area and ECC, any behavioural responses would be further mitigated. Furthermore, monitoring at OWFs to date has not recorded any changes in invertebrate behaviour resulting from EMF exposure. Although benthic invertebrates are likely to be present within the sites designated for coastal and marine habitats, there are no QIs for benthic invertebrates specifically, only designated habitats which will not be impacted by noise. Therefore, there is no impact pathway, and this impact can be discounted for coastal and marine habitats.

Barrier effects

There is no impact pathway for barrier effect to coastal and marine habitat receptors, therefore this impact is not considered further within the coastal and marine habitats assessment.

3.4.2.2 Migratory Fish

For migratory fish receptors the following impacts were screened out and are not considered further in this report:

- Barrier effects
- Marine invasive non-native species
- Changes in physical processes

Barrier effects

In the context of the open ocean, turbines are unlikely to constitute a barrier to mobile fish during migration or while living at sea. As such, were any barrier effects to occur to fish during operation, these are expected to be highly localised to the area immediately adjacent to the pile. Therefore, this impact is not considered further within the migratory fish assessment.

Marine invasive non-native species

The main pathway for invasive non-native species is from vessel traffic servicing the WTGs, as the ballast water from ships can carry non-native marine organisms which may colonise the introduced hard substrate associated with the WTGs. However migratory fish are not considered particularly susceptible to this effect given their range of mobility and therefore, there is a limited risk of potential impacts to migratory fish species.

Changes in physical processes

Migratory fish are not considered sensitive to any changes in physical processes, arising from tides, waves and currents, against the background of natural variability. They are capable of moving through water, and against current or strong water flow. Therefore, any potential change in physical processes would be considered minimal to the animals.

3.4.2.3 Marine Mammals

For marine mammal receptors, the following impacts were discounted and are not considered further in this report:

- Above water noise
- EMF
- Changes in physical processes
- Barrier effect
- Marine invasive non-native species

Above water noise

Given that cetacean species only breach the surface of the water for very brief periods for air and are transient and highly mobile, it is considered that there is no pathway for effect for above water noise. For seal species however, as they haul additional consideration is required. There is evidence that seal species can open and close the opening to the external auditory meatus during loud noise events, reducing the impact of exposure to anthropogenic noise (Kastak et al., 2005). Combined with the distance to the nearest haul out site (approximately 15km to the Lambay Islands SAC), it is considered that there is no pathway for seals and therefore the above water noise impacts can be discounted for marine mammal receptors.

EMF

Based on the latest data and research findings available, there is no evidence of EMF from array or export cables having any positive or negative impact on marine mammals (Copping, 2018). There is no evidence that the harbour seal or grey seal can detect or respond to EMF (Normandeau et al., 2011).

To date, the only cetacean species known to show any response to EMF is the Guiana dolphin (*Sotalia guianensis*), a species not occurring in this region, which has been shown to possess an electroreceptive system, by using its vibrissal crypts on its rostrum to detect electrical stimuli similar to those generated by small to medium sized fish (Czech-Damal et al., 2012). However, this has not been shown in any other species of marine mammal. Therefore, this impact is not considered further within the marine mammal assessment. Any indirect impacts of EMF, for example, in relation to changes to prey behaviour are considered within that impact pathway.

Changes in physical processes

Marine mammals are not considered sensitive to any changes in physical processes, arising from tides, waves and currents, against the background of natural variability. They are capable of moving through water, and against current or strong water flow. Therefore, any potential change in physical processes would be considered minimal to the animals. Any physical processes effects on the prey of marine mammals are considered as a standalone effect.

Barrier effect

Previous reviews have concluded that operational noise of offshore windfarms has negligible barrier effects on marine mammals (Madsen, 2006; Teilmann, 2006a; Teilmann, 2006b; Cefas, 2010; Brasseur, 2012). Post-construction monitoring from wind farms within the Firth of Forth has demonstrated that marine mammals are recorded within wind farms when operational (Iovio-Merlo, 2024. As such, were any barrier effects to occur to marine mammals during operation, these are expected to be extremely localised to the area immediately adjacent to the pile, if at all, considering data showing seal predation within wind farms (Russell et al., 2014). Therefore, this impact is not considered further within the marine mammal assessment.

Marine Invasive non-native species (Marine INNS)

Impacts of introducing marine INNS as a result of offshore wind developments are not considered to be a risk to marine mammals as top predators and generalist feeders. There is currently a lack of relevant studies of potential impacts of marine INNS on marine mammals (Watson et al., 2024), which could be due to the fact that the estimated effect will be negligible at worst. Any impact of marine INNS to the prey of marine mammals will be considered as a standalone effect.

3.4.2.4 Offshore and intertidal ornithology

For offshore and intertidal ornithology, the following impacts were screened out and are not considered further in this report:

- Visual / noise disturbance
- Underwater noise
- Marine invasive non-native species
- Accidental release of contaminants

Visual / noise disturbance

Both visual and noise disturbance impacts are already accounted for within the screened in disturbance and displacement assessment. The effects of visual and noise disturbance are restricted spatially, and temporally, and birds have the ability to relocate away from the disturbance. Furthermore, any visual and auditory disturbance effects would impact birds through displacement as they avoid sources. Any further potential for disturbance impacts to occur on birds as a result of visual and/or noise disturbance from construction, operation and decommissioning of the proposed development is expected to be minimal. Therefore, this impact is not considered further within the ornithology assessment.

Underwater noise

Underwater noise generated by offshore wind developments is not expected to adversely affect ornithological receptors. The majority of species have very low sensitivity; unlike marine mammals and fish, subsea noise is not considered a risk factor for seabirds as they spend most of their time above or on the water surface. For example, seabirds that may shallow dive, dip, dive or surface feed are of limited sensitivity to underwater noise, due to the brevity of exposure time and sensitivity to disturbance. Terns that feed by shallow dives are therefore considered unlikely to be vulnerable. For deeper diving birds, such as auks, there is some evidence (e.g., Mooney, 2020) to suggest potential impacts from underwater noise, however in this this case any effects would be limited temporally and spatially. Based on what is known about the physiology of hearing in birds they do not hear well underwater, and therefore they are unlikely to be impacted when diving. Anatomical studies of ear structures in diving birds (e.g., Dooling and Therrien, 2012), suggest that there are adaptations for protection against the large pressure changes that occur while diving which may protect the ear from damage due to acoustic over-exposure. Furthermore, unlike marine mammals, birds are highly mobile and can remain on the surface to avoid the noise or relocate to other areas for foraging with minimal energy expenditure, therefore avoiding potential damage. Based on the foraging ranges provided by Woodward et al. (2019), there is a large area of alternative habitat that seabirds can exploit if they are temporarily disturbed from an area. Moreover, any potential displacement effects are considered within the displacement assessment, and as such any potential impacts from underwater noise are not considered further within the ornithology assessment.

Marine Invasive non-native species

Impacts relating to marine INNS as a result of offshore wind developments are not considered to be a risk to ornithological receptors. The main impacts to birds in relation to terrestrial INNS arise from mammalian predators, such as the introduction of rats onto previously rat-free islands, or from larger mammals such as foxes. As there is not considered to be an interaction between the introduction of mammalian predators and offshore wind developments, this impact is not considered further within the offshore ornithology assessment.

Accidental release of contaminants

During the construction, operation and decommissioning of the proposed development, there is potential for impacts on birds arising due to accidental release of contaminants. However, pursuant to legislative requirements, e.g., those within the International Convention for the Prevention of Pollution from Ships (MARPOL), which prohibit discharge of contaminants, there will not be any impact pathway to ornithological features. Therefore, this impact is not considered further within the offshore ornithology assessment. Other receptor groups may be more sensitive to accidental release of contaminants and are therefore still considered for this impact within this assessment.

Artificial Light (from offshore construction)

The presence of artificially illuminated structures namely WTGs, OSP and vessels during construction, operation and decommissioning phases has the potential to impact birds by deterring some species and attracting other species. For deterred birds, any changes in flight path may increase energy expenditure and add to any displacement effects, whereas for birds attracted, impacts may be similar with a potential increase in the risk of collision.

Most species recorded in surveys for the proposed development (fulmar, gannet, kittiwake and auk species) are unlikely to be active at night, with birds either returning to colonies overnight or roosting on the sea surface (Wade et al., 2016). This has been evidenced by tracking studies, namely Furness et al. (2018) that found gannet flight and diving activity was minimal during the night, and a study by Kotzerka et al. (2010) that reported kittiwake foraging trips primarily occurred during daylight hours and were mostly inactive at night. The main species which are expected to have higher activity during the night are fulmar, Manx shearwater and European storm petrel.

Considering potential impacts relating to increased energy expenditure, evidence for these impacts occurring is varied, with research largely originating from studies on oil and gas platforms which are more extensively and intensively lit than OWFs (APEM, 2023; Ronconi et al., 2015).

Additionally, though species such as Manx shearwater are considered at potential risk due to nocturnal activity, the potential for impacts is still considered low. Although there is some evidence of foraging occurring at night in Scotland (Kane, 2020), Manx shearwater forage almost exclusively during daylight hours (corresponding to the diurnal diel movements of their primary prey source within the Celtic Sea region, clupeid fish (Shoji et al., 2016; Dean, 2012). Nocturnal activity is therefore predominantly associated with birds rafting and then returning to burrows after dusk. Since key foraging trips are not expected to be undertaken during nocturnal hours, potential impacts from artificial light in terms of impacts on energy expenditure are unlikely to be adverse.

Additionally, available evidence suggests that light-disorientation of Manx shearwaters does not occur at large distances from the light source but is instead related to birds which are within vicinity of the artificial light (Guilford et al., 2019). Research is also largely focussed on maiden flights, with attraction of fledgelings to artificial light predominantly seen in weather conditions involving very poor visibility (Brown et al., 2022; Archer et al., 2015).

In relation to potential increased collision risk due to artificial light for fulmar, Manx shearwater and European storm petrel, these species are expected to remain a very low collision risk with a minimal proportion of flights occurring at collision risk height. Notably available flight height information is based on data collected during daylight hours, however Manx shearwater engage in slope-soaring and birds are likely to remain low to the sea surface where the wind shear is strongest regardless of the weather conditions or visibility (Spivey et al., 2014). Therefore, the likelihood of increased collision risk during nocturnal hours is very low.

There is also potential for impacts to migratory birds if large numbers of birds pass through the array area in a single event, leading to disorientation or collisions. However, there is insufficient evidence from current literature or any existing OWFs to suggest mass collision events occur because of aviation and navigation lighting at OWFs. Available evidence from Welcker et al. (2017) and Kerlinger et al. (2010) found nocturnal migrants do not have a higher risk of collision with wind energy facilities than diurnally active species, nor do mortality rates increase at OWFs with lighting compared to those without. Additionally, studies have shown that birds alter their nocturnal flight to counteract the risk of collision with WTGs as birds tend to fly down the centre of corridors, further away from the structures (Dirksen et al., 2000; Desholm and Kahlert, 2005).

Based on the above evidence, regardless of the sensitivity of the receptor, any impacts resulting from disorientation and/or collision of ornithological receptors as a result of artificial light can be ruled out.

3.4.3 Determination of LSE for SPAs

The screening process for offshore and intertidal ornithology first identified all European Sites with designated ornithology features with potential connectivity to the proposed development. The Ornithology screening table (Table 3.13) considers all Irish and UK coastal SPAs and identifies those sites where a designated feature falls into the criteria outlined in Table 3.5. The following descriptions provide context to the criteria used in the screening process.

3.4.3.1 Seabirds

Connectivity and the potential for LSE has been assessed using the available literature. Bradbury et al. (2014), Dierschke et al. (2016), and Fliessbach et al. (2019) have undertaken comprehensive analyses of various seabirds' vulnerability to collision or displacement from OWFs. Any features that are considered not vulnerable to OWF impacts have been screened out. The use of these sources and their ranking criteria is common practice within OWF assessments to determine LSE for ornithological features.

It should be noted that connectivity of seabird features varies throughout the year, with seabirds in the breeding season being constrained by the need to provision for young. Definitions of connectivity criteria are outlined in Table 3.5. Breeding season connectivity was determined by species-specific foraging ranges presented in Woodward et al. (2019). To remain precautionary, all sites within mean-maximum foraging range plus one standard deviation (MMF+1SD) have been considered.

Since seabirds travel around land while foraging, potential connectivity, or distance, between Irish and UK coastal SPAs and the proposed development, has not been calculated as a direct, linear distance. The distance has instead been calculated around land to mimic realistic foraging behaviours of the various ornithological features.

All SPAs within 300km are included in Table 3.13 For SPAs beyond 300km, only features which have breeding season connectivity were included (based on foraging ranges in Table 1.8), for example gannet and kittiwake due to their larger foraging ranges.

All SPAs within the regional population were considered to have non-breeding season connectivity.

Collision risk

Where connectivity with SPAs is identified, species are only screened in for the collision risk assessment if they are considered vulnerable to collision impacts. Species which were identified as having medium or higher vulnerability according to Bradbury et al. (2014) were considered for the collision risk assessment, if birds were recorded in sufficient numbers in DAS data. Species considered include:

- Kittiwake
- Black-headed gull
- Common gull
- Great black-backed gull
- Herring gull
- Lesser black-backed gull
- Roseate tern
- Common tern
- Arctic tern
- Gannet

Fulmar and Manx shearwater are both considered to have low vulnerability to collision impacts, however they have been included for this impact at selected sites within close proximity to the proposed development (e.g., the North West Irish Sea cSPA) where impacts will be predominantly localised to, with this presenting a precautionary approach.

Disturbance and displacement

Where connectivity with SPAs is identified, species are only screened in for the collision risk assessment if they are considered vulnerable to collision impacts. Species which were identified as having medium or higher vulnerability according to Bradbury et al. (2014) were considered for the disturbance and displacement assessment, if birds were recorded in sufficient numbers in DAS data. Species considered include:

- Red-throated diver
- Great northern diver
- Common scoter
- Guillemot
- Razorbill
- Puffin
- Gannet

Manx shearwater is considered to have low vulnerability to displacement impacts but has been included for this impact at selected sites within close proximity to the proposed development (e.g., the North West Irish Sea cSPA) where impacts will be predominantly localised to, with this presenting a precautionary approach.

Diver species and common scoter are considered vulnerable to vessel activity (e.g., Dierschke et al., 2006; Bellebaum et al., 2006), however research on vulnerability to displacement from the presence of offshore infrastructure is comparatively limited. Additionally, their distribution is predominantly coastal with no great northern diver or common scoter recorded in site-specific DAS data in the array area plus 4km buffer, and only one red-throated diver which was recorded in the 4km buffer. Therefore, consideration is given to displacement impacts due to vessel activity in the ECC only.

For all other species, the main form of displacement is expected to arise from the presence of offshore infrastructure (Bradbury et al., 2014; Dierschke et al., 2016) and therefore impacts are considered in the array area (and relevant buffer) only.

Barrier effects

There is potential for the proposed development to provide a barrier to movement for some species at designated sites. Detailed consideration of barrier effects is provided for the North-West Irish Sea SPA and Rockabill SPA qualifying interests only, with these sites being in very close proximity to the proposed development. For other SPAs, the greater distance from the proposed development is such that connectivity with the array area will be reduced. Therefore, there is low potential for the proposed development to create a barrier to movement and limit access to the SPA or ecologically important sites outside the SPA. Additionally, impacts arising from barrier effects are already accounted for within the assessment of displacement impacts for relevant species.

3.4.3.2 Migratory birds

Connectivity of migratory qualifying interests was determined by both distance to the array area and available information on migratory corridors from Woodward et al. (2023).

SPAs with high connectivity to the development, quantified using the Migropath tool (Section 3.4.3.3), were scoped in and included in Table 3.13 Further details on the migropath methodology are provided below.

Migratory species with no evidence of connectivity have been screened out of the assessment, with likely significant effects on ornithological receptors beyond this range considered highly unlikely. The negligible numbers that do migrate through the array area would only do so on a maximum of two occasions per year. Furthermore, migratory species are less at risk from adverse effects caused by the proposed development during migration. The costs of one-off avoidances during migration are trivial, accounting for less than 2% of available fat reserves (Masden et al., 2010; 2012; Speakman et al., 2009). Lastly, the vast majority of the predicted impacts on migratory features will be apportioned to SPAs in proximity to the array, leaving a de minimis contribution to distant SPAs. Therefore, there is no opportunity for any LSE to manifest for these species and limited or no connectivity from the proposed development, and they have therefore been screened out.

3.4.3.3 Migropath screening of migratory species

Migratory connectivity was established using migropath modelling. In order to screen-in relevant SPAs to the array area, a quantifiable approach was used that captured the percentage of bird migration pathways that could intersect with the array area. All geometry and data manipulation functions utilised within this method were carried out within the software QGIS 3.34. UK and Irish SPA boundary data was obtained from relevant sources (JNCC and NPWS). A centroid value was then calculated for each SPA, by using the geometry tool “Centroids”. This algorithm creates a new point layer that represents the centroid of the geometrics of an input layer. The coastlines of Continental Europe and Iceland were split into 1km points, with each point being labelled with a unique identification, to capture representative southern and northern bird migratory endpoints. Using the “MMQGIS Hub Lines tool”, each point along these coastlines were joined to the centre of each SPA. For each SPA this created a unique vector layer of lines from the SPA to each individual endpoint that represented all possible migratory pathways.

Using the geoprocessing tool “Intersection” the number of lines, from each SPA to the north and south endpoints, that directly passed through the array area could be counted. The “Intersection” algorithm extracts the overlapping proportions of features in an input layer (SPA lines shapefile) that overlap with an overlay layer (project array boundary layer). A unique intersection layer was then created for each SPA. Each SPA intersection layer was then combined into a single layer by utilising the processing toolbox function “Merge vector layers”. The “Statistics by categories” function was then used to create an exportable attributes table containing a list of all SPAs that intersected with the array area, and the number of lines to do so. SPAs that had no lines intersecting with the array area were removed at this point. Utilising the number of northern (7311) and southern (7110) migratory endpoints, a percentage of lines intersecting, for each relevant SPA, with the array area could then be calculated from the exported attributes table. In order for relevant SPAs to be included within following assessments, only those with at least 10% of lines intersecting with the array were carried forward. SPAs with percentage intersections below this threshold were deemed to equate to a number of potential birds passing through the array area that would be negligible in following assessments. However, if an SPA was deemed to be relevant to the proposed development boundary, it was also included in the final SPA screening results. A high-level summary of the screening methodology is presented in the flowchart below (Figure 3.5).

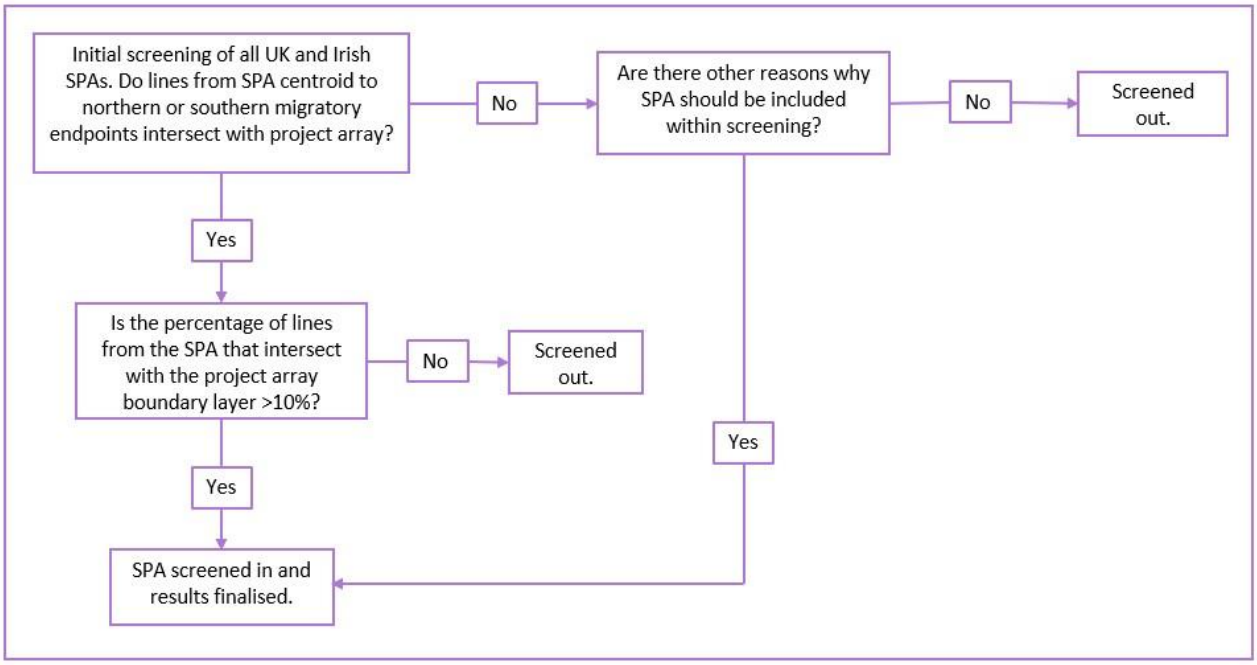

Figure 3.5: Overview of the methodology used for screening migratory species

With respect to ornithology, SPAs located on the west coast of Ireland were considered, however it was determined that there is no pathway or LSE for any designated features at these sites. For those species with potential connectivity, it is considered extremely unlikely that birds will fly from the west coast into the Irish Sea. For example, though Manx shearwater have one of the largest foraging range of species considered, available tracking data from colonies on the west coast of Ireland shows that no birds move over land or into the Irish Sea, with birds instead moving west on migrations (Wischnewski et al., 2019).

After screening has been undertaken, the remaining sites and features for which a pathway may exist are presented in Section 3.4 where they are screened in or out depending on potential for LSE. The resulting sites screened in as shown in are considered in-combination (see Section 3.4.5).

Table 3.5: Screening criteria used for offshore and intertidal ornithology receptors

Criteria	Definition	Relevant distance/ range to determine connectivity with qualifying features
Criterion 1	National Site Network/European Sites which have physical overlap with the proposed development array areas or ECC.	Direct overlap between designated site and array area or ECC

Criteria	Definition	Relevant distance/ range to determine connectivity with qualifying features
Criterion 2	National Site Network/European Sites that occur within a defined range of effect (in this case MMF+1SD of the proposed development). This Criterion only identifies sites with seabird receptors that are interest features in the breeding season since it is only at that part of the year that a numeric range can be stated based on foraging distances from the designated site. Consequently, only breeding features of relevant SPAs/ Ramsar Sites are assessed for Criterion 2).	MMF+1SD, Woodward et al. (2019) provides the most up-to-date collation of seabird foraging ranges based on multiple individuals from numerous study colonies. Table 1.8 provides an overview of Woodward et al., (2019) foraging ranges.
Criterion 3	European Sites which occur within range of the maximum expected extent of displacement/ disturbance due to Project activities.	Intertidal: 0.5km Seaducks: 4km Divers: 10km (Ranges based on advice from UK Statutory Nature Conservation Bodies (SNCBs), 2022 and recent discussion (relevant to red-throated diver).
Criterion 4	Seabird non-breeding season connectivity consisting of both: (1) seabirds that will disperse from the wider bio-geographic region into the array area or ECC (2) seabirds that might pass through the array on migration or in winter. Relevant breeding SPAs for each species from colonies located along the eastern seaboard of Ireland and west coast of the UK. These SPAs have been carried forward to the determination of LSE stage.	All SPA colonies that form part of the defined regional population are considered for non-breeding season connectivity. This includes seabirds that fall into categories (1) and (2).
Criterion 5	Connectivity with migratory non-seabird species. Relevant SPAs designated for non-seabird species located along the eastern seaboard of Ireland and west coast of the UK.	Only SPAs with migratory features that showed high migratory connectivity to the array were screened in. For further details see the Migropath screening of migratory species section.

3.4.4 Determination of LSE for SACs

The screening for coastal and marine habitats, marine mammals and migratory fish first identified all European Sites with the respective designated features located within the ZoI. All sites identified within this first stage were then included within the test for LSE.

3.4.5 Determination of LSE In-combination

As stated previously, Article 6(3) of the Habitats Directive requires that in-combination impacts with other plans and projects are also considered within this assessment.

In the case of projects, in-combination impacts of both plans and projects must be considered (i.e. not solely other projects). The in-combination assessment is required to consider plans or projects that are:

- Projects under construction
- Operational projects (only if there is an ongoing unquantified/ residual effect)
- Those projects that are only partially constructed at the time that baseline characterisation is undertaken
- Those projects that were only recently completed, during the development of the baseline characterisation, the full extent of the impacts arising from the development(s) may not be reflected in the baseline
- Those plans and projects which may have consent or licences to undertake further work, such as maintenance dredging or notable maintenance works which may arise in additional effects
- Permitted application(s), but not yet implemented

- Submitted application(s), but not yet determined
- Activities which require licences or other consents
- Projects on the National Marine Planning website including those at pre-application stage where adequate information is available (for UK projects)
- Projects identified in the relevant development plans (including Offshore Renewable Energy Development Plan (OREDP) I, and OREDP II) (and emerging development plans – with appropriate weight given as they move closer to adoption) recognising that information on any relevant proposals will be limited
- Projects identified in other plans and programmes (including National Marine Planning Framework, and Designated Maritime Area Plans (DMAP)) (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward

As already established, this SISAA does not consider LSE in-combination, but defers the in-combination assessment to the NIS with the following methodology used to determine which of the sites considered for LSE alone would require further assessment in-combination:

- Any sites that have been screened in for further assessment alone have also been screened in for in-combination consideration
- Any sites that have been screened out for further assessment alone have been screened in for in-combination consideration with the exception of those screened out alone on the basis of no connectivity or likely trivial effects

The in-combination assessment within the NIS considers the longlist of reasonably foreseeable proposals, and the tiers into which they have been allocated, as presented in Tables 3.6 to 3.9.

The tiers have been defined as:

- Tier 1 – The OMF
- Tier 2 – The east coast Phase One Offshore Wind Farms
- Tier 3 – All other plans and projects.

Table 3.6: Plans and projects identified for inclusion in in-combination assessment for coastal and marine habitats

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Greenore Operations and Maintenance Facility (OMF)	Operations and Maintenance Facility (OMF)	1	Ireland	Pre-consent
Oriel Wind Park	Phase One Offshore wind farm	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Drogheda Port Company	Dredging	3	Ireland	Consented
Warrenpoint	Dredging	3	Ireland	Consented
Planning ref. 301635	Residential Development	3	Ireland	In planning
Greater Dublin Drainage Project	Greater Dublin Drainage Project	3	Ireland	In planning

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
BusConnects Clongriffin to City Centre Core Bus Corridor Scheme	Transport Infrastructure	3	Ireland	Consented
Planning ref. 313337	Residential Development	3	Ireland	In planning
Planning ref. 313494	Residential Development	3	Ireland	In planning
Planning ref. 316444	Residential Development	3	Ireland	In planning
Planning ref. 313362	Residential Development	3	Ireland	Consented
Planning ref. 312112	Residential Development	3	Ireland	Consented
Planning ref. 313361	Residential Development	3	Ireland	In planning
BusConnects Swords to City Centre Bus Corridor Scheme	Transport Infrastructure	3	Ireland	In planning
Grid connection infrastructure for solar development	Electricity Infrastructure	3	Ireland	Consented
Provision of a double circuit 110kV underground transmission line SID/01/19 (ABP 303687-19)	Electricity Infrastructure	3	Ireland	Consented
Planning ref. ABP 313360-22	Residential Development	3	Ireland	In planning
School Development amendments	School Development	3	Ireland	Consented
Belcamp Extension Project	Electricity Infrastructure	3	Ireland	Consented
Planning ref. F21A/0647	Residential Development	3	Ireland	In planning
Synchronous Compensator Development south of Belcamp Substation	Electricity Infrastructure	3	Ireland	Consented
Planngin ref. 3696/18	Commercial Developments	3	Ireland	Consented
MetroLink – Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin	Transport Infrastructure	3	Ireland	In planning
Metrolink 110kV Proposed development of three 110kV electricity circuits	Electricity Infrastructure	3	Ireland	In planning
Planning ref. F23A/0034	Commercial Development	3	Ireland	Consented
Fingal Coastal Way	Greenway	3	Ireland	Pending Application
Development of an aviation fuel pipeline	Infrastructure Development	3	Ireland	Consented
R132 Connectivity Project	Transport Infrastructure	3	Ireland	Consented
Bremore Regional Park Development Project	Sports and Recreation	3	Ireland	Consented
Planning ref. 305623	Residential Development	3	Ireland	Consented

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Planning ref. 312855	Residential Development	3	Ireland	In planning
East Meath – North Dublin Grid Upgrade project	Electricity Infrastructure	3	Ireland	In planning

Table 3.7: Plans and projects identified for inclusion in in-combination assessment for migratory fish receptors.

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Greenore OMF	Operation and Management Facility	1	Ireland	Pre-consent
Oriel Wind Farm	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Dublin Array	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Codling Offshore Wind Park	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Arklow Bank Phase 2	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Drogheda Port Company	Dredging and disposal at sea	3	Ireland	Consented
Dublin Port Company MP2 Project	Dredging and disposal at sea	3	Ireland	Consented
Dublin Port	Maintenance dredging	3	Ireland	Consented
Mares Connect	Subsea Cables	3	Ireland	Pre-consent
Warrenpoint B	Disposal at Sea	3	Ireland	Consented
Aqua Comms Havingsten Telecommunication Cable	Active telecommunications cable	3	Ireland	Consented - Active
EU NETWORKS Rockabill Telecommunications Cable	Active telecommunications cable	3	Ireland	Consented - Active
Eirgrid Interconnector Ltd East West Interconnector	Active power cable	3	Ireland	Consented - Active
Hibernia Atlantic HIBERNIA ‘C’	Active telecommunications cable	3	Ireland	Consented - Active
Virgin Media SIRIUS SOUTH	Active telecommunications cable	3	Ireland	Consented - Active
Aqua Comms Celtix Connect Sea Fibre Networks	Active telecommunications cable	3	Ireland	Consented - Active
ZAYO Emerald Bridge One	Active telecommunications cable	3	Ireland	Consented - Active
BT ESAT 2	Active telecommunications cable	3	Ireland	Consented - Active

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Proposed Mares Connect Electricity Interconnector	Site Investigation	3	Ireland	Consented
Codling Wind Park	Site Investigation	3	Ireland	Consented
Arklow Bank Wind Park Phase 2	Site surveys	3	Ireland	Both consented and pre-consent
Ringsend Wastewater Treatment Works	Extension	3	Ireland	Consented
Greenore Port Development	Construction including dredging	3	Ireland	Consented
Arklow Bank Phase 2	Construction of Operations and Maintenance Base	3	Ireland	Consented

Table 3.8: Plans and projects identified for inclusion in in-combination assessment for marine mammals.

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
OMF	Operations and Maintenance Facility (OMF)	1	Ireland	Pre-consent
Codling Wind Park	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Dublin Array	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Arklow Bank	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Oriel	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Mona	OWF	3	England	Concept/Early Planning
Morgan	OWF	3	England	Concept/Early Planning
Awel y Môr	OWF	3	Wales	Consented
Morecambe	OWF	3	England	Concept/Early Planning
Erebus Floating Wind Demo	OWF	3	Wales	Consented
White Cross	OWF	3	Wales	Consent Application Submitted

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
TwinHub	OWF	3	Wales	Lease awarded 2020. Manufacturing to start end of 2026.
Greenlink Interconnector	Subsea Cable	3	Ireland	Construction 2023 – 2024
Fair Head Phase 2	Tidal	3	England	Construction 2023 – 2025
Cardiff Bay Tidal Lagoon	Tidal	3	Wales	Construction 2023 – 2026
Saint-Brieuc	OWF	3	France	Under Construction
Isle of Man	OWF	3	Isle of Man	Concept/Early Planning
North Channel Wind 1	OWF	3	Ireland	Concept/Early Planning
Valorous	OWF	3	England/Wales	Pre-lease Concept/Early Planning (Project planning and design phase)
Llyr 1	OWF	3	England/Wales	Lease rights subject to HRA Concept/Early Planning (Preparing to submit EIA)
Llyr 2	OWF	3	England/Wales	Lease rights subject to HRA Concept/Early Planning (Preparing to submit EIA)
Sceirde Rocks	OWF	3	Ireland	Phase 1 (MAC awarded)
Atlantic Marine Energy Test Site	OWF	3	Ireland	Consented
Mares Connect	Subsea Cable	3	Ireland	Proposed
CeltixConnect – Sea Fibre Networks	Subsea Cable	3	Ireland	TBC
West Anglesey Demonstration Zone	Tidal	3	Wales	Construction 2023 – 2025
West Somerset Tidal Lagoon	Tidal	3	England	In-planning
Dublin Port Company MP2 Project	Coastal Assets	3	Ireland	Application submitted
Arklow Waste Water Treatment Plant	Coastal Assets	3	Ireland	Construction 2023 – 2029

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Maintenance dredging River Boyne, Drogheda	Coastal Assets	3	Ireland	Approved, ongoing operations
Bremore Port	Coastal Assets	3	Ireland	Construction 2028 – 2030
NISA Site Investigation	Site Investigation Surveys	3	Ireland	Construction 2023-2026
Lir Offshore Array Ltd.	Site Investigation Surveys	3	Ireland	Construction 2023
Codling Wind Park Ltd.	Site Investigation Surveys	3	Ireland	Construction 2023-2028
MaresConnect Site Investigation	Site Investigation Surveys	3	Ireland	Construction 2024 – 2028
Clogher Head Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2023
Rockabill Cable Systems Ltd Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2023 – 2031
Oriel Windfarm Ltd Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2023 – 2026
Braymore Point Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2023 – 2025
Sunrise Wind Ltd. Site Investigations*	Site Investigation Surveys	3	Ireland	Construction 2023 – 2026
Wicklow Sea Wind Ltd Site Investigations*	Site Investigation Surveys	3	Ireland	Construction 2023 – 2024
Arklow Bank Wind Park Phase 2 Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2023 – 2027
Arklow Bank Wind Park Site Investigations	Site Investigation Surveys	3	Ireland	Construction 2024 – 2030
Banba Wind Ltd. Site Investigations*	Site Investigation Surveys	3	Ireland	Construction 2023 – 2026
Hibernian Wind Power Site Investigations*	Site Investigation Surveys	3	Ireland	Construction 2023
Energia Site Investigations*	Site Investigation Surveys	3	Ireland	Construction 2023 – 2025
Mersey Tidal Power	Tidal	3	England	Construction 2023 – 2031

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Milford Haven Estuary (META Phase 2) – Warrior Way	Tidal	3	Wales	Decommissioning 2026
LirlC	Subsea Cable	3	Ireland	Construction 2028
Xlinks	Subsea Cable	3	England	Construction 2027 – 2029
MORECAMBE DP4 TO CPP1	Pipeline	3	Ireland	Decommissioning 2023
MORECAMBE CPP1 TO DP3	Pipeline	3	Ireland	Decommissioning 2023
MORECAMBE DP3 TO CPP1	Pipeline	3	Ireland	Decommissioning 2023
Dublin Port Masterplan (3FM Plan)	Coastal Assets	3	Ireland	Construction 2023 – 2031
Dublin Port maintenance dredging	Coastal Assets	3	Ireland	Construction 2023 – 2031
Development at Greenore Port	Coastal Assets	3	Ireland	Construction 2023 – 2031
Arklow Bank Wind Park Phase 2 OMF	Coastal Assets	3	Ireland	Construction 2023 – 2025
EirGrid Celtic Interconnector	Coastal Assets	3	Ireland	Construction 2024 - 2026

* Survey is associated with an OWF that is outside of a DMAP and MARA have confirmed that these will not be approved

Table 3.9: Plans and projects identified for inclusion in in-combination assessment for ornithology

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Oriel Wind Park	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Codling Wind Park	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Arklow Bank Phase 2	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Dublin Array	OWF	2	Ireland	Phase One OWF Concept/Early Planning (MAC awarded)
Awel-y-Mor	OWF	3	Wales	Consented

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Erebus	OWF	3	Ireland	Consented
Morgan	OWF	3	England	Pre-Consent
Mona	OWF	3	Wales	Pre-Consent
Gwynt y Mor	OWF	3	Wales	Operational
Rhyl Flats	OWF	3	Wales	Operational
Burbo Bank Extension	OWF	3	England	Operational
North Hoyle	OWF	3	Wales	Operational
Walney Extension 3	OWF	3	Ireland	Operational
Walney Extension 4	OWF	3	Ireland	Operational
West of Duddon Sands	OWF	3	Scotland	Operational
Walney 2	OWF	3	Ireland	Operational
Walney 1	OWF	3	Ireland	Operational
Burbo Bank	OWF	3	England	Operational
Ormonde	OWF	3	UK	Operational
Barrow	OWF	3	Scotland	Operational
Robin Rigg East	OWF	3	Scotland	Operational
Robin Rigg West	OWF	3	Scotland	Operational
Arklow Bank Phase 1	OWF	3	Ireland	Operational
Morecambe	OWF	3	Wales	Concept/ Early Planning
Sceirde Rocks Windfarm	OWF	3	Ireland	Phase 1 (MAC Awarded)
Minesto	Tidal Energy	3	France	Operational
Broadmeadow Way - Greenway between Malahide Demesne and Newbridge Demesne	Greenway	3	Ireland	Consented
DART+	Transport Infrastructure	3	Ireland	Pending Application
Fingal Coastal Way	Greenway	3	Ireland	Pending Application
Bremore Regional Park Development Project	Sports and Recreation	3	Ireland	Consented
Planning ref. 3016504	Residential Development	3	Ireland	In planning
Greater Dublin Drainage Project	Greater Dublin Drainage Project	3	Ireland	In planning
BusConnects Clongriffin to City Centre Core Bus Corridor Scheme	Transport Infrastructure	3	Ireland	Consented

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
Planning ref. 313337	Residential Development	3	Ireland	In planning
Planning ref. 313494	Residential Development	3	Ireland	In planning
Planning ref. 316444	Residential Development	3	Ireland	In planning
Planning ref. 313362	Residential Development	3	Ireland	Consented
Planning ref. 312112	Residential Development	3	Ireland	Consented
Planning ref. 313361	Residential Development	3	Ireland	In planning
BusConnects Swords to City Centre Bus Corridor Scheme	Transport Infrastructure	3	Ireland	In planning
Grid connection infrastructure for solar development	Electricity Infrastructure	3	Ireland	Consented
Provision of a double circuit 110kV underground transmission line SID/01/19 (ABP 303687-19)	Electricity Infrastructure	3	Ireland	Consented
Planning ref. ABP 313360-22	Residential Development	3	Ireland	In planning
School Development amendments	School Development	3	Ireland	Consented
Belcamp Extension Project	Electricity Infrastructure	3	Ireland	Consented
Planning ref. F21A/0647	Residential Development	3	Ireland	In planning
Synchronous Compensator Development south of Belcamp Substation	Electricity Infrastructure	3	Ireland	Consented
Planngin ref. 3696/18	Commercial Developments	3	Ireland	Consented
MetroLink – Estuary through Swords, Dublin Airport, Ballymun, Glasnevin and City Centre to Charlemont, Co. Dublin	Transport Infrastructure	3	Ireland	In planning
Metrolink 110kV Proposed development of three 110kV electricity circuits	Electricity Infrastructure	3	Ireland	In planning
Planning ref. F23A/0034	Commercial Development	3	Ireland	Consented
Fingal Coastal Way	Greenway	3	Ireland	Pending Application
Development of an aviation fuel pipeline	Infrastructure Development	3	Ireland	Consented
R132 Connectivity Project	Transport Infrastructure	3	Ireland	Consented
Bremore Regional Park Development Project	Sports and Recreation	3	Ireland	Consented
Planning ref. 305623	Residential Development	3	Ireland	Consented
Planning ref. 312855	Residential Development	3	Ireland	In planning

NAME	TYPE	CURRENT TIER	COUNTRY	STATUS
East Meath – North Dublin Grid Upgrade project	Electricity Infrastructure	3	Ireland	In planning

3.5 Summary of Screening

Following the ZoIs identified (see Section 1.13.2) and the above information describing the screening process, various sites have been screened in for consideration. Table 3.10, Table 3.11, Table 3.12 and Table 3.13 present the sites identified, their distance to the proposed development, associated designated features, impacts for which they are considered, and the rationale used to screen them in or out at this stage.

3.5.1 Identification of potential LSE – Coastal and Marine Habitats

Table 3.9: Table of sites and features identified for coastal and marine habitat receptors

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
Malahide Estuary SAC	20.3km	16.2km	0km Immediately adjacent	Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide; • *Salicornia* and other annuals colonising mud and sand; • Atlantic salt meadows; and Mediterranean salt meadows.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution • Marine INNS; and • Dust deposition	The site is within the ZoI of 20km of the ECC and is immediately adjacent to the onshore development area and as described within Section 1.13.2 has therefore has been considered for suspended sediment / deposition, accidental pollution, marine INNS and dust deposition both alone and in-combination. Although the site is beyond the 20km ZoI for the array area, this site has also been screened in for the array area on a precautionary basis.	Yes for Suspended sediment / deposition, Accidental pollution, Marine INNS, and Dust deposition
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	The site is within the ZoI of 20km of the ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, changes to physical processes and marine INNS only both alone and in-combination. Although the site is beyond the 20km ZoI for the array area, this site has also been screened in for the array area on a precautionary basis.	Yes for Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS
Rogerstown Estuary SAC	15.7km	12.5km	0km Immediately adjacent	Annex I habitats: • Estuaries; • Mudflats and sandflats not covered by seawater at low tide; • *Salicornia* and other annuals	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; • Marine INNS; and • Dust deposition	The site is within the ZoI of 20km of the Array and ECC, and is immediately adjacent to the onshore development area, as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, marine INNS, and dust deposition for both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution, Marine INNS, and Dust deposition

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
				colonising mud and sand; • Atlantic salt meadows; and Mediterranean salt meadows.	Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	The site is within the ZoI of 20km of both the Array and ECC as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, changes to physical processes and marine INNS only for both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS
Baldoyle Bay SAC	26.1km	22.5km	0.9km	Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide; • *Salicornia* and other annuals colonising mud and sand; • Atlantic salt meadows; and Mediterranean salt meadows.	Construction and decommissioning	• Suspended sediment / deposition; and • Accidental pollution; and Marine INNS	The site is outside the ZoI of 20km for both the Array and ECC as described within Section 1.13.2 and therefore has been screened out for marine INNS both alone and in-combination. The onshore development area is hydrologically connected to the European site. Five of the proposed Onshore Cable Route watercourse crossings are upstream of, and have hydrological connectivity to, the European site. Therefore, LSEs on this European site, and arising from the onshore development area, including suspended sediment / deposition and accidental pollution, cannot be ruled out.	Yes for Suspended sediment / deposition, and Accidental pollution. No for Marine INNS.
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition; Accidental pollution; Changes to physical processes; and Marine INNS

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
North Dublin Bay SAC	29.0km	26.2km	2.0km	Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide; • *Salicornia* and other annuals colonising mud and sand; • Atlantic salt meadows; and • Mediterranean salt meadows.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution, and Marine INNS
					Operation	• Suspended sediment / deposition; • Accidental pollution; • Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Changes to physical processes, Accidental pollution and Marine INNS
Rockabill to Dalkey Island SAC	2.4km	2.9km	5.5km	Annex I habitats: Reefs.	Construction and decommissioning	• Physical habitat loss / disturbance; • Suspended sediment / deposition; • Accidental pollution; and • Marine INNS.	The site is within the ZoI of 20km of the Array and ECC as described within Section 1.13.2and therefore has been considered for suspended sediment / deposition, accidental pollution and marine INNS for both alone and in-combination.	Yes for Suspended sediment / deposition; Accidental pollution, and Marine INNS. No for physical habitat loss/disturbance.
					Operation	• Suspended sediment / deposition; • Accidental pollution;	The site is within the ZoI of 20km of the Array, ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, marine INNS and changes to physical processes only for both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS.

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
						• Changes to physical processes; and Marine INNS		
Howth Head SAC	27.4km	26.6km	5.1km	Annex I habitats: • Vegetated sea cliffs of the Atlantic and Baltic coasts; and European dry heaths.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution and Marine INNS
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS
Ireland's Eye SAC	25.6km	24.4km	5.8km	Annex I habitats: • Perennial vegetation of stony banks; and • Vegetated sea cliffs of the Atlantic and Baltic coasts.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution and Marine INNS

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Operation	• Suspended sediment / deposition; • Accidental pollution; • Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS
South Dublin Bay SAC	35.4km	31.1km	6.4km	Annex I habitats: • Mudflats and sandflats not covered by seawater at low tide; • Annual vegetation of drift lines; *Salicornia* and other annuals colonising mud and sand; and Embryonic shifting dunes	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution and Marine INNS
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition; Accidental pollution; Changes to physical processes and Marine INNS
Boyne Coast and Estuary SAC	16.4km	7.9km	8.9km	Annex I habitats: • Estuaries; • Mudflats and sandflats not covered by seawater at low tide;	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	The site is within the ZoI of 20km of the Array, ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, and marine INNS, both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution and Marine INNS

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
				• *Salicornia* and other annuals colonising mud and sand; and Atlantic salt meadows.	Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS	The site is within the ZoI of 20km of both the Array, ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, changes to physical processes and marine INNS only both alone and in-combination.	Yes Suspended sediment / deposition, Accidental pollution, Changes to physical processes and Marine INNS
Lambay Island SAC	14.8km	15.7km	10.2km	Annex I habitats: • Reefs.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS	The site is within the ZoI of 20km of the Array, ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution and marine INNS both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution and Marine INNS,
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	The site is within the ZoI of 20km of both the Array, ECC and onshore development area as described within Section 1.13.2 and therefore has been considered for suspended sediment / deposition, accidental pollution, changes to physical processes and marine INNS only both alone and in-combination.	Yes for Suspended sediment / deposition, Accidental pollution, Marine , Changes to physical processes and Marine INNS.
River Boyne and River Blackwater SAC	20.9km	13.0km	12.7km	Annex I habitats: • Alkaline fens; and • Alluvial forests with *Alnus glutinosa*.	Construction and decommissioning	• Suspended sediment / deposition; • Accidental pollution; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution, and Marine INNS

Site Name	Distance to array area	Distance to ECC	Distance to Onshore development area	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Operation	• Suspended sediment / deposition; • Accidental pollution; Changes to physical processes; and • Marine INNS.	There is no hydrological, or other, connectivity between the onshore development area and European site. The site is also outside of the ZoI of 20km for both the Array and ECC as described in Section 1.13.2. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No for Suspended sediment / deposition, Accidental pollution, Marine INNS, and Changes to physical processes.

3.5.2 Identification of potential LSE – Migratory fish

Table 3.10: Table of sites and features identified for migratory fish receptors

Site Name	Distance to array area	Distance to ECC	Feature	Project phase(s)	Impact(s)	S-P-R	Screened In?
River Boyne and River Blackwater SAC	20.9km	13.0km northwest	Annex II species: River lamprey; and Atlantic salmon.	Construction, Operation Decommissioning	• Underwater noise • Suspended sediment/ deposition • Accidental pollution • EMF	The proposed development array area and ECC are within the ZoI as described within Table 1.7 and therefore has been considered for all impacts. Based on the distance from the site to the array area and ECC, out of the impacts identified within Table 3.4 this site (and associated features) is screened in for underwater noise, suspended sediment and deposition, accidental pollution and EMF. All other impacts have been screened out due to lack of connectivity (marine INNS, changes to prey, habitat loss/disturbance, vessel collision risk and non-physical disturbance (light/visual)).	Yes (offshore development area) for underwater noise, Suspended sediment/ deposition Accidental pollution, and EMF.

3.5.3 Identification of potential LSE – Marine Mammals

Table 3.11: Table of sites and features identified for marine mammal receptors

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Rockabill to Dalkey Island SAC	2.4km	2.9km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in harbour porpoises with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel collision	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels, any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes (offshore development area) for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
Lambay Island SAC	14.8km	15.7km	Annex II species: Grey seal, Harbour seal, Harbour porpoise	Construction and decommissioning	Underwater noise	Grey seals, harbour seals and harbour porpoise are sensitive to underwater noise and given the proximity of the site being within the species specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Grey seals, harbour seals and harbour porpoise are sensitive to vessel presence and given the proximity of the site being within the species specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between grey, harbour seals and harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on grey seals, harbour seals and harbour porpoise as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013).	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in grey seals or harbour seals with relatively poor hearing sensitivity at low sound frequencies.	No for Underwater noise

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						There will be no interaction or pathway for significant impact.	
					Vessel disturbance	Grey seals, harbour seals and harbour porpoise are sensitive to vessel presence and given the proximity of the site being within the species-specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between grey , harbour seals and harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on grey seals, harbour seals and harbour porpoise as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
Codling Fault Zone SAC	28km	38km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination..	Yes (offshore development area) for Vessel disturbance
					Vessel collision		Yes (offshore development area) for Vessel collision

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in harbour porpoises with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013).	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels, any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes (offshore development area) for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
North Anglesey Marine/ Gogledd Môn Forol SAC	34.7km	42.9km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination..	Yes (offshore development area) for Vessel disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel collision risk	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision risk
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in harbour porpoises with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination..	Yes (offshore development area) for Vessel disturbance
					Vessel collision risk	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision risk
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013).	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels, any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes (offshore development area) for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
Murlough SAC	41.3km	47.1km	Annex II species: Harbour seal	Construction and decommissioning	Underwater noise	Harbour seals are sensitive to underwater noise and given the proximity of the site being within the species specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel disturbance	Harbour seals are sensitive to vessel presence and given the proximity of the site being within the species specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between harbour seals with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on harbour seals as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected.	Yes for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in harbour seals with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise
					Vessel disturbance	Harbour seals are sensitive to vessel presence and given the proximity of the site being within the species specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between harbour seals with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Changes to prey	There is potential of indirect effects on harbour seals as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
North Channel SAC	48.4km	63.2km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination..	Yes (offshore development area) for Vessel disturbance
					Vessel collision risk	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision risk
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in harbour porpoises with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise
					Vessel disturbance	Harbour porpoises are sensitive to vessel presence and given the distance to site within the MU, there is a pathway of effect for vessel disturbance from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel collision risk	There is the potential for collisions between harbour porpoises with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision risk
					Changes to prey	There is potential of indirect effects on harbour porpoise as a result of direct impacts upon its prey species or habitats the prey and therefore there is a pathway for effect both alone and in-combination.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Harbour porpoises and other marine mammal species rely primarily on echolocation to navigate and find food in darkness (Hanke et al. 2010, Hanke and Dehnhardt 2013, Hanke et al. 2013). The porpoise species has been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini et al., 2009, Hastie et al., 2016). Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact its foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels, any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes (offshore development area) for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
Glannau Ynys Gybi/ Holy Island Coast SAC	82.34km	91.79km	Annex II species: Grey seal	Construction and decommissioning	Underwater noise	Grey seals are sensitive to underwater noise and given the proximity of the site being within the species-specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel disturbance	Grey seals are sensitive to vessel presence and given the proximity of the site being within the species-specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Vessel collision	There is the potential for collisions between grey seals with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Changes to prey	There is potential of indirect effects on grey seals as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
				Operation	Vessel collision	There is the potential for collisions between grey seal with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The non-impulsive noise from operational wind turbine generator (WTGs) and maintenance vessels, primarily of low frequencies of below 1 kHz (Thomsen 2006), is not considered to result in significant impact in grey seals with relatively poor hearing sensitivity at low sound frequencies. There will be no interaction or pathway for significant impact.	No for Underwater noise

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel disturbance	Grey seals are sensitive to vessel presence and given the proximity of the site being within the species-specific foraging range, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Vessel disturbance
					Changes to prey	There is potential of indirect effects on grey seals as a result of direct impacts upon its prey species or habitats the prey. A pathway for effect has therefore been identified.	Yes (offshore development area) for Changes to prey
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
					Accidental pollution	The release of contaminants from the small proportion of fine sediments is likely to be rapidly dispersed with the tide and/ or currents and therefore increased bioavailability resulting in adverse eco-toxicological effects are not expected. For accidental pollution from the proposed development/proposed development vessels any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. However, given the mobile nature of the species there is still a potential pathway for effect.	Yes for Accidental pollution

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
West Wales Marine/ Gorllewin Cymru Forol SAC	100.7km	110.6km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore, there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC	106.7km	116.8km	Annex II species: Bottlenose dolphin	Construction and decommissioning Construction and decommissioning	Underwater noise	Bottlenose dolphins are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between bottlenose dolphin with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between bottlenose dolphins with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Blackwater Bank SAC	121km	128km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) to Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Carnsore Point SAC	154km	160km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Cardigan Bay/ Bae Ceredigion SAC	161.9km	171.6km	Annex II species: Bottlenose Dolphin	Construction and decommissioning	Underwater noise	Bottlenose dolphins are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between bottlenose dolphin with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between bottlenose dolphins with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
Hook Head SAC	199km	205km	Annex II species: Harbour porpoise; Bottlenose dolphin	Construction and decommissioning	Underwater noise	Harbour porpoises and Bottlenose dolphin are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise, and bottlenose dolphin, due to connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise, and bottlenose dolphin, due to connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC	223.0km	232.2km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
Roaringwater Bay and Islands SAC	320.0km	317.6km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment
Blasket Island SAC	346.6km	331.8km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Bunduff Lough and Machair / Trawalua / Mullaghmore SAC	436km	444km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Kenmare River SAC	453km	459km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
West Connacht Coast SAC	477km	486km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) and Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Belgica Mound Province SAC	545km	552km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Kilkieran Bay and Islands SAC	615km	623km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Inishmore Island SAC	636km	644km	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoises are sensitive to underwater noise and given the distance to site within the MU, there is a pathway of effect for underwater noise from construction works both alone and in-combination.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success. Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
Transboundary sites with Mainland Europe for Harbour Porpoise: Nord Bretagne DH SAC, Mers Celtiques – Talus du golfe de Gascogne SAC, Récifs et landes de la Hague SAC , Anse de Vauville SAC, Banc et récifs de Surtainville SAC, Tregor Goëlo SAC, Baie de Morlaix SAC, Abers – Côtes des legends SAC, Ouessant-Molène SAC, Chausey SAC, Baie de Saint-Brieuc – Est SAC, Côtes de Crozon SAC, Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC, Baie du Mont Saint-Michel SAC, Chaussée de Sein SAC	467.3km +	476.3km +	Annex II species: Harbour porpoise	Construction and decommissioning	Underwater noise	Harbour porpoise are sensitive to underwater noise. Although there is unlikely to be a pathway for effect in view of the great distances of this SAC to the proposed development boundary, due the mobile nature of the species, a precautionary approach is adopted.	Yes (offshore development area) for Underwater noise
					Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from construction works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Vessel disturbance	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from construction and decommissioning works both alone and in-combination.	Yes for Vessel disturbance, Changes to prey and Accidental pollution
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	
				Operation	Vessel collision	There is the potential for collisions between harbour porpoise with connectivity to the site and vessels associated with the proposed development, therefore there is a pathway of effect from maintenance works both alone and in-combination.	Yes (offshore development area) for Vessel collision
					Underwater noise	The pathway is only linked between mobile individuals that may move into the proposed development boundary. There is the potential individuals from distant designated sites may be affected, therefore there is a pathway of effect from operation and maintenance works both alone and in-combination.	Yes for Underwater noise, Vessel disturbance, Changes to prey and Accidental pollution
					Vessel disturbance		
					Changes to prey		
					Accidental pollution		
					Habitat loss/ disturbance	No pathway for effects on habitats within the SAC and to the QI has been identified due to lack of spatial overlap between the proposed development boundary and this SAC.	No for Habitat loss/ disturbance
					Increased concentration of suspended sediment	Marine mammals are known to forage in tidal areas where water conditions are turbid and visibility conditions are poor, as they rely primarily on hearing. Seals are also able to detect water movements and hydrodynamic trails with their mystacial vibrissae. Low light levels, turbid waters and suspended sediments are therefore not likely to negatively impact their foraging success.	No for Increased concentration of suspended sediment

Site name	Distance to array area	Distance to ECC	Qualifying features	Project phase(s)	Impact(s)	S-P-R	Screened In?
						Any disturbance to the seabed will be localised, temporary and of negligible level. There will be no interaction or pathway for significant impact.	

3.5.4 Identification of potential LSE – Ornithology

Table 3.12: Table of sites and features identified for offshore and intertidal ornithological receptors

"*" identifies species which are part of an assemblage feature only

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
North-West Irish Sea cSPA	0.0km	0.0km	0.0km	Annex I Species: Common scoter; Red-throated diver; Great northern diver.	Non-breeding waterbird	Construction, operation, and decommissioning.	Disturbance and displacement; Spatial distribution and disturbance; and Indirect effects via impacts on prey.	The array area and cable corridor directly overlaps with this cSPA. These species have high vulnerability to displacement (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019). Therefore, LSE cannot be discounted in relation to disturbance & displacement, spatial distribution, impacts on prey effects, migratory collision risk, and barrier effects for these features. Due to low numbers of these species in the array area in site specific data this is considered in the cable corridor only, with these qualifying features screened out for the array area.	Yes (ECC only)
						Operation	Migratory collision risk; and Barrier effects		

[6] Unless specified otherwise, 'Breeding Seabird' categories will be considered in both the breeding and non-breeding seasons.

[7] The 'Yes' or 'No' designation that applies for a site's screened-in status will apply to both the breeding and non-breeding season, unless specified otherwise.

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Fulmar; Kittiwake; Lesser black-backed gull; and Herring gull;	Breeding seabirds	Operation	Collision risk Spatial distribution and disturbance; Indirect effects via impacts on prey; and Barrier effects.	The array area and cable corridor directly overlaps with this cSPA. These species have moderate vulnerability to collision. Therefore, LSE cannot be discounted in relation to collision effects for these features.	Yes (array area only)
				Annex I Species: Manx shearwater Lesser black-backed gull; Little tern; Roseate tern; Common tern; and Arctic tern.	Breeding seabirds (breeding season only)	Operation	Collision risk Spatial distribution and disturbance; Indirect effects via impacts on prey; and Barrier effects.	The array area and cable corridor directly overlaps with this cSPA. These species have moderate vulnerability to collision. Therefore, LSE cannot be discounted in relation to collision effects for these features.	Yes (array area only
				Annex I Species: Manx Shearwater	Breeding seabirds	Operation	Spatial distribution and disturbance;	The array area and cable corridor directly overlaps with this cSPA. This species has high vulnerability to displacement in the array area (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019). Therefore, LSE cannot be discounted in relation to disturbance & displacement effects.	Yes (array area only)
				Annex I Species: Manx shearwater; Razorbill; Guillemot.	Breeding seabirds	Construction, operation, and decommissioning.	Disturbance and displacement; Spatial distribution and disturbance; and Indirect effects via impacts on prey.	The array area and cable corridor directly overlaps with this cSPA. These species have high vulnerability to displacement in the array area (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019).	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
						Operation	Barrier effects	Therefore, LSE cannot be discounted in relation to disturbance & displacement effects for these features.	
				Annex 1 species: Great black-backed gull, Fulmar, Little gull, Kittiwake, Black-headed gull, Common gull, Lesser black-backed gull, Herring gull, Little tern, Roseate tern, Common tern, Arctic tern	Breeding seabirds; and non-breeding seabirds	Construction and decommissioning	Spatial distribution and disturbance; and Indirect effects via impacts on prey.	The array area and cable corridor directly overlaps with this cSPA. These species have moderate vulnerability to collision. Therefore, LSE cannot be discounted in relation to collision effects for these features.	Yes (array area only)
				Annex I Species: Shag; and Cormorant.	Breeding seabirds	Construction, operation, and decommissioning.	Collision risk.	Although the array area and cable corridor directly overlaps with this cSPA. These species have low vulnerability to displacement and collision (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019). Survey and tracking data show little or no evidence of these species occurring within the proposed development boundary. Therefore, LSE can be discounted in relation to all effects for these features alone or in-combination.	No for Collision risk
				Annex I Species: Great black-back gull; Little gull; Black-headed gull; and Common gull;	Non-breeding seabirds	Operation	Collision risk; Spatial distribution and disturbance; Indirect effects via impacts on prey; and Barrier effects.	The array area and cable corridor directly overlaps with this cSPA. These species have moderate vulnerability to collision. Therefore, LSE cannot be discounted in relation to collision effects for these features.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex 1 Species: Puffin	Breeding seabirds	Construction, operation, and decommissioning.	Disturbance and displacement; Spatial distribution and disturbance; Barrier effects; and Indirect effects via impacts on prey.	Puffin were recorded in very low numbers in DAS data, with a peak abundance of 12 individuals in the array area plus 2km buffer. Based on little evidence of this species occurring within the proposed development boundary, LSE can be discounted in relation to all effects for this species alone or in-combination	No
				Annex I Species: Common scoter; Red-throated diver; Great northern diver; Kittiwake; Lesser black-backed gull; Black-headed gull; Common gull; Herring gull; Guillemot; Razorbill; Shag; and Cormorant.	Breeding seabirds; and Non-breeding waterbird	Onshore Construction and Decommissioning	Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; and Onshore Disturbance and displacement.	The onshore development area is immediately adjacent and is hydrologically connected to the European site. All of the proposed Onshore Cable Route watercourse crossings are upstream of, and have hydrological connectivity to, the SPA. Due to the close proximity of the onshore development area to the SPA at the landfall site, there is, albeit limited, potential for dust impacts from the works area to reach the SPA. In addition, mobile SCI species may use land within or adjacent to the onshore development area. Twelve SCIs of the SPA were recorded at the landfall site. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for these features.	Yes (onshore development area)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Malahide Estuary SPA	21.7km	16.2km	0.0005km (0.5m)	Annex I Species: Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser; Redshank; and Shelduck.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser; Redshank; and Shelduck. Wetlands and waterbirds	Non-breeding waterbird	Onshore Construction and Decommissioning	Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; and Onshore Disturbance and displacement of fauna	The onshore development area is immediately adjacent and is hydrologically, and hydrogeologically, connected to the European site. Seven of the proposed Onshore Cable Route watercourse crossings are upstream of, and have hydrological connectivity to, the SPA. Due to the close proximity of the Onshore Cable Route to the estuary, there is, albeit limited, potential for hydrogeological connectivity and groundwater discharge to the SPA. Similarly, dust impacts from the works area may arise given the close proximity. In addition, mobile SCI species may use land within or adjacent to the onshore development area. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
Rockabill SPA	0.2km	1.0km	8.3km	Annex I Species: Common tern; Roseate tern; and Arctic tern.	Breeding seabird	Operation	Collision risk; Barrier effects; and Indirect effects via impacts on prey.	These species have low vulnerability to disturbance / displacement from offshore wind farms (OWF) and vessel disturbance (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019).	Yes (breeding season only) (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								They are therefore also not considered at risk of potential barrier effects, though an assessment is provided as a precautionary approach due the proximity of the SPA to the proposed development. These species have moderate vulnerability to collision and there is connectivity with the array area (Bradbury et al., 2014; Dierschke et al., 2016; Fliessbach et al., 2019). Therefore, LSE cannot be discounted in relation to collision effects for these features. During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development in very small numbers which will be insufficient to result in LSE. They are therefore screened out during the non-breeding season.	
				Annex I Species: Purple sandpiper.	Non-breeding waterbird	Operation	Disturbance and displacement; and Migratory collision risk.	The offshore development area lies inside the 0.5km buffer for assessing disturbance on intertidal birds recommended by UK SNCBs (MIG-Birds, 2017).	Yes (offshore development area)
						Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and European site. However, mobile SCI species associated with the SPA may use land within or adjacent to the onshore development area. Wintering purple sandpiper were recorded at the proposed landfall area.	Yes (Onshore development area)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	
Rogerstown Estuary SPA	15.6km	12.5km	0.8km	Annex I Species: Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; and Shoveler.	Non-breeding waterbird	Operation	Migratory collision risk.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; and Shoveler. Wetlands and waterbirds	Non-breeding waterbird	Onshore Construction and decommissioning	Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; and Onshore Disturbance and displacement	The onshore development area is hydrologically connected to the European site. Six of the proposed Onshore Cable Route watercourse crossings are upstream of and have hydrological connectivity to the SPA. In addition, mobile SCI species may use land within or adjacent to the Onshore Cable Route and onshore development area. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
Baldoyle Bay SPA	26.4km	22.6km	0.9km	Annex I Species: Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; and Shelduck.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	Yes (array area only) for Migratory collision risk

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	
				Annex I Species: Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; and Shelduck. Wetlands and waterbirds	Non-breeding waterbird	Onshore Construction and decommissioning	Surface water run-off of suspended sediment/ deposition; Accidental pollution; and Disturbance and displacement	The onshore development area is hydrologically connected to the European site. Five of the proposed Onshore Cable Route watercourse crossings are upstream of, and have hydrological connectivity to, the SPA. In addition, mobile SCI species may use land within the onshore development area. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
North Bull Island SPA	29.0km	26.2km	2.0km	Annex I Species: Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover; Grey plover; Knot;	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the “barrier effect”.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler; Teal; and Turnstone.				Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	
				Annex I Species: Black-headed gull.	Non-breeding seabird	Operation	Collision risk.	Black-headed gulls were only detected within the array area during two of the 29 months of aerial surveys. During the non-breeding season black-headed gulls migrate east and south and therefore birds from this SPA may pass through the proposed development in very small numbers which will be insufficient to result in LSE. This assumption was confirmed with the Migropath tool. They are therefore screened out during the non-breeding season, with no potential for LSE alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler; Teal; and Turnstone.	Non-breeding waterbird	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the Onshore Cable Route and onshore development area and the European site. However, mobile SCI species associated with this SPA may use land within or adjacent to the Onshore Cable Route and onshore development area. For example, golden plover are known to move significant distances of up to 12km between fields during the winter period. While geese foraging range from night roosts during the winter period can be up to 20km and 25km. Therefore, LSEs on this European site, arising from the Onshore Cable Route and onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
				Annex I Species: Black-headed gull.	Non-breeding seabird				
				Wetland and waterbirds	N/A			There is no hydrological connectivity and therefore the is no pathway for potential effect	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
River Nanny Estuary and Shore SPA	16.9km	3.3km	3.0km	Annex I Species: Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	Non-breeding waterbirds and seabirds	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
						Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and European site. However, mobile SCI species associated with the SPA may use land within or adjacent to the onshore development area. For example, golden plover are known to move significant distances of up to 12km between fields during the winter period. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
				Wetlands and Waterbirds				There is no hydrological connectivity and therefore no pathway for effect.	No
				Annex I Species: Herring gull.	Non-breeding seabird	Operation	Collision risk.	These non-breeding features may have non-breeding season connectivity with the proposed development due to their migratory path or proximity to the array area. However, this is a non-breeding feature and any gulls impacted by the proposed development will be assessed at their relevant breeding colonies during the breeding and non-breeding bio-season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
South Dublin Bay and River Tolka Estuary SPA	33.8km	28.8km	4.4km	Annex I Species: Arctic tern.	Breeding seabird	Construction, operation, and decommissioning.	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. During the non-breeding season terns migrate south and therefore birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Common tern; and Roseate tern.	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). During the non-breeding season terns migrate south and therefore birds from this SPA are unlikely to pass through the proposed development in numbers which will to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Black-headed gull; Bar-tailed godwit; Dunlin; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; and Sanderling.	Non-breeding seabirds & waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone on in-combination.	
				Annex I Species: Black-headed gull; Bar-tailed godwit; Dunlin; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; and Sanderling.	Non-breeding seabirds & waterbird	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and European site. However, mobile SCI species associated with this SPA may use land within or adjacent to the onshore development area. While geese foraging range from night roosts during the winter period can be up to 20km and 25km. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area only)
				Wetlands and waterbirds	N/A			There is no hydrological connectivity and therefore no pathway for effect.	No
Skerries Islands SPA	9.3km	5.1km	6.0km	Annex I Species: Cormorant; and Shag.	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; and Disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014).	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Survey data show little or no evidence of these species occurring in the proposed development. Birds may pass windfarms during their migrations; however, the negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Herring gull.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	Yes (array area only) for

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Light-bellied brent goose; Purple sandpiper; and Turnstone.	Non-breeding waterbird	Operation	Migratory collision risk.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)
				Annex I Species: Cormorant; and Shag.	Breeding seabirds	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and European site. However, mobile SCI species associated with the SPA may use land within or adjacent to the onshore development area.	Yes (onshore development area)
				Annex I Species:	Non-breeding waterbird				

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Light-bellied Brent Goose; Purple Sandpiper; Turnstone; and Herring Gull				Wintering SCIs were recorded at the proposed landfall area. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	
Ireland's Eye SPA	25.1km	24.4km	5.6km	Annex I Species: Cormorant	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; and Disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Guillemot; and Razorbill.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are not considered to have high vulnerability to collision with turbines but are vulnerable to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	Yes (array area only) for Disturbance and displacement
				Annex I Species: Herring gull; and Kittiwake.	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	Yes (array area only) for Collision risk

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Cormorant; Herring Gull; Kittiwake; Guillemot; and Razorbill.	Breeding seabird	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and European site. While a number of these SCI species were recorded during winter surveys in the vicinity of the landfall site, there is no risk to the breeding seabird colonies for which this SPA is designated from the onshore elements of the proposed development. Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	No (onshore development area) for Disturbance and displacement
Saltee Islands SPA	169.3km	165.9km	141.9	Annex I Species: Cormorant; and Shag.	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; and Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Guillemot	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all breeding-season effects alone or in-combination. However, this species may be present in the array area during the non-breeding season. This species is not considered to have high vulnerability to collision with turbines but are vulnerable to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014).	Yes (non-breeding only; array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSE cannot be discounted during the non-breeding season.	
				Annex I Species: Herring gull	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Fulmar	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; Disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Gannet	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement; and Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to both collision with turbines and to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Kittiwake; and Lesser black-backed gull.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Razorbill.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are not considered to have high vulnerability to collision with turbines but are vulnerable to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Puffin.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement	Puffin were recorded in very low numbers in DAS data, with a peak abundance of 12 individuals in the array area plus 2km buffer. Based on little evidence of this species occurring within the proposed development boundary, LSE can be discounted in relation to all effects for this species alone or in-combination	No
Howth Head Coast SPA	27.1km	27.0km	7.1km	Annex I Species: Kittiwake.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	Yes (array area only)
						Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between onshore development area and European site. While small numbers of kittiwake were recorded during winter surveys in the vicinity of the landfall site, there is no risk to the breeding colony of kittiwake for which this SPA is designated from the onshore elements of the proposed development.	No (onshore development area)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	
Lambay Island SPA	14.4km	15.3km	10.2km	Annex I Species: Cormorant; and Shag.	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; and Disturbance and displacement.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Survey and tracking data show little or no evidence of these species occurring within the proposed development boundary. Therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Guillemot; and Razorbill.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are not considered to have high vulnerability to collision with turbines but are vulnerable to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	
				Annex I Species: Puffin	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement.	Puffin were recorded in very low numbers in DAS data, with a peak abundance of 12 individuals in the array area plus 2km buffer. Based on little evidence of this species occurring within the proposed development boundary, LSE can be discounted in relation to all effects for this species alone or in-combination.	No
				Annex I Species: Herring gull; Kittiwake; Lesser black-backed gull; and Fulmar.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Greylag goose.	Non-breeding waterbird	Operation	Migratory collision risk.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)
				Annex I Species: Cormorant; Shag; Lesser Black-backed Gull;	Breeding seabird	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and the European site.	Yes (onshore development area)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Herring Gull; Kittiwake; Guillemot; and Razorbill.				However, mobile SCI species associated with the SPA may use land within or adjacent to the onshore development area. Wintering cormorant, shag, lesser black-backed gull and herring gull were recorded at the proposed landfall area. Therefore, LSEs on this European site, arising from the onshore development area, cannot be ruled out alone or in-combination for all considered features.	
Boyne Estuary SPA	16.3km	10.6km	10.8km	Annex I Species: Little tern	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	
						Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the onshore development area and the European site. However, mobile SCI species associated with the SPA may use land within or adjacent to the Onshore Cable Route and onshore development area. For example, golden plover are known to move significant distances of up to 12km between fields during the winter period. Therefore, LSEs on this European site, arising from the Onshore Cable Route and onshore development area, cannot be ruled out alone or in-combination for all considered features.	Yes (onshore development area)
				Wetland and waterbirds	N/A	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological connectivity and therefore no pathway for effect on this feature.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Dundalk Bay SPA	21.5km	25.0km	26.2km	Annex I Species: Common gull; and Herring gull.	Non-breeding seabird	Operation	Collision risk.	These non-breeding features may have non-breeding season connectivity with the proposed development due to their migratory path or proximity to the array area. However, this is a marine SPA and any gulls impacted by the proposed development will be assessed at their relevant breeding colonies during the breeding and non-breeding bio-season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Bar-tailed godwit; Black-headed gull; Black-tailed godwit; Common scoter; Curlew; Dunlin; Golden plover; Great crested grebe; Grey plover; Greylag goose; Knot; Lapwing; Light-bellied brent goose; Mallard; Oystercatcher; Pintail;	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Red-breasted merganser; Redshank; Ringed plover; Shelduck; and Teal.					
Carlingford Lough SPA	31.3km	36.0km	41.9km	Annex I Species: Common tern.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Sandwich tern.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have moderate vulnerability to collision with turbines (Bradbury et al., 2014). However, only one Sandwich tern was recorded in the array area during the 29 months of site-specific surveys. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Dunlin; Grey plover; Oystercatcher; Redshank; and Ringed plover.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season).	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone on in-combination.	
				Annex I Species: Light-bellied brent goose.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	
Poulaphouca Reservoir SPA	61.5km	52.7km	36.2	Annex I Species: Greylag goose	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using Migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Dalkey Islands SPA	39.5km	38.4km	13.9km	Annex I Species: Arctic tern.	Breeding seabird	Construction, operation, and decommissioning.	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development in very small numbers which will be insufficient to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Common tern.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019).	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSE can be discounted in relation to all effects alone or in-combination. During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development in very small numbers which will be insufficient to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Roseate tern.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development in very small numbers which will be insufficient to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Roseate Tern; Common Tern; and Arctic Tern.	Breeding seabird	Onshore Construction and decommissioning	Onshore Disturbance and displacement	There is no hydrological, or other, connectivity between the Onshore Cable Infrastructure and the European site. These bird populations are not considered to use lands within or adjacent to the Onshore Cable Route. Therefore,	No (onshore development area)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								LSEs can be discounted in relation to all effects alone or in-combination for all considered features.	
Wicklow Head SPA	70.4km	72.4km	47.8	Annex I Species: Kittiwake	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted. Outside the breeding season, these species disperse throughout the bio-geographic region. A proportion of birds estimated to be present within the proposed development will be from this SPA and therefore it is screened in for non-breeding season connectivity. Therefore, LSE cannot be discounted in relation to all effects alone or in-combination.	Yes (array area only)
The Murrough SPA	52.7km	55.0km	30.3km	Annex I Species: Little tern.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Black-headed gull; Greylag goose; Light-bellied brent goose; Red-throated diver; Teal; and Wigeon.	Non-breeding seabird & waterbirds	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No
				Annex I Species: Herring gull	Non-breeding seabird	Operation	Collision risk.	These non-breeding features may have non-breeding season connectivity with the proposed development due to their migratory path or proximity to the array area. However, this is a non-breeding feature and any gulls impacted by the proposed development will be assessed at their relevant breeding colonies during the breeding and non-breeding bio-season.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
Killough Bay SPA	57.7km	64.9km	78.4km	Annex I Species: Light-bellied brent goose	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No
Strangford Lough SPA	64.7km	72.0km	85.8km	Annex I Species: Arctic tern; Common tern; and Sandwich tern.	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development in numbers which are unlikely to result in LSE.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Bar-tailed godwit; Black-tailed godwit; Coot; Curlew; Dunlin; Eider; Gadwall; Golden plover; Goldeneye; Great crested grebe; Greenshank; Grey plover; Greylag goose; Lapwing; Mallard; Mute swan; Oystercatcher; Pintail; Red-breasted merganser; Ringed plover; Shelduck; Shoveler; Teal;	Non-breeding waterbird	Operation	Migratory collision risk.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Turnstone; Wigeon.					
Outer Ards SPA	69.7km	77.1km	91.2km	Annex I Species: Arctic tern	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone. During the non-breeding season terns migrate south and therefore birds from this SPA may pass through the proposed development boundary in numbers which are unlikely to result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Golden plover; Light-bellied brent goose; Ringed plover; and Turnstone.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	
Lough Sheelin SPA	85.3km	74.7km	73.9km	Annex I Species: Goldeneye; Great crested grebe; Pochard; and Tufted duck.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No
Lough Neagh & Lough Beg SPA	86.7km	91.4km	96.4km	Annex I Species: Common tern	Breeding seabird	Operation	Collision Risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). During the non-breeding season terns migrate south and generally stay within 20km from the coast.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, birds from this SPA may pass through the proposed development but it is unlikely to be in numbers which will result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Bewick's swan; Whooper swan; Goldeneye; Pochard; Scaup; and Tufted duck.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Copeland Islands SPA	104.6km	111.4km	123.6km	Annex I Species: Arctic tern	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). During the non-breeding season terns migrate south and generally stay within 20km from the coast. Therefore, birds from this SPA may pass through the proposed development but it is unlikely to be in numbers which will result in LSE. They are therefore screened out during the non-breeding season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Manx shearwater	Breeding seabird	Construction, operation, and decommissioning.	Collison risk; and Disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast & Bardsey Island SPA	105.8km	112.8km	106km	Annex I Species: Manx shearwater	Breeding seabird	Construction, operation, and decommissioning.	Collison risk; and Disturbance and displacement;	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; However, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Sea off Wexford cSPA	118.7km	120.7km	96.1	Annex I Species: Red-throated diver; and Common scoter.	Non-breeding waterbirds	Construction, operation, and decommissioning.	Disturbance and displacement; and Indirect effects via impacts on prey.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Mediterranean gull; Black-headed gull; Lesser black-headed gull; Sandwich tern; Roseate tern; Common tern; Arctic tern; and Little tern.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Fulmar; and Manx Shearwater.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season).	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Herring gull; and Kittiwake.	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Gannet	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; Disturbance and displacement; and Barrier effect	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However there is no direct impact within the SPA all impacts on these species are assessed for their breeding SPAs that abut the Seas off Wexford SPA. Therefore, LSE can be discounted in relation to effects alone or in-combination.	No
				Annex I Species: Cormorant.	Breeding and non-breeding seabird	Construction, operation, and decommissioning.	Collison risk; Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). This species has low vulnerability to displacement and collision.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Therefore, LSE can be discounted in relation to all effects for this feature alone and in-combination	
				Annex I Species: Shag.	Breeding seabird	Construction, operation, and decommissioning.	Collison risk; and Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). This species has low vulnerability to displacement and collision. Therefore, LSE can be discounted in relation to all effects for this feature alone and in-combination	No
				Annex I Species: Guillemot; Razorbill; and Puffin.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance & displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However there is no direct impact within the SPA all impacts on these species are assessed for their breeding SPAs that abut the Seas off Wexford SPA. Therefore, LSE can be discounted in relation to effects alone or in-combination.	No
Morecambe Bay & Duddon Estuary SPA	164.6km	173.1km	190.23	Annex I Species: Arctic tern*; Black-headed gull*; Common tern*; Great black-backed gull*; Herring gull*; Little tern*; and Sandwich tern*.	Breeding seabird	Operation	Collison risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Lesser black-backed gull*.	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover; Grey plover; Knot; Little egret; Oystercatcher; Pink-footed goose; Pintail; Redshank; Ringed plover; Ruff; Sanderling; Shelduck; Turnstone; Whooper swan; and Mediterranean gull.	Non-breeding waterbirds & seabirds	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Based on this and the distance (>100km) from the Proposed Development, the likelihood and severity of effects on the SPA will be trivial. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Rathlin Island SPA	168.5km	173.4km	181.1	Annex I Species: Common gull; Herring gull	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Guillemot; and Razorbill.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement;	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Kittiwake; and lesser black-backed gull	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. This species is considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted n relation to effects alone or in-combination.	Yes (array area only)
				Annex I Species: Puffin.	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement	Puffin were recorded in very low numbers in DAS data, with a peak abundance of 12 individuals in the array area plus 2km buffer. Based on little evidence of this species occurring within the proposed development boundary, LSE can be discounted in relation to all effects for this species alone or in-combination	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Fulmar	Breeding seabird	Construction, operation, and decommissioning.	Collision risk; and disturbance and displacement	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
Ailsa Craig SPA & Assemblage	171.0km	178.0km	190.53	Annex I Species: Gannet	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement; and Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								These species are considered to have high vulnerability to both collision with turbines and to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	
				Annex I Species: Guillemot*	Breeding seabird	Construction, operation, and decommissioning.	Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Herring gull*	Breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Lesser black-backed gull; and Kittiwake	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. This species is considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
Helvick Head to Ballyquin SPA	204.9km	196.0km	174.8	Annex I Species: Cormorant	Breeding seabird	Construction operation, and decommissioning.	Collision risk; Disturbance and displacement;.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Herring gull	Breeding seabird	Operation	Collision risk	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Kittiwake	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Chough; and Peregrine falcon.	Breeding terrestrial bird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								Based on this and the distance (>100km) from the Proposed Development, the likelihood and severity of effects on the SPA will be trivial. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone and in-combination.	
Ribble & Alt Estuaries SPA	177.8km	185.4km	199.83	Annex I Species: Black-headed gull*; and Common tern*.	Breeding & non-breeding seabird	Operation	Collision risk.	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Cormorant	Non-breeding seabird	Construction and decommissioning; and Operation.	Collision risk; and Disturbance and displacement	These non-breeding features may have non-breeding season connectivity with the proposed development due to their migratory path or proximity to the array area. However, this is a non-breeding feature and any cormorants impacted by the proposed development will be assessed at their relevant breeding colonies during the breeding and non-breeding bio-season. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Lesser black-backed gull.	Breeding seabird	Operation	Collision risk.	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	
				Annex I Species: Bar-tailed godwit; Bewick's swan; Black-tailed godwit; Dunlin; Golden plover; Grey plover; Knot; Oystercatcher; Pink-footed goose; Pintail; Redshank; Ringed plover; Sanderling; Shelduck; Teal; Whooper swan; and Wigeon.	Non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Based on this and the distance (>100km) from the Proposed Development, the likelihood and severity of effects on the SPA will be trivial. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Skomer, Skokholm & the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	205.0km	212.1km	188.2	Annex I Species: Lesser black-backed gull; and Kittiwake.	Breeding seabird	Operation;	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Manx shearwater; and Storm petrel.	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement;	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). During the non-breeding season, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Puffin	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement	Puffin were recorded in very low numbers in DAS data, with a peak abundance of 12 individuals in the array area plus 2km buffer. Based on little evidence of this species occurring within the proposed development boundary, LSE can be discounted in relation to all effects for this species alone or in-combination	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Guillemot; and Razorbill.	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement;	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
Grassholm SPA	207.2km	213.2km	188.8	Annex I Species: Gannet	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement;	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to both collision with turbines and to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
						Operation	Collision risk.		
Blackwater Callows SPA	202.5km	213.1km	190.4	Annex I Species: Whooper swan; Bewick's swan; Wigeon; Teal; Mallard; Shoveler; Black-tailed godwit; Lapwing; Curlew;	Breeding and non-breeding seabirds and waterbirds	Operation	Migratory collision risk.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using Migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	
				Black-headed gull	Breeding and non-breeding seabirds and waterbirds	Operation	Migratory collision risk	During DAS surveys, a very low number of black-headed gulls were observed. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
Horn Head to Fanad Head SPA	190.7km	194.7km	194.5	Annex I Species: Guillemot; and Razorbill.	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Cormorant; and Shag.	Breeding seabird	Construction and decommissioning; and Operation.	Collision risk; and Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
				Annex I Species: Fulmar	Breeding seabird	Construction and decommissioning; and Operation.	Collision risk; Disturbance and displacement; Barrier effects	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
								However, these species are not vulnerable to either collision with turbines or to displacement / disturbance from OWFs and vessel traffic (Bradbury et al., 2014). Birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Survey data show little or no evidence of this species occurring in the proposed development. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. During the non-breeding season, therefore, birds from this SPA are unlikely to pass through the proposed development boundary in numbers which will to result in LSE. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	
				Annex I Species: Kittiwake	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Barnacle goose; Greenland white-fronted goose; Chough; and Peregrine falcon.	Breeding & non-breeding waterbird and terrestrial bird	Operation	Migratory collision risk; and Barrier effects.	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Based on this and the distance (>100km) from the Proposed Development, the likelihood and severity of effects on the SPA will be trivial. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No
Cork Harbour SPA	243.6km	233.1km	213.29	Annex 1 Species: Shelduck; Wigeon; Teal; Mallard; Pintail; Shoveler;	Breeding & non-breeding waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season).	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Red-breasted merganser; Little grebe; Great crested grebe; Grey heron; Oystercatcher; Black-tailed godwit; Bar-tailed godwit; Redshank; Golden plover; Grey plover; Lapwing; Dunlin; Curlew;				Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using Migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	
				Black-headed gull	Breeding & non-breeding waterbird	Operation	Migratory collision risk	During DAS surveys, a very low number of black-headed gulls were observed. Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No
Courtmacsherry SPA	286.5km	275.5km	256.14	Annex 1 Species: Shelduck; Wigeon; Red-breasted merganser; Black-tailed godwit; Bar-tailed godwit;	Breeding & non-breeding seabird and waterbird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season).	Yes (array area only)

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Golden plover; Lapwing; Dunlin; Curlew; Great northern diver.				Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using Migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	
				Black-headed gull	Breeding & non-breeding seabird and waterbird	Operation	Migratory collision risk	During DAS surveys, a very low number of these species were observed. Therefore, LSE can be discounted in relation to all effects alone or in-combination	No
North Colonsay & Western Cliffs SPA	259.5km	264.7km	272.6	Annex I Species: Guillemot	Breeding seabird	Construction and decommissioning; and Operation.	Disturbance and displacement	Site has no connectivity with breeding features based on mean-maximum +1SD foraging range (Woodward et al., 2019). Therefore, LSE can be discounted in relation to all effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
				Annex I Species: Kittiwake	Breeding seabird	Operation	Collision risk	The proposed development array area is within the mean-maximum +1SD foraging ranges (Woodward et al., 2019) for designated seabird species. These species are considered to have high vulnerability to collision with turbines (Bradbury et al., 2014). Therefore, LSE cannot be discounted.	Yes (array area only)
				Annex I Species: Chough	Non-breeding terrestrial bird	Operation	Migratory collision risk	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. Based on this and the distance (>100km) from the Proposed Development, the likelihood and severity of effects on the SPA will be trivial. Furthermore, Migropath modelling established a low degree of connectivity between this site and the proposed development. Therefore, LSE can be discounted for this site in relation to effects alone or in-combination.	No

Designated site	Distance to array area	Distance to ECC	Distance to onshore development area	Qualifying features	Breeding / non-breeding[6]	Project phase(s)	Impact(s)	S-P-R	Screened in?[7]
Clonakilty SPA	298.7km	287.5km	268.4	Annex 1 Species: Shelduck; Black-tailed godwit; Curlew; Dunlin.	Breeding & non-breeding waterbird	Operation	Migratory collision risk;	Migratory birds may pass windfarms during their migrations; however, the impact is considerably less than for species that come into contact with windfarms daily (e.g., central place foragers during the breeding season). Migratory species are consequently less at risk from adverse impacts caused by the "barrier effect". Survey data show little or no evidence of these species occurring within the proposed development boundary. The negligible numbers that do migrate through the array area would only do so on two occasions per year and these species tend to show high avoidance of OWFs. However, LSE cannot be discounted for these species due to the proximity of this site to the proposed development. Furthermore, a high degree of connectivity was established between this site and the proposed development using Migropath modelling. Therefore, this model establishes that non-breeding features from this SPA are likely to pass through the array during migration and risk collision with the array.	Yes (array area only)

3.6 Transboundary Effects

Several transboundary sites have been identified with respect to marine mammal and ornithological receptors. These sites are all included within Table 3.11 and Table 3.12 in Section 3.5. For marine mammals, sites include those which are designated for species such as harbour porpoise, grey seal and harbour seal at sites such as Abers – Côtes des legends SAC, Baie de Morlaix SAC, and Banc et récifs de Surtainville SAC. The effects considered for these sites range depending on the receptor but include the more wide-reaching effects such as underwater noise and disturbance and displacement. As seen in Table 3.11 and Table 3.12 several transboundary sites LSE were determined and were screened in for further assessment. There is a requirement to notify Transboundary States where there is an AEoI, which will be determined in Stage 2 of the Appropriate Assessment.

4. Summary of Appropriate Assessment Screening Assessment

The following Tables 4.1 to 4.4 provide a summary of the screening conclusions for each of the receptor groups.

Table 4.1: Summary table for sites screened in for coastal and marine habitat receptors

Site name	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Malahide Estuary SAC	20.3km	16.0km	0.00km	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Construction, operation and decommissioning.	Dust deposition; Suspended sediment / deposition; Accidental pollution; and Marine INNS. Changes in physical processes
Rogerstown Estuary SAC	15.7km	12.5km	0.00km	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Construction, operation and decommissioning.	Dust deposition; Suspended sediment / deposition; Accidental pollution; Marine INNS; and Changes to physical processes.
Baldoyle Bay SAC	26.1km	22.5km	0.9km	Annex I habitats: Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; Atlantic salt meadows; and Mediterranean salt meadows.	Construction, and decommissioning.	Suspended sediment / deposition; and Accidental pollution

Site name	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Rockabill to Dalkey Island SAC	2.4km	2.9km	5.53	Annex I habitats: Reefs.	Construction, operation and decommissioning.	Suspended sediment / deposition; Accidental pollution; Marine INNS; and Changes to physical processes.
Boyne Coast and Estuary SAC	16.4km	7.9km	8.9	Annex I habitats: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Salicornia and other annuals colonising mud and sand; and Atlantic salt meadows.	Construction, operation and decommissioning.	Suspended sediment / deposition; Accidental pollution; Marine INNS; and Changes to physical processes.
Lambay Island SAC	14.8km	15.7km	10.18	Annex I habitats: Reefs.	Construction, operation and decommissioning.	Suspended sediment / deposition; Accidental pollution; Marine INNS; and Changes to physical processes.

Table 4.2: Summary table for sites screened in for migratory fish receptors

Site name	Distance to array area (km)	Distance to ECC (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
River Boyne and River Blackwater SAC	20.9km	13.0km	Annex II species: River lamprey; and Atlantic salmon.	Construction and decommissioning	Offshore development area only Underwater noise; Suspended sediment/deposition; and Accidental pollution.
				Operation & Maintenance	Offshore development area only EMF.

Table 4.4.3: Summary table for sites screened in for marine mammal receptors

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Rockabill to Dalkey Island SAC	2.4km	2.9km	Annex II species: Harbour porpoise.	Construction, operation and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Lambay Island SAC	14.8km	15.7km	Annex II species: Harbour porpoise; Grey seal; and Harbour seal.	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Codling Fault Zone SAC	28km	38km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
North Anglesey Marine/ Gogledd Môn Forol SAC	34.7km	42.9km	Annex II species: Harbour porpoise	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Murlough SAC	41.3km	47.1km	Annex II species: Harbour seal.	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
North Channel SAC	48.4km	63.2km	Annex II species Harbour porpoise	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Glannau Ynys Gybi/ Holy Island Coast SAC	82.34km	91.79km	Annex II species: Grey seal	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
West Wales Marine/ Gorllewin Cymru Forol SAC	100.7km	110.6km	Annex II species: Harbour porpoise.	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Pen Llŷn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC	106.7km	116.8km	Annex II species: Bottlenose dolphin.	Construction and decommissioning.	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Blackwater Bank SAC	121km	128km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Carnsore Point SAC	154km	160km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Cardigan Bay/ Bae Ceredigion SAC	161.9km	171.6km	Annex II species: Bottlenose dolphin.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Hook Head SAC	199km	205km	Annex II species: Harbour porpoise; and Bottlenose dolphin	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Bristol Channel Approaches/ Dynesfeydd Môr Hafren SAC	223.0km	232.2km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Roaringwater Bay and Islands SAC	320.0km	317.6km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Blasket Islands SAC	346.6km	331.8km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Kenmare River SAC	453km	459km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Bunduff Lough and Machair / Trawalua / Mullaghmore SAC	436km	444km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Nord Bretagne DH SAC	470.8km	479.7km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
West Connacht Coast SAC	477km	486km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Mers Celtiques – Talus du golfe de Gascogne SAC	499.9km	502.1km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Récifs et landes de la Hague SAC	503.8km	513.6km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Anse de Vauville SAC	511.8km	521.6	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Banc et récifs de Surtainville SAC	529.6km	539.4km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Tregor Goëlo SAC	535.1km	544.0km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Belgica Mound Province SAC	545km	552km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Baie de Morlaix SAC	551.2km	559.0km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Abers - Côtes des légendes SAC	554.0km	560.8km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Ouessant-Molène SAC	572.2km	567.5km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Chausey SAC	578.7km	589.4km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie de Saint-Brieuc – Est SAC	592.8km	602.2km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Côtes de Crozon SAC,	598.1km	604.3km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC	605.0km	614.5km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Baie du Mont Saint-Michel SAC	607.1km	616.8km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Kilkieran Bay and Islands SAC	615km	623km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
Chaussée de Sein SAC	617.0km	622.6km	Annex II species: Harbour porpoise.	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Site name	Distance to array area (km)	Distance to ECC (km)	Feature screened in for further assessment	Project phase(s)	Impacts that have been screened in
Inishmore Island SAC	636km	644km	Annex II species: Harbour porpoise	Construction and decommissioning	Offshore development area only Underwater noise; Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.
				Operation & Maintenance	Offshore development area only Vessel disturbance; Vessel collision; Changes to prey; and Accidental pollution.

Table 4.4: Summary table for sites screened in for ornithology receptors

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
North-West Irish Sea cSPA	0.0km	0.0km	0.0km	Common scoter; Red-throated diver; and Great northern diver.	Construction and decommissioning.	Offshore and onshore disturbance and displacement; Spatial distribution and disturbance; Dust deposition; Suspended sediment; Accidental pollution; and Indirect effects via impacts on prey.
					Operational & Maintenance	Migratory collision risk; Barrier effects; Offshore disturbance and displacement, Indirect effects via impacts on prey; and Spatial distribution.

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Fulmar; Kittiwake; Lesser black-backed gull; and Herring Gull	Construction and decommissioning	Spatial distribution and disturbance; Indirect effects via impacts on prey; Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; and Onshore Disturbance and displacement.
					Operational and Maintenance	Collision risk; Spatial distribution and disturbance; Indirect effects via impacts on prey; and Barrier effects
				Shag; and Cormorant	Construction and decommissioning.	Dust deposition; Suspended sediment; Accidental pollution; and Onshore disturbance and displacement.
				Great black-back gull; Manx shearwater; Little gull; Little tern; Roseate tern; Common tern; and Arctic tern.	Construction and decommissioning.	Indirect effects via impacts on prey; and Spatial distribution.
					Operational & Maintenance	Collision risk; Spatial distribution and disturbance; Indirect effects via impacts on prey; and Barrier effects.

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Manx shearwater	Construction, Operational and decommissioning.	Offshore disturbance and displacement.
				Razorbill; and Guillemot.	Construction and decommissioning.	Offshore and onshore disturbance and displacement; Spatial distribution and disturbance; Dust deposition; Suspended sediment; Accidental pollution; and Indirect effects via impacts on prey.
					Operational & Maintenance	Barrier effects; Offshore disturbance, Indirect effects via impacts on prey; and Spatial distribution.
Malahide Estuary SPA	21.7km	16.2km	0.0005km (0.5m)	Bar-tailed godwit; Black-tailed godwit; Dunlin; Golden plover; Goldeneye; Great crested grebe; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Red-breasted merganser;	Operation & Maintenance	Migratory collision risk.
					Construction and Decommissioning	Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; Onshore Disturbance and displacement.

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Redshank; and Shelduck.		
				Wetlands and waterbirds		
Rockabill SPA	0.2km	1.0km	8.28	Common tern; Roseate tern; and Arctic tern.	Operational & Maintenance	Collision risk; Barrier effects; and Indirect effects via impacts on prey.
				Purple sandpiper.	Construction and decommissioning	Offshore and onshore disturbance and displacement.
					Operational & Maintenance	Migratory collision risk
Rogerstown Estuary SPA	15.6km	12.5km	0.79km	Black-tailed godwit; Dunlin; Grey plover; Greylag goose; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; Shelduck; and Shoveler.	Operational & Maintenance	Migratory collision risk
					Construction and decommissioning	Dust deposition; Surface water run-off of suspended sediment/ deposition; Accidental pollution; Onshore Disturbance and displacement

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Wetlands and waterbirds		
Baldoyle Bay SPA	26.4km	22.6km	0.92km	Bar-tailed godwit; Golden plover; Grey plover; Light-bellied brent goose; Ringed plover; and Shelduck.	Operational & Maintenance	Migratory collision risk
				Wetlands and waterbirds	Construction and Decommissioning	Suspended sediment/ deposition; Accidental pollution; and Onshore Disturbance and displacement
North Bull Island SPA	29.0km	26.2km	2.0km	Bar-tailed godwit; Black-tailed godwit; Curlew; Dunlin; Golden plover; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Pintail; Redshank; Sanderling; Shelduck; Shoveler; Teal;	Construction and Decommissioning	Onshore Disturbance and displacement.

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Turnstone; and Black-headed gull.		
River Nanny Estuary and Shore SPA	16.9km	3.3km	3.03km	Golden plover; Knot; Oystercatcher; Ringed plover; and Sanderling.	Operational & Maintenance	Migratory collision risk
					Construction and Decommissioning	Onshore Disturbance and displacement
South Dublin Bay and River Tolka Estuary SPA	33.8km	28.8km	4.4km	Black-headed gull; Bar-tailed godwit; Dunlin; Grey plover; Knot; Light-bellied brent goose; Oystercatcher; Redshank; Ringed plover; and Sanderling.	Construction and Decommissioning	Onshore Disturbance and displacement
Skerries Islands SPA	9.3km	5.1km	6km	Herring gull.	Operational & Maintenance	Collision risk.
				Light-bellied Brent Goose; Purple Sandpiper; and Turnstone;	Operational & Maintenance	Migratory collision risk

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Herring gull; Cormorant; and Shag.	Construction and decommissioning	Onshore Disturbance and displacement
Ireland's Eye SPA	25.1km	24.4km	5.61km	Guillemot; and Razorbill.	Construction, operational and decommissioning.	Offshore disturbance & displacement.
				Herring gull; and Kittiwake.	Operational & Maintenance	Collision risk.
Saltee Islands SPA	169.3km	165.9km	6km	Kittiwake; and Lesser black-backed gull.	Operational and Maintenance	Collision risk.
				Gannet	Construction, operation and decommissioning.	Offshore disturbance and displacement.
				Razorbill; and Guillemot		
Howth Head Coast SPA	27.1km	27.0km	7.1km	Kittiwake	Operational & Maintenance	Collision risk.
Lambay Island SPA	14.4km	15.3km	10.18km	Guillemot; and Razorbill.	Construction, operational and decommissioning.	Offshore disturbance & displacement.

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
					Construction and decommissioning	Onshore Disturbance and displacement
				Cormorant; and Shag		
				Herring gull; Kittiwake; and Lesser black-backed gull		
					Operation & Maintenance	Collision risk.
				Fulmar.		
				Greylag goose.	Operational & Maintenance	Migratory collision risk;.
Boyne Estuary SPA	16.3km	10.6km	10.98	Black-tailed godwit; Golden plover; Grey plover; Knot; Lapwing; Oystercatcher; Redshank; Sanderling; Shelduck; and Turnstone.	Operational & Maintenance	Migratory collision risk
					Construction and decommissioning	Onshore Disturbance and displacement

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
Poulaphouca Reservoir SPA	61.5km	52.7km	36.21km	Greylag goose	Operational & Maintenance	Migratory collision risk
Wicklow Head SPA	70.4km	72.4km	47.82km	Kittiwake	Operational & Maintenance	Collision risk.
Morecambe Bay & Duddon Estuary SPA	164.6km	173.1km	190.23km	Lesser black-backed gull	Operational & Maintenance	Collision risk.
Rathlin Island SPA	168.5km	173.4km	181.13km	Kittiwake; Lesser black-backed gull.	Operational & Maintenance	Collision risk.
Ailsa Craig SPA	171.0km	178.0km	190.53km	Gannet	Construction, operational and decommissioning.	Offshore disturbance & displacement
					Operational & Maintenance	Collision risk.
				Lesser black-backed gull; and Kittiwake		
Helvick Head to Ballyquin SPA	204.9km	196.0km	174.78km	Kittiwake	Operational & Maintenance	Collision risk
Ribble & Alt Estuaries SPA	177.8km	185.4km	199.83km	Lesser black-backed gull	Operational & Maintenance	Collision risk.
Skomer, Skokholm & the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	205.0km	212.1km	188.16km	Lesser black-backed gull; and Kittiwake.	Operational & Maintenance	Collision risk
Grassholm SPA	207.2km	213.2km	188.81km	Gannet	Construction and decommissioning.	Offshore disturbance and displacement.
					Operational & Maintenance	Collision risk

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
Blackwater Callows SPA	202.5km	213.1km	190.4km	Whooper swan; Bewick's swan; Wigeon; Teal; Mallard; Shoveler; Black-tailed godwit; Lapwing; Curlew;	Operational & Maintenance	Migratory collision risk
Horn Head to Fanad Head SPA	190.7km	194.7km	194.53km	Kittiwake	Operational & Maintenance	Collision risk.
Cork Harbour SPA	243.6km	233.1km	213.29km	Shelduck; Wigeon; Teal; Mallard; Pintail; Shoveler; Red-breasted merganser; Little grebe; Great crested grebe; Grey heron; Oystercatcher; Black-tailed godwit; Bar-tailed godwit; Redshank;	Operational & Maintenance	Migratory collision risk

Designated site	Distance to array area (km)	Distance to ECC (km)	Distance to onshore development area (km)	Features screened in for further assessment	Project phase(s)	Impacts that have been screened in
				Golden plover; Grey plover; Lapwing; Dunlin; and Curlew.		
Courtmacsherry SPA	286.5km	275.5km	256.14km	Shelduck; Wigeon; Red-breasted merganser; Black-tailed godwit; Bar-tailed godwit; Golden plover; Lapwing; Dunlin; Curlew; and Great northern diver.	Operational & Maintenance	Migratory collision risk
North Colonsay & Western Cliffs SPA & Assemblage	259.5km	264.7km	272.6km	Kittiwake	Operational & Maintenance	Collision risk.
Clonakilty SPA	298.7km	287.5km	268.43km	Shelduck; Black-tailed godwit; Curlew; Dunlin.	Operational & Maintenance	Migratory collision risk

4.1 Screening Statement

This report presents the findings of Screening, the first stage in the AA process for the proposed development. The assessment is required by the Habitats Directive, as transposed into Irish legislation by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended) and Part XAB of the Planning and Development Act 2000 (as amended) and is used to determine whether or not there could be a LSE on a European site as a result of the construction, operation or decommissioning of the proposed development.

A Screening Assessment has evaluated the potential for LSE to arise from the implementation of the proposed development acting alone or in-combination with other plans and projects on the COs of European sites.

Screening can result in the following possible conclusions or outcomes:

- **AA is not required.** The screening process concluded there are no LSE or that LSE can be ruled out, and an appropriate assessment will therefore not be required.
- **Significant effects are certain, likely or uncertain.** Likely significant effects cannot be excluded and an appropriate assessment will therefore be carried out.

The safeguards set out in Article 6(3) and (4) of the Habitats Directive are triggered not by certainty but by the possibility of likely significant effects. Thus, in line with the precautionary principle, the screening process has screened in sites and qualifying interests unless it can be established beyond reasonable scientific doubt that there are no LSE.

In the case of this report, it has not been possible to rule out LSE and therefore, the proposed development must proceed to Stage 2: AA. A NIS has been conducted to inform the Stage 2 AA for the European sites and features where LSE could not be ruled out.

To reiterate, this SISAA does not consider LSE in-combination, but defers the in-combination assessment to the NIS with the following methodology used to determine which of the sites considered for LSE alone would require further assessing in-combination:

Any sites that have been screened in for further assessment alone have also been screened in for in-combination consideration.

Any sites that have been screened out for further assessment alone have been screened in for in-combination consideration with the exception of those screened out alone on the basis of no connectivity or likely trivial effects.

In terms of transboundary European site consideration, the SISAA includes a screening assessment for all European sites and QIs within the Zone of Influence (ZoI) for the proposed development, which includes transboundary sites. The approach to in-combination consideration, as set out above, also applies for transboundary sites; where transboundary sites are screened in for LSE, these are included within the NIS.

Several transboundary European sites were identified and considered within the test for LSE for marine mammals and ornithology. It was determined that for several sites, LSE could not be ruled out and therefore they were taken forward to Stage 2 (AA) for further assessment.

The following receptors are required to proceed to Stage 2: AA for further assessment:

- Coastal and Marine Habitat receptors including habitat and bird features. Screened in for the following impacts:
  - Suspended sediment/ deposition
  - Accidental pollution
  - Marine INNS
  - Changes to physical process

  - Dust deposition
- Migratory Fish receptors including Annex II species features. Screened in for the following impacts:
  - Underwater noise
  - Suspended sediment and deposition
  - Accidental pollution
- Annex II Marine Mammal receptors. Screened in for the following impacts:
  - Underwater noise
  - Vessel disturbance
  - Vessel collision
  - Changes to prey
  - Habitat loss
  - Accidental pollution
- Ornithology receptors including breeding seabirds and non-breeding waterbirds. Screened in for the following impacts:
  - Collision risk
  - Disturbance and displacement
  - Barrier effects
  - Indirect effects via impacts on prey
  - Indirect effects via water quality or dust impacts on intertidal habitats

A detailed list of sites along with the receptors and features screened in for Stage 2: AA is provided in Section 4.

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