Oriel Wind Farm Project

Natura Impact Statement Addendum

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

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ESB Energy for generations

ORIEL WIND FARM PROJECT

Natura Impact Statement - Addendum
Stage 2 Appraisal to Inform an Appropriate Assessment of Implications on European Sites

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Natura Impact Statement
Addendum
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Glossary

Term	Meaning
The Applicant	Oriel Windfarm Limited
Birds Directive	European Parliament and Council Directive 2009/147/EC on the conservation of wild birds, a key legislative measure for the protection of birds in the European Union.
Catchment	An area of land contributing to a river, lake or other water body
Cumulative Impacts	Impacts that result from incremental changes caused by other reasonably foreseeable actions alongside the project in question. This includes the impact of all other developments that were not present at the time of data collection (surveys etc.) (derived from DMRB (Highways Agency *et al*., 2008)).
Displacement	In relation to offshore wind farm development, displacement refers to a reduced number of birds occurring within or immediately adjacent to an offshore wind farm.
Disturbance	Disturbance occurs when a bird's normal pattern of activity is interrupted by an anthropogenic activity. Individuals may choose to avoid sources of disturbance (e.g. swimming or flying away) and may not return until sometime later.
Environmental Impact Assessment	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Impact Assessment (EIA) Report.
Foreshore	The area of the land and seabed between the high-water mark of ordinary or medium tides and the 12 nautical mile limit.
Groundwater Body	Groundwater bodies are subdivisions of large geographical areas of aquifers so that they can be effectively managed in order to protect the groundwater and linked surface waters.
Habitat	The natural home or environment of an animal, plant, or other organism.
Joint Bay	These are concrete lined chambers, that provide a clean and dry environment for jointing the sections of cable together. Link boxes and communication chambers (C2) will also be required along the onshore cable route adjacent to each JB. These are small chambers which house connections between the joints for fibre optic cables, cable shielding and other auxiliary equipment.
Landfall	The area in which the offshore export cable make landfall and is the transitional area between the offshore cabling and the onshore cabling. The landfall is proposed at Dunany Point.
Magnitude	Size, extent and duration of an impact.
Measures included in the Project	The Project design includes a number of designed-in measures and management measures (or controls) which are committed to be delivered by the Applicant as part of the Project. These measures are standard measures applied to offshore wind development, including lighting and marking of the Project, use of 'soft-starts' for piling operations etc, to reduce the potential for impacts. These measures are integrated into the description of the development and have therefore been considered in the assessments in the NIS.
Migration	The regular seasonal movement, often north and south along a flyway, between breeding and wintering grounds.
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
Offshore cable corridor	The offshore export cable will be installed along a route in this corridor.
Onshore Cable Route	The route of the proposed underground electrical cable between the proposed landfall site and the proposed onshore substation site.
Onshore Substation Site	The site location of the proposed onshore substation.
Ornithology	Ornithology is a branch of zoology that concerns the study of birds.
Oriel Wind Farm Project	The subject of this NIS.
Project Design Parameter	These are the design details and measurements of the Project infrastructure that are used to inform the assessment of the likely significant effects of the Project on the environment. These also include details on the Project construction, operation and maintenance and decommissioning phase activities. Where design flexibility applies under Section 287B of the Planning and Development Act 2000 as amended, the project design parameters include a

Term	Meaning
	description of the parameters or options e.g. the wind turbine hub height will vary within the range 145-152 metres above Lowest Astronomical Tide (maLAT).
Sensitive Receptor	Physical or natural resource, special interest or viewer group that will experience an impact.
Sensitivity	Vulnerability of a sensitive receptor to change.
Water Body	A surface water body as defined under the Water Framework Directive (WFD) (i.e. a river/ stream, lake, transitional, coastal or groundwater body).
Watercourse	Any water body (WFD designation) as well as any other stream or ditch identified during the course of this NIS.

Acronyms

Term	Meaning
AA	Appropriate Assessment
ABP	An Bord Pleanála
AC	Alternating Current
ACP	An Coimisiún Pleanála
ADD	Acoustic Deterrent Device
AIS	Air Insulated Switchgear
BDMPS	Biologically Defined Minimum Population Scale
BMP	Best Management Practices
CAP	Climate Action Plan
CBRA	Cable Burial Risk assessment
CEMP	Construction Environmental Management Plan
CIL	Commissioner of Irish Lights
CMU	Catchment Management Unit
CO	Conservation Objective
CJEU	Court of Justice of the European Union
CRM	Collision Risk Modelling
cSAC	Candidate Special Area of Conservation
cSPA	Candidate Special Protection Area
CTV	Crew Transfer Vessel
DAHG	Department of Arts Heritage and the Gaeltacht
DaS	Dumping at Sea
dMPNI	draft Marine Plan for Northern Ireland
DoD	Department of Defence
DPV	Dynamic Positioning Vessel
EDR	Effective Deterrent Ranges
EIAR	Environmental Impact Assessment Report
EMF	Electromagnetic Fields
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
FCS	Favourable Conservation Status
FWPM	Freshwater Pearl Mussel
GIS	Gas Insulated Switchgear
GNI	Gas Networks Ireland
GSRP	Grey Seal Reference Population
HDD	Horizontal Directional Drilling
HSRP	Harbour Seal Reference Population
HVAC	High Voltage Alternating Current
HWM	High Water Mark
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICA	In-Combination Assessment
IRCG	Irish Coast Guard
IMO	International Maritime Organisation
JB	Joint Bay

Term	Meaning
JUV	Jack-Up Vessel
LAT	Lowest Astronomical Tide
LCIM	Line Cable Interface Masts
LSE	Likely Significant Effect
LV	Low Voltage
MMMP	Marine Mammal Mitigation Plan
MODIGA	Monopile Offshore Drilling Installation & Grouting Aid
MPCP	Marine Pollution Contingency Plan
MSO	Marine Survey Office
MU	Management Unit
MV	Medium Voltage
NAS	Noise Abatement System
NIS	Natura Impact Statement
NISA	North Irish Sea Array
NMFS	National Marine Fisheries Service
NMPF	National Marine Planning Framework
NPWS	National Parks and Wildlife Services
OHL	Overhead Line
ORE	Offshore Renewable Energy
OREDP	Offshore Renewable Energy Development Plan
OSS	Offshore Substation
OWF	Offshore Wind Farm
OWL	Oriel Windfarm Limited
PAM	Passive Acoustic Monitoring
PDP	Project Design Parameters
PLGR	Pre-lay Grapnel Run
PTS	Permanent Threshold Shift
pSPA	Proposed Special Protected Area
RBMP	River Basin Management Plan
RFI	Request for Further Information
ROV	Remotely Operated Vehicle
SAC	Special Area of Conservation
SAR	Search and Rescue
SCI	Special Conservation Interest
SCADA	Supervisory Control and Data Acquisition
SEA	Strategic Environmental Assessment
SEL	Sound Exposure Level
SPL_{pk}	peak Sound Exposure Level
SEL_{cum}	cumulative Sound Exposure Level
SEL_{ss}	single-strike Sound Exposure Level
SHD	Strategic Housing Development
SID	Strategic Infrastructure Development
SMRU	Sea Mammal Research Unit
SNCBs	Statutory Nature Conservation Bodies
SNH	Scottish Natural Heritage

Term	Meaning
SOSSMAT	Strategic Ornithological Support Services (SOSS) Migration Assessment Tool
SOV	Service Operation Vessel
SPA	Special Protected Area
SPL	Sound Pressure Level
SPL_{pk}	peak Sound Pressure Level
SEL_{cum}	cumulative Sound Pressure Level
SEL_{ss}	single-strike Sound Pressure Level
SSC	Suspended Sediment Concentrations
TAO	Transmission Asset Owner
TJB	Transition Joint Bay
TSO	Transmission System Operator
TTS	Temporary Threshold Shift
UI	Uisce Éireann
UKHO	UK Hydrographic Office
UXO	Unexploded Ordnance
QI	Qualifying Interest
VP	Vantage Point
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Units

Term	Meaning
dB	decibels
GW	giggawatts
ha	hectare
km	kilometre
km^2	kilometre squared
kHz	kilohertz
kJ	kilojoule
kV	kiloVolt
m	metre
m^2	metre squared
mAOD	Metres Above Ordnance Datum
mg/L	milligrams per litre
m/s	Metres/second
MW	megawatts
TWh	terawatt hours
µPa	micro pascal
uT	microteslas
µV/m	Microvolts per meter

1 INTRODUCTION

1.1 Scope of report

This Addendum provides supplementary information to the Natura Impact Statement (NIS), which was prepared to inform the Stage 2 Appropriate Assessment (AA) for the Oriel Wind Farm Project (hereafter referred to as "the Project"). It has been prepared in response to a Request for Further Information (RFI) from An Coimisiún Pleanála (ACP) (formerly An Bord Pleanála) regarding the planning application (case reference ABP-319799-24) for the Project.

The RFI listed 19 topics in a 'Schedule - Further Information Request' including the following topics which are relevant to Appropriate Assessment:

- 7. Ornithology
- 8. Benthic Subtidal & Intertidal Ecology
- 9. Marine Mammals & Megafauna
- 10. Fish and Shellfish Ecology
- 19. Onshore Biodiversity

Table 1A-2 to Table 1A-5 (in Section 1.4 of this Addendum) list the specific information requested for these topics and outlines those which are relevant to the assessment of Annex I habitats and Annex II and Birds Directive Special Conservation Interest (SCI) species. The information requested is divided according to the relevant receptors, as follows:

- Table 1A-2: Annex I habitats, and Annex II terrestrial and freshwater mammals;
- Table 1A-3: Annex II marine mammals;
- Table 1A-4: Annex II fish; and
- Table 1A-5: Birds Directive SCI species.

These tables also indicate where the corresponding information / responses can be found within this NIS Addendum and associated appendices and provides a concluding statement on any resulting updates or changes to the conclusions of the NIS (2024).

Many of the items included in the 'Schedule-Further Information Request' relate to the Environmental Impact Assessment Report (EIAR) however, as there is cross over in the assessments completed for the EIAR and the NIS in terms of examining the baseline environment and potential impacts, all items listed under the relevant topics in the 'Schedule-Further Information Request' are included in Table 1A-2 to Table 1A-5. The Applicant acknowledges that the assessments are different between the EIAR and NIS, however for completeness all items have been included in Table 1A-2 to Table 1A-5. The Applicant has also noted where an item is not relevant to the NIS.

The section and subsection headings in this Addendum correspond to those used in the NIS (2024)[1]. The reader is directed to review the information presented in this Addendum alongside the assessment presented in the NIS.

The reader is also directed to review the Report to Inform Screening for Appropriate Assessment – Addendum.

[1] There is an error in the Table of Contents in the NIS (2024) in that section 5.5 Annex II Fish Species is missing. However, the headings and sub-headings are correct in the document. The error is only in the Table of Contents.

1.2 Legislative context

There are no changes to the Natura Impact Statement.

1.2.1 The Habitats Directive

There are no changes to the Natura Impact Statement.

1.2.2 Irish legislation

There are no changes to the Natura Impact Statement.

1.2.3 Step-wise procedure

There are no changes to the Natura Impact Statement.

1.3 Document structure

The structure of this NIS Addendum is the same as the structure of the NIS (2024) i.e. the section and subsection heading titles in this Addendum correspond to those used in the NIS.

In response to the RFI, supplementary information is provided under the relevant NIS headings. However, for the section titled '*Assessment of the Project against conservation objectives'*, a different approach to presenting the updates has been taken to provide clarity to the reader. Where there is a change in the assessment in the NIS, the text from the NIS is repeated and changes arising from the further information (where they relate to the assessment) are shown in blue (e.g. example text). Where text from the NIS (2024) has been superseded or is no longer relevant, this text has been included in this Addendum with a strikethrough (e.g. ~~example text~~) in order to present the changes as clearly as possible. Where there is no change to the assessment then, this is noted as 'There are no changes to the Natura Impact Statement'.

1.4 Supporting information

Table 1A-1 lists the documents that provide supporting information in the NIS (2024). Where supplementary information has been provided in response to the RFI, the updated reference to the supporting documents is provided. A number of new documents have also been completed to support the NIS Addendum. These documents are also listed in Table 1A-1.

References to the NIS and supporting documents submitted with the application are made throughout this report. To distinguish between these documents (i.e. the documents submitted with the application in 2024) and the documents that provide supplementary information in response to the RFI, the word 'Addendum' is included in the title of the updated documents. For example, *appendix A Addendum: Report to Inform Screening for Appropriate Assessment* provides supplementary information to a*ppendix A: Report to Inform Screening for Appropriate Assessment.*

One new report has been included as appendix L: Cumulative iPCoD Modelling Report. Also, a new annex 1 is included in appendix F Addendum. Marine Mammal and Megafauna – Supporting Information and a new annex 9 is included in appendix H: Offshore Ornithology – Supporting Information.

Table 1A-1: Structure of NIS Addendum supporting information

NIS & Supporting documents (2024)	Further Information Provided?	Addendum Reference
Appendix A: Report to Inform Screening for Appropriate Assessment	Yes	Appendix A Addendum: Report to Inform Screening for Appropriate Assessment
Appendix B: Marine Processes Technical Report	Yes	Appendix B Addendum: Marine Processes Technical Report
Appendix C: Subsea Noise Technical Report	Yes	• Appendix C-1 Addendum: Updated Subsea Noise Modelling Report[2] • Appendix C-2 Addendum: NAS Modelling Report[2] • Appendix C-3 Addendum: NAS Comparison Technical Note - Marine Mammals, Megafauna and Fish • Appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement)
Appendix D: Benthic Subtidal and Intertidal Ecology – Supporting Information	No[3]	N/A
Appendix E: Fish and Shellfish Ecology – Supporting Information	Yes	Appendix E Addendum: Fish and Shellfish Ecology – Supporting Information
Appendix F: Marine Mammal and Megafauna – Supporting Information	Yes	Appendix F Addendum: Marine Mammal and Megafauna – Supporting Information • Annex 1: Seal Survey Report
Appendix G: Marine Mammals and Megafauna – Technical Report	No	N/A
Appendix H: Offshore Ornithology – Supporting Information	Yes	Appendix H Addendum: Offshore Ornithology – Supporting Information • Annex 8 Addendum[4]: Offshore Ornithology Population Viability Analysis. • Annex 9: Migratory Collision Risk Modelling (Phase 1 Projects Cumulative Assessment)
Appendix I: Onshore Biodiversity – Supporting Information	Yes	Appendix I Addendum: Onshore Biodiversity – Supporting Information
Appendix J: Screening In-Combination Effects	Yes	Appendix J Addendum: Screening In-Combination Effects
Appendix K: Management Plans:		Appendix K Addendum: Management Plans:
• Appendix 5-1: Construction Environmental Management Plan	Yes	• Appendix 5-1 Addendum: Construction Environmental Management Plan
• Appendix 5-2: Environmental Management Plan	Yes	• Appendix 5-2 Addendum: Environmental Management Plan
• Appendix 5-3: Marine Invasive Non-Indigenous Species Management Plan	No	N/A
• Appendix 5-4: Marine Megafauna Mitigation Plan	Yes	• Appendix 5-4 Addendum: Marine Megafauna Mitigation Plan
• Appendix 5-5: Marine Megafauna: Vessel Code of Conduct	No	N/A
-	New appendix	Appendix L: Cumulative iPCoD Modelling Report

[2] Updated subsea noise modelling has been completed and is included in appendix C-1 Addendum: Updated subsea Noise Modelling Report. Further modelling has also been undertaken to model Noise Abatement Systems in appendix C-2 Addendum: NAS Modelling Report.

[3] RFI 8 Benthic Subtidal & Intertidal Ecology outlined a number of points relating to the EIAR. These points were not considered relevant to the NIS Addendum and have therefore been addressed in the EIAR Addendum only.

[4] Annex 8 Addendum, replaces annex 8 included in appendix H: Offshore Ornithology – Supporting Information in the NIS (2024).

Table 1A-2: Further Information requested on Annex I habitats, and Annex II terrestrial and freshwater mammals and details on the Applicant's response.

Reference	Request for Further Information		Response / Reference where information is presented	Concluding statement
1.C	The applicant is requested to confirm whether any on-going or additional surveying has been carried out since the application was lodged and, if so, the applicant is invited to submit any further survey data results and update the planning application documentation, as appropriate.		See appendix I Addendum: Onshore Biodiversity – Supporting Information, which provides details on a number of site-specific surveys (habitats and flora, otter, birds, freshwater) that have been undertaken since the application was lodged.	The updated baseline environment for habitats and flora, otter, birds, and freshwater has not resulted in any changes to the assessment or conclusions presented in the NIS.
19.A	The proposed landfall for the offshore cable is located within the Dunany Point pNHA (Site Code: 001856), and within a Sedimentary Sea cliff habitat as detailed in the EIAR (Appendix 19-01). The EIAR also identifies that the offshore cable corridor comes on shore 'at a shingle bank extending from the scrub (WS1) and dry calcareous and neutral grassland (GS1) habitats to below the High-Water Mark (HWM). Vegetation was restricted to the upper section of shingle and contained a single species of rare occurrence, curled dock Rumex crispus. Below the shingle bank a tidal mudflat and sandflat was present.' The Board notes that the occurrence of shingle beach adds to the scientific importance of Dunany Point pNHA, and that this habitat is as an Annex I habitat in the Habitats Directive.		-	-
	i)	The DAU considers that the description of onshore habitats is limited in the EIAR, and that sections of the cliff habitat at and in the vicinity of the Dunany Point landfall might correspond to annexed habitat Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]. The applicant is requested to submit further information in this regard, including additional survey/data, to determine if the habitats show characteristics of Annex 1 habitats, at and in the vicinity of the Dunany Point landfall.	See section 5.2.2 for details on an updated baseline environment at Dunany. See also section 2.5.9 of this NIS Addendum which provides details on the proposed revised alignment of the offshore cable route and repositioning of the transition joint bay (TJB) (options 1 and 2) at Dunany.	Following a review of the baseline characterisation for CS3 Sedimentary sea cliffs, this habitat meets the requirements (three positive indicator species) for the species composition associated with *vegetated sea cliffs of the Atlantic and Baltic coasts* [1230]. However, the revised location of the TJB (options 1 and 2) at the landfall will now avoid CS3 Sedimentary sea cliffs entirely, avoiding any potential impacts on this habitat. Therefore there is no change to the Annex I habitats presented in section 5.2.2 of the NIS.
	ii)	The impacts to the identified habitats, within this eroding coastline are noted to arise due to the proposed use of dredge/open cut construction technique to allow on-shoring of the cable. This is not considered to be consistent with	Further justification regarding the requirement for open trench construction methods for the installation of the offshore export cable, instead of Horizontal	There is no change to the proposed construction method for the offshore cable corridor and therefore this has not resulted in any changes to the approach

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	best practice in terms of management of impacts on intertidal sediment communities. Notwithstanding the inclusion of Section 4.11.3 of the EIAR (Consideration of Alternatives – Offshore cable construction at the landfall) the applicant is advised that the Board is not satisfied that the promotion of this construction technique within these coastal habitats is justified, given that HDD drilling is likely to be less impactful. The applicant is requested to submit a justification for the proposal to use dredge/open cut construction technique to facilitate the on-shoring of the cable in this instance or alternatively update application documentation to provide for HDD to facilitate the on-shoring of the cable and incorporate an assessment of any alternative impact arising throughout the application documentation where relevant. The responses to the above should be incorporated into the assessment of the landfall of the offshore cable in terms of the significance of the impact on this coastal environment and in terms of the appraisal of Options for the location of the TJB.	Directional Drilling (HDD), is provided in section 2.5.9 of this NIS Addendum. The proposed revised alignment of the offshore cable route and repositioning of the TJB (options 1 and 2) are also outlined in section 2.5.9 of this NIS Addendum.	taken to the assessment presented in the NIS (2024), including appendix D: Benthic Subtidal and Intertidal Ecology – Supporting Information.
19.B	The Board notes that access to rivers was restricted due to flood conditions during the field survey, and therefore, the aquatic bio-index assessment was not applied in some water bodies. In addition, it is noted that the EIAR addresses this limitation by applying the latest EPA River Q-Values to supplement the assessment of aquatic features. Given the sensitivity of the aquatic habitats and the features they support, together with the fact that the aquatic bio-index assessment was not applied in some waterbodies, the applicant is requested to justify the proposal for open trench crossings of water bodies at three locations, as well as at the landfall location, where HDD might be considered less intrusive and best practice.	See appendix I Addendum: Onshore Biodiversity – Supporting Information, which provides details on the aquatic surveys completed in 2023 and 2025. It also provides justification for the proposed open cut crossings at stream locations.	The baseline aquatic environment has been updated, but that has not resulted in any changes to the assessment of Annex II Fish (section 5.5) and Annex II Invertebrates (section 5.6) in the NIS. There are no changes to the conclusions in the NIS i.e. there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Table 1A-3: Further Information requested on Annex II marine mammals and details on the Applicant's response.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
Marine Mammals			
Underwater Noise – Mitigation & Noise Abatement			
9.A	The details that have been submitted in relation to underwater noise arising from the proposed development acknowledges the potential for impacts to arise on marine fauna from both Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS) over significant areas. The Wildlife Act 1976, as amended, lists marine mammals, including all dolphin, porpoise, seal and whale species as protected (with subsequent regulations also applying protections to all species of marine turtles and similar protections to basking sharks), stating that it is an offence to hunt, injure, or wilfully interfere with/destroy the resting or breeding place of such species. The January 2014 National Parks and Wildlife Service (NPWS) 'Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources' published by the Department of Arts, Heritage and the Gaeltacht (NPWS (2014)), notes that sound sources with the potential to induce TTS in a receiving marine mammal has the potential to cause both disturbance and injury. This guidance has a statutory basis under Regulation 71 of SI No. 477 of 2011, and refers to the "offence to injure" under the Wildlife Act, 1976, noting that TTS "may constitute such an injury". Having regard to the information submitted in the EIAR, the NPWS underwater noise guidelines (NPWS, 2014), the strict protections afforded to marine mammals under the Wildlife Act 1976, as amended, in addition to submissions from prescribed bodies and observers, the Board requires a comprehensive suite of noise abatement measures to be submitted and assessed in addition to the existing mitigation measures referenced in the planning documentation. The applicant is requested to submit:	-	The Project had regard to the Guidance to Manage the Risk to Marine Mammals from Man-Made Sound Sources (National Parks and Wildlife Service (NPWS), 2014a) (hereafter known as the 'NPWS (2014) guidance') in preparing the assessment for the NIS. The Project has provided a comprehensive review of noise abatement measures, including the Monopile Offshore Drilling Installation & Grouting Aid (MODIGA) with internal air bubble ring, in addition to existing mitigation measures.
	i) A comprehensive review of relevant mitigation, in addition to what is currently contained in the submitted documentation, specifically appropriate noise abatement measures, which could be applied to the proposed development to reduce/restrict the propagation of noise through the marine	A comprehensive review of relevant noise abatement measures and thresholds is provided in appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement)	Whilst there are a range of relevant Noise Abatement System (NAS) available; these are not required for the Project because the assessment of injury and/or disturbance to marine megafauna from underwater noise

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	environment and provide realistic values for the reduction in sound level possible from these technologies. The review must consider the range of suitable abatement measures available, including consideration of, at a minimum, bubble curtains, casings, resonators alternative hammer/piling technologies to reduce noise emissions, and out in detail the suitability of such measures for the construction of the proposed development at this location, including restrictions in relation to their suitability, where relevant.	The suitability of these measures for the construction of the Project is also outlined in section 6.2.1 of this NIS Addendum.	during pile driving in the EIAR concluded no significant impact. However, in an abundance of caution, the Project is committed to the use of noise abatement measures for the purpose of reducing sound levels from construction piling and will use MODIGA with internal air bubble ring as its noise abatement solution to provide reduction in underwater noise during impact piling. The review of noise mitigation and thresholds has not resulted in changes to the proposed designed-in mitigation or conclusions of the NIS, however MODIGA with internal air bubble ring is included as additional NAS mitigation
	ii) The applicant must also consider and draw on the best available technology and thresholds, including as applied in other EU jurisdictions (e.g. Germany; Belgium; Netherlands; Denmark), to identify and provide for suitable noise abatement to reduce the level and extent of potential noise impacts arising from the proposed development. Examples include the German 160 dB re 1 µPa²s SEL*ss* and 190 dB re 1 µPa SPL*peak* thresholds that must not be exceeded at a distance of 750m from a piling site; or the frequency weighted SEL*cum* PTS thresholds (e.g. harbour porpoise 155 dB re 1µPa2s) that must not be exceeded for a fleeing animal with a starting distance of 200m in Denmark.	See appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement). See section 6.2.1 of this NIS Addendum.	The assessment of noise and noise abatement measures set out in the NIS and this Addendum is in line with the best available technology and thresholds and as such has not resulted in changes to the proposed designed-in mitigation or conclusions of the assessment in the NIS. Whilst the assessment of injury and/or disturbance to marine megafauna from underwater noise during pile driving in the NIS concluded no adverse effect on the integrity of any European site(s), in an abundance of caution, a review of noise abatement systems has been undertaken. The Project is committed to the use of noise abatement measures for the purpose of reducing sound levels from construction piling and will use a casing option known as MODIGA

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
			with internal air bubble ring as its noise abatement solution. The additional information does not change the conclusions of the NIS.
	iii) Revised noise modelling and mapping which provides detailed consideration of the noise abatement strategy selected in response to (ii) above and include: a) The modelled SPLpeak and SELcum PTS and TTS contours for each functional hearing group potentially present, emanating from the existing locations proposed in the application at the periphery of the proposed development to demonstrate the full potential spatial extent of underwater noise propagation. Modelling must also show the noise level (SPLpeak, SELss) at 750m from the locations of each of the piling activities selected. b) The modelled SELss contours for 120-180 dB re 1µPa2s at 5 dB increments at the locations in (a) above. Mapping provided must show the relevant noise contours in the context of implementing the abatement technologies/ measures identified at (i) above and should be displayed alongside the noise contours in the absence of any such noise abatement measures being implemented. c) Revised details showing the change in total impacted individuals of each species before and after consideration of noise abatement technologies. d) Modelling must be performed for monopiles and pin piles, as both are under consideration within the project design envelope. e) Any additional abatement and/or mitigation measures should also be considered where practicable in terms of their potential for reduction of cumulative effects with other projects in terms of underwater noise.	• The following sections in this NIS Addendum have been updated to take into account the updated noise modelling included in appendix C-1 Addendum: Updated Subsea Noise Modelling Report and appendix C-2 Addendum: NAS Modelling Report, which presents the results of noise modelling noise abatement scenarios including sound levels from piling at 750 m (SPLpk, SELss) for scenarios with and without mitigation, with a comparison to German standards. ○ Section 5.3.5.1; ○ Section 5.3.5.2; and ○ Section 6.2.1. • Appendix C-3 Addendum: NAS Comparison Technical Note - Marine Mammals, Megafauna and Fish presents further information in response to items a to e. • An updated in-combination assessment (ICA) is provided in appendix J Addendum: Screening In-Combination Effects. • Appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement); • Appendix F Addendum Marine Mammals: Supporting Information; and • Section 6.2 provides further information on mitigation.	The outputs of the NAS modelling and mapping clearly demonstrate the potential for measurable reductions in auditory injury (Permanent Threshold Shift (PTS)), Temporary Threshold Shift (TTS) and disturbance impact ranges/areas. Given the range of reductions demonstrated (see appendix C-3 Addendum: NAS Comparison Technical Note - Marine Mammals, Megafauna and Fish) it is expected that application of the NAS available at the time of construction will produce similar results. Furthermore, given that the impact assessment (see section 5.3 of this Addendum) has concluded no adverse effects on marine mammals, it is considered that any application of NAS would simply further reduce the magnitude of effect on marine mammals for PTS, TTS and disturbance. Despite the assessment of injury and/or disturbance to marine megafauna from underwater noise during pile driving concluding no significant impact, the Project is committed to the use of noise abatement measures for the purpose of reducing sound levels from construction piling. In an abundance of caution, for the short duration of hammer impact piling of the sacrificial casing (and limited number of days piling), the Project will use the MODIGA with internal air bubble

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
			ring as its noise abatement solution (see appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement)) to provide reduction in underwater noise during piling. This further contributes to the conclusion of no adverse effect on marine mammals from underwater noise during pile-driving. The additional information does not change the conclusions of the NIS.
9.B	The applicant is requested to provide a detailed justification for the 500m (Geophysical acoustic surveys) - 1,000m (pile driving) Marine Mammal Mitigation Zones (as detailed in the Marine Mammal Mitigation Plan (MMMP) (Appendix 5-4 of the EIAR), acknowledging that the results of the underwater noise assessment on marine mammals indicate impacts (TTS) may be experienced beyond mitigation zones for a number of species (Table 1-5 of the MMMP).	• See section 4.2 in appendix F Addendum: Marine Mammals – Supporting Information which provides a justification for the mitigation zones. • See appendix 5-4 Addendum: Marine Megafauna Mitigation Plan (in appendix K Addendum: Management Plans of the NIS), which has been updated in response to 9.B.	The Marine Mammal Mitigation Zone focused on the maximum predicted injury ranges. The NPWS (2014) guidance details that 'pile driving activity shall not commence if marine mammals are detected within a 1,000 m radial distance of the pile driving sound source'. In revised noise modelling the maximum PTS range was less than the 1,000 m for SPLpk, and with application of an ADD the SELcum PTS range would not be exceeded. Therefore, the mitigation range of 1,000 m encompasses the auditory injury (PTS) ranges. The additional information does not change the conclusions of the NIS.
9.C	The EIAR should address the inconsistency in deterrence from different Acoustic Deterrent Device manufacturers and device specifications across studies, and some appear to be misrepresented in the chapter text in terms of their effectiveness. The type of ADD and source level / frequency selected will have direct implications for its effectiveness of impact on different species. Not all species will be equally impacted by a single device, variations in both sound level and frequencies across devices. The applicant is therefore requested to clarify the relevant mitigation measures to be	• See appendix 5-4 Addendum: Marine Megafauna Mitigation Plan (MMMP) (in appendix K Addendum: Management Plans of the NIS), which has been updated in response to 9.C to address Acoustic Deterrent Device (ADD) deterrence and to clarify the relevant mitigation measures to be utilised, including the Applicant's commitment to using specified devices. • See also section 6.2 which refers to updated MMMP.	The updates to the MMMP have not resulted in changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	utilised, including their commitment to using specified devices.		
9.D	The applicant is requested to address the possibility for temporal mitigation, for example limiting piling to periods that do not overlap with the harbour or grey seal pupping season or the harbour porpoise calving season, to further limit effects on nearby SACs.	• See section 6.2 which provides a response to why the Applicant has not proposed the use of temporal mitigation to avoid seasonal effects, outside of the piling strategy.	Consideration of temporal mitigation is unnecessary and would be disproportional to the risk as piling is limited to 26 days total. There are no changes to the conclusions of the assessment in the NIS.
9.E	The Board notes the applicants' commitment to implement phased piling as part of a Piling Strategy which will be prepared in collaboration with other offshore windfarms in the western Irish Sea to reduce the potential for an in-combination effect. Noting that the Irish Sea Phase 1 ORE projects are independent of one another, the applicant is requested to provide further information regarding the piling strategy outlined in appendix 05-02: Environmental Management Plan, including an outline of the programming schedules of the other projects to provide a more robust assessment of the potential adverse effects of cumulative noise (airborne and underwater) from concurrent pile driving across the Phase 1 projects in the Irish Sea.	• Detail on phased piling was provided in Table 5-10 in the NIS. See section 4.2 in appendix F Addendum: Marine Mammals – Supporting Information for detail on phased piling. A piling strategy can only be prepared post consent once it is known which projects have the potential to overlap with the Project's programme for piling. The finalised project schedules for each project cannot be determined until each has planning consent. • An updated ICA is provided in appendix J Addendum: Screening In-Combination Effects and updated CIA population modelling (see appendix L: Cumulative iPCoD Modelling Report) has been conducted using piling schedules in other applications (noting these dates are likely to change due to the application process and therefore are treated as indicative).	The Project has committed to a piling strategy to be prepared post consent, prior to commencement of construction. The updated cumulative impact assessment (CIA) with cumulative population modelling concluded no adverse effects for marine mammal and megafauna receptors. There are no changes to the conclusions of the assessment in the NIS.
9.F	The Board acknowledges the applicant's extensive experience in offshore renewable projects in both the North Sea and Baltic Sea, and other jurisdictions, including the information presented in the EIAR (appendix 5-11: Supporting Information Demonstrating the Applicant's Experience on Other Offshore Wind Farm Projects). The applicant is invited to submit any details or monitoring/reporting available from previous experience of offshore development in other EU jurisdictions which demonstrates the efficacy of mitigation measures adopted (and proposed in the current application) in relation to underwater noise. In all cases where mitigation is proposed or requested as above, the applicant is requested to comply with all aspects of NPWS (2014) Guidelines including soft start times, delay durations, mitigation zone sites, mandatory ramp-up procedures and defined reporting requirements. Furthermore the use of distance estimation formula should	• The Applicant has submitted further details on measures used on the Arcadis Ost 1 project, which includes the use of Big Bubble Curtains. These are provided in the EIAR Addendum (appendix 10-5: Monitoring Reporting on Previous Project Experience). • Appendix K Addendum: Management Plans (see appendix 5-4 Addendum: Marine Megafauna Mitigation Plan) and section 5.3.4 of this Addendum, confirm that the MMMP has been prepared in accordance with the NPWS (2014) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters and outlines how this has been achieved.	There are no changes to the conclusions of the assessment in the NIS. The design and installation methodology of the Project incorporates the extensive experience the applicant has on other Offshore Renewable Energy (ORE) projects. Despite the assessment of injury and/or disturbance to marine megafauna from underwater noise during pile driving concluding no significant impact, the Project is committed to the use of further noise abatement measures for the purpose of reducing sound levels from construction piling. In an abundance of caution, for the

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	follow the same approach suggested for distance estimation by the Joint Nature Conservation Committee (JNCC) (refer to Marine Mammal Observer Association article on the subject of distance estimation using reticular binoculars for further explanation) and use standard trigonometric equations for calculation.		short duration of stability piling required for the sacrificial casing, the Project will use the MODIGA with internal air bubble ring as its noise abatement solution.
Underwater Noise Modelling			
9.G	In terms of the underwater noise modelling assessment, a conversion factor (CF) is mentioned in the text of the EIAR but there is no further discussion of this value (e.g., description, justification) in the EIAR or in the Subsea Noise Technical Report (EIAR Appendix 10-02). The applicant is requested to provide a description of the value and how this value was selected.	• See appendix C-1 Addendum: Updated Subsea Noise Modelling Report, which outlines that the source modelling used the equivalent monopile Energy Conversion Factor as outlined in De Jong and Ainslie, 2008, which was considered the best available advice at the time. However, advances have been made in the field of underwater noise modelling since the assessment was carried out, and the modelling was revised to remodel the injury ranges associated with piling to present the most scientifically rigorous and up to date results using the recent research presented by Wood et al. (2023). • See section 6.1 in appendix F Addendum: Marine Mammals – Supporting Information	The revised source modelling has resulted in an updated marine mammal assessment; however this does not change the conclusions in the NIS.
9.H	It is noted that recent research (Wood *et al*., 2023) suggests that the modelling method of Weston (1971) used in the application, has been found to be problematic and potentially underestimates the received levels from the noise sources. The 0.5% value used in the Subsea Noise Technical Report is within a reasonable range, however no justification for this value has been provided, therefore it cannot be assumed it has been chosen based on specific aspects of the operations. Options for this value vary, and may reach up to 1.56%, which would give a difference of 4.9dB from the 0.5% used in the assessment. The applicant is requested to address these concerns and, in particular, to provide a justification for the modelling methodology employed.	• As outlined above, the modelling was revised applying an updated approach and no longer uses a 0.5% conversion factor (as recommended by Wood *et al*., 2023). Subsequently the injury ranges associated with piling were remodelled to present the most scientifically rigorous and up to date results to underpin the impact assessment. See appendix C-1 Addendum: Updated Subsea Noise Modelling Report.	As above, there are no changes to the conclusions of the assessment in the NIS.
9.I	The modelling methodology for Acoustic Deterrent Device (ADD) use is not clear in the Subsea Noise Technical Report, for example whether the applicant considers complete exclusion, or if the sound level or frequency of the representative ADD has been considered. It does not	• The Applicant has considered the available literature on the impact of ADDs and has assumed complete exclusion based on a conservative marine mammal swim speed. Further details are included in appendix F	There are no changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	appear that the ADD modelling is informed by the dose-response curve. The applicant is requested to clarify this.	Addendum: Marine Mammals & Megafauna Supporting Information (see section 5).	
9.J	EIAR Chapter 10 and Appendix 1-21 of the Subsea Noise Technical Report consider underwater noise impacts associated with each phase of the project. The applicant is requested to clarify whether Ultra-short Baseline (USBL) positioning systems will be used during pre-construction surveys. If so, the applicant is requested to include these systems in the assessment for auditory injury.	• At the time of the EIAR, only Multibeam Echosounder (MBES) was expected to be employed however the Project clarifies Ultra Short Baseline (USBL) positioning systems may be used during routine geophysical surveys, Therefore see section 6.2 appendix F Addendum: Marine Mammals – Supporting Information which provides an assessment of auditory injury from the use of USBL, which will be used on the Project. • Please note that the reference to appendix 1-21 in RFI 9.J is an error as there are no appendices in appendix 10.2: Subsea Noise Technical Report.	Additional assessment of the potential impact of USBL has been included, however there are no changes to the conclusions of the assessment in the NIS.
9.K	In terms of the species densities values, it is noted that Table 10-6 of the EIAR describes the two values that will be selected for density of each species, to provide a range. In Table 10-30, however, these values are presented as 'Average' and 'Maximum', which is not accurate. The value presented as the 'Average' is the lower of the two values of the range. The maximum density should be used to establish the highest number of animals potentially affected, to ensure a robust conservative assessment. The applicant is requested to review and adjust the document as necessary.	• See appendix F Addendum: Marine Mammals – Supporting Information section 6.1.2.2 which splits out original tables in the NIS into two tables (Small Cetaceans in the European Atlantic waters and North Sea (SCANS)-IV densities and alternative densities, as per RFI request 9L) and clarifies whether each density estimate is the minimum or maximum for each species.	The updates to the data presented do not change the conclusions of the assessment in the NIS.
9.L	In addition, a number of inconsistencies are noted in terms of the application of densities across sources. For example, the SCANS-IV surveys have been used as the 'Average' density in some cases and the 'Maximum' in others without any commentary on the appropriateness of the choices made. The applicant is requested to provide separate assessment tables for each density source used, (i.e. one table with the consistent use of SCANS-IV for all densities and separate tables where SCANS-III or site-based surveys have been used). All relevant species should be included.	• See appendix F Addendum: Marine Mammals – Supporting Information for clarification of dual density approach: – Each pair of tables splits the original table into SCANS-IV densities and alternative densities and all are updated with revised underwater noise modelling. ○ Table 6-7 of appendix F: Marine Mammals – Supporting Information has been split into two tables; 6A-3 and 6A-4 in the Addendum. ○ Table 6-8 of appendix F: Marine Mammals – Supporting Information has been split into two tables; 6A-5 and 6-A6 in the Addendum.	The assessment applies dual densities, and this has been clarified. The updates to the data are presented appendix F Addendum: Marine Mammals and there are no changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		○ Table 6-9 of appendix F: Marine Mammals – Supporting Information has been split into two tables; 6A-14 and 6A-15. ○ Table 6-12 of appendix F: Marine Mammals – Supporting Information has been split into two tables; Table 6A-20 and 6A-21. ○ Table 6-15 of appendix F: Marine Mammals – Supporting Information has been split into two tables; Table 6A-23 and 6A-24.	
Behavioural Disturbance			
9.M	The EIAR does not appear to adequately justify the screening out of injury and/or disturbance to marine megafauna from operational underwater noise. While the scientific papers cited in the justification for omission are noted (Norro *et al*., 2011; Hastie *et al*., 2015), the Board is concerned that the scale of the turbines referenced (3MW and 5MW turbines) do not compare with the proposed 25 no. 15MW turbines proposed for the Oriel Project, and that the combined noise effect of the installation may not be 'unlikely to be at a level sufficient to cause injury or behavioural changes to marine mammals, fish or turtles' as indicated in the Subsea Noise Technical Report. It is further noted that the desktop study of operational noise from wind turbines (Table 1-31 of Appendix 10-2: Subsea Noise Technical Report) considers turbines of between 2MW and 5MW. The Board, therefore, requests that disturbance from operational turbines be assessed in the context of the size and the number of turbines proposed, and that the assessment of the combined noise effects of all turbines be examined and relevant disturbance ranges identified.	• It was considered that any impact from operational noise would be highly localised and not at a level which would cause injury or behavioural changes, and therefore not cause a significant impact. However, in response to RFI 9.M, see section 6.5 in appendix F Addendum: Marine Mammals – Supporting Information, which assesses injury and/or disturbance to marine megafauna from operational underwater noise. • Assessment is also provided in section 5.3.5.2 of this NIS Addendum • Appendix C-2 Addendum: NAS Modelling Report presents the underwater noise modelling of operational underwater noise.	This additional assessment has been included in this Addendum in section 5.3.5.2, and concludes that there are no adverse effect on the integrity of any European site(s) due to the Project alone.
9.N	The applicant is requested to more clearly define the methodology for the dose-response assessment. The studies on which the dose-response assessment is based (Graham, 2017; 2019) are explained in detail, however the specific threshold within the dose-response curve that has been used is not stated (Table 10.21 the threshold is listed as "Based on SEL 5 dB contours"). The process of applying the dose-response curve to density maps to determine number of individuals disturbed is not clearly elaborated upon (e.g. description of density calculation within each	• See section 6.1.2.2 in appendix F Addendum: Marine Mammals – Supporting Information, which explains the dose response calculations and how they were applied to determine the number of animals potentially disturbed.	The updates to the data are presented in appendix F Addendum: Marine Mammals and there are no changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	isopleth and summing). The applicant is requested to address this issue.		
9.O	The Board note the use of NOAA Level B Harassment Threshold (National Marine Fisheries Service, USA) rather than more recently defined thresholds in European jurisdictions (e.g. Danish threshold of 143 dB re 1µPa (or 103 dB re 1µPa VHF-weighted) single strike sound exposure level (SELss) (Tougaard, 2021). The Board further note the threshold values recommended by TG Noise (Sigray et al., 2023) and thresholds used in the Ireland's Draft Marine Strategy Part 1, Articles 8, 9 and 10 report 2024 and its Annex III. The applicant is requested to discuss these thresholds and justify why they have not been used in the assessment.	• See section 6.1 in appendix F Addendum: Marine Mammals – Supporting Information for a review of alternative thresholds to the applied National Oceanic and Atmospheric Administration (NOAA) Level B Harassment Threshold and justification for the approach to the assessment of disturbance from piling (using a dose-response approach, with additional application of the strong and mild disturbance thresholds).	Whilst discussion of the thresholds are presented in appendix F Addendum Marine Mammals, there are no changes to the conclusions of the assessment in the NIS.
9.P	Please address the following comments regarding the presentation of Disturbance data: i) The EIAR requires a discussion of the maximum range of disturbance for NOAA Level B harassment. ii) Table 10-25 of the EIAR appears to be missing a column. The applicant is requested to include SELcum mitigated injury range for piling at the east modelled location (initiation + soft start + ramp up). iii) The applicant is requested to expand Table 10-30 of the EIAR to display the min, max, and mean range to the selected disturbance threshold. iv) The worst-case number of piling events does not account for contingency of having to move and re-pile if substrate does not accept the pile. The applicant is requested to add in this consideration or justify its exclusion for the worst-case scenario.	• Whilst this RFI is EIAR focused, it applies to supporting assessment of the NIS. See the following sections in appendix F Addendum: Marine Mammals – Supporting Information – Section 6.1.2.2 for 9.Pi, for discussion of NOAA Level B harassment. – Section 6.1.2.1 for 9.Pii, for inclusion of SEL_{cum} mitigated injury range. – Section 6.1.2.1 for 9.Piii, for updated tables on numbers of animals predicted to be disturbed for different densities. – Section 4.1 for 9Piv, for project design parameters (PDP).	The updates presented in appendix F Addendum: Marine Mammals do not change the conclusions of the assessment in the NIS.
Survey/Monitoring			

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
9.Q	With reference to the Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 2, April 2018 by the Department of Communications Climate Action and Environment (DCCAE) (DCCAE (2018) Guidance), the applicant is requested to provide additional justification/assessment in relation to the following: i) The selection of a 4km buffer area extending around the Array Area. The DCCAE (2018) Guidance recommends a minimum buffer of 10km for cetaceans and seals with monthly haul-out site surveys. ii) The lack of empirical acoustic data, noting the DAU submission which states the omission of acoustic monitoring does not allow the site to be fully characterised for all Annex IV species. iii) The lack of any vantage point surveys or monitoring for pinniped species at the cable landfall location.	• See section 2.2 in appendix F Addendum: Marine Mammals – Supporting Information for further details on the survey methodology in response to items i and ii. • Regarding 9.Q.iii, see also Annex 1: Seal Survey Report in appendix F Addendum: Marine Mammals – Supporting Information, which presents the results of seal surveys completed in 2024/2025.	The applicant considers the 4 km buffer is appropriate for a precautionary and comprehensive evaluation of the baseline for assessment. Inclusion of broadband recorder data would not result in a change to the conclusion of assessment. Seal surveys were carried out in 2024/2025, with very few seals recorded at the cable landfall location and no seals were hauled out in any of the surveys. The updates presented in appendix F Addendum: Marine Mammals do not change the conclusions of the assessment in the NIS.
9.R	The DAU note that monitoring for pinniped species at the location where the proposed development interacts with the shore was not carried out by the applicant and therefore there is no information on whether harbour and grey seals use this site. The applicant is requested to submit further information by means of specific surveys of the site for pinnipeds and that this should also be set in the context of seasonal changes in distribution of these species. The applicant is requested to refer to the most up-to-date NPWS seal data and DCCAE (2018) Guidance.	• See section 2.2 in appendix F Addendum: Marine Mammals – Supporting Information • See also Annex 1 in in appendix F Addendum: Marine Mammals – Supporting Information, which presents the results of seal surveys completed in 2024/2025.	The seal survey data collected in 2024/2025 does not change the conclusions of the assessment in the NIS.
9.S	The applicant is requested to confirm whether any on-going or additional surveying has been carried out on the site in relation to mobile species since the application was lodged. If so, the applicant is invited to submit any further survey data results and incorporate these into the assessments within the application documentation as appropriate.	Seal surveys have been completed in 2024/2025. No other surveys were completed for mobile species. See Annex 1 in appendix F Addendum: Marine Mammals – Supporting Information,	The seal survey data collected in 2024/2025 does not change the conclusions of the assessment in the NIS.
Cumulative and Transboundary Impacts			
9.T	The applicant is requested to map maximum masking, and behaviour impacts in the cumulative noise impact assessment on marine mammals and fish and behavioural impacts for shellfish for all phases of the project, including	• See appendix F Addendum: Marine Mammals – Supporting Information: – Section 7 – for details on masking.	The further updates presented do not change the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	the operational phase. The cumulative assessment should model impacts based on concurrent construction with and without noise abatement with at least one other windfarm in the Irish Sea. Critical periods of breeding and spawning should be identified and if these are associated with any known vocalisations.	– Section 2.1 – for details on critical periods of breeding and spawning.	
9.U	The assessment of cumulative impacts appears to deviate from standard practice in that the Cumulative Impact Assessment (CIA) should consider the cumulative percentage of disturbed individuals for each species within the respective Management Unit. The applicant is requested to address this.	• Although this RFI is EIAR focused, the numbers of animals potentially disturbed from in-combination piling is presented in Table 7-4 of the NIS, and therefore has also been updated in response to RFI 9.U. See section 7.2 in appendix F Addendum: Marine Mammals – Supporting Information	There are no changes to the conclusions of the assessment in the NIS.
9.V	Under the current definition of Medium magnitude in the EIAR ("reversible or irreversible in individuals, could result in some population-level effects, but not a level that would alter the relevant population trajectory over a generational scale"), when considering >5% of the reference population that may be impacted for some species, certain evaluations of magnitude could fall within the Medium category. Please provide justification for their assessment as lower magnitude.	• See section 7.2 in appendix F Addendum: Marine Mammals – Supporting Information for justification of the assessment of low magnitude for injury and/or disturbance to marine megafauna from underwater noise during piling-driving / drilling.	There are no changes to the conclusions of the assessment in the NIS.
9.W	In addition to the above, the CIA sensitivity appears to be redefined for each of the receptors from the sensitivities used during assessment alone. This is contrary to best practice. While magnitude of the disturbance may change when considering cumulative effects rather than effects from piling alone, the sensitivity should remain constant. The applicant is requested to address this.	• The Applicant acknowledges errors in the sensitivity conclusions. Whilst the detailed discussion of sensitivity remains valid and the evidence still stands and remains unchanged, the Applicant agrees the final conclusions of sensitivity should align with those for the project alone assessments and has clarified this in section 7.1 in appendix F Addendum: Marine Mammals – Supporting Information.	There are no changes to the conclusions of the assessment in the NIS.
9.X	The Board notes that the Oriel project took part in consultation across all Irish Sea Phase 1 ORE Projects to assess whether cumulative disturbance resulting from pile driving activities across the five Irish Sea Phase 1 ORE Projects is predicted to result in population level impacts to four marine mammal species (harbour porpoise, bottlenose dolphins, harbour and grey seals). However, there has been no iPCoD modelling performed for the CIA, nor inclusion or consideration of an indicative piling schedule any of the	• Although this is EIAR focused, the ICA in the NIS draws upon the cumulative population modelling. Therefore, see section 7 in appendix F Addendum: Marine Mammals – Supporting Information which summarises the results of the cumulative modelling; • See appendix L: Cumulative iPCoD Modelling Report, which has been included in the NIS Addendum.	Population modelling for other Irish Sea Phase 1 ORE projects and additional projects in the Irish Sea concluded no significant impact on marine mammals. There are no changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	other Phase 1 projects within the EIAR or Appendix 10-03: Marine Mammal Population Modelling Report (iPCoD). The applicant is requested to update the document with iPCoD modelling to be used in the CIA, including indicative piling schedules for the other Irish Sea Phase 1 ORE projects, and to submit to the Board any documentation resulting from the aforementioned consultation.		
9.Y	Notwithstanding the rationale provided in relation to the assessment of impacts of operational underwater noise on marine megafauna, and the scoping out of injury and/or disturbance to marine megafauna, including basking sharks and sea turtles, from operational underwater noise (Chapter 10, Table 10-13), the applicant is requested to assess potential impacts from operational underwater noise in terms of the cumulative assessment with other Irish Sea Phase 1 ORE projects.	• See additional section 7.2.4 in appendix F Addendum: Marine Mammals – Supporting Information, for assessment of potential impacts from operational underwater noise in terms of the ICA.	Injury and/or disturbance from operational noise was included as an additional impact in the in-combination effects assessment and concluded no adverse in-combination effect on marine mammals and megafauna.
Collisions			
9.Z	The DAU state in their submission on this application that when assessing the risk of collisions between marine mammals and vessels, the applicant must include all data relevant to Irish waters and not solely rely on reports from UK monitoring programmes, e.g. those reported in Irish Whale and Dolphin Group Cetacean Stranding Schemes and Irish Whale & Dolphin Group Deep Diving and Rare Species Investigation Programme (both supported by NPWS funding). The applicant is requested to address this issue and incorporate the findings of these data sources in to the submitted documentation.	• See section 6.3.1.2 in appendix F Addendum: Marine Mammals – Supporting Information for additional data to support the assessment of collision risk.	The additional detail on collision presented in appendix F Addendum: Marine Mammals does not change the conclusions of the assessment in the NIS.
Appropriate Assessment			
9.AA	In terms of the NIS submitted in support of the proposed development, it is noted that the Lower River Shannon SAC and West Connacht Coast SAC, located on the west coast of Ireland, are two sites with bottlenose dolphin identified as designated features. Given the noted connectivity between the west and east coasts of Ireland, the applicant is requested to justify the omission of these two important sites for this species from the screening process.	• See Report to Inform Appropriate Assessment Screening - Addendum	The Lower River Shannon and West Connacht Coast Special Areas of Conservation (SAC) remain screened out and therefore there is no change to the conclusions of the assessment in the NIS.
NOTE 1	In the interests of minimising the potential for cumulative effects to arise on the environment and marine fauna, and to further inform the Boards consideration of this matter, the	• A piling strategy will be agreed with the other phase 1 developers. A piling strategy can only be prepared post consent once it is known which projects have the	There are no changes to the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	applicant is strongly advised to liaise with the other Phase I projects in order to develop a robust suite of appropriate mitigation measures that will reduce the propagation of noise into the Irish Sea and ensure that maximum protection is afforded to all relevant species who inhabit/transit these waters. In all cases where mitigation is proposed or requested as above, the applicant is requested to comply with all aspects of NPWS (2014) Guidelines including soft start times, delay durations, mitigation zone sites, mandatory ramp-up procedures and defined reporting requirements. Furthermore, the use of distance estimation formula should follow the same approach suggested for distance estimation by the JNCC (refer to Marine Mammal Observer Association article on the subject of distance estimation using reticular binoculars for further explanation) and use standard trigonometric equations for calculation.	potential to overlap with the Project's programme for piling. The finalised project schedules for each project cannot be determined until each has planning consent. • See appendix 5-4 Addendum: Marine Megafauna Mitigation Plan (MMMP) in appendix K Addendum: Management Plans, which confirm that the MMMP has been prepared in accordance with the NPWS (2014) guidance and outlines how this has been achieved. • Section 5.3.4 (and the MMMP) which confirms the use of distance estimation formula will follow the same approach suggested for distance estimation by the Joint Nature Conservation Committee (JNCC) (JNCC, 2017) (as discussed in Marine Mammal Observer Association (MMOA) (2024)) and will use standard trigonometric equations for calculation.	

Table 1A-4: Further Information requested relating to Annex II fish and details on the Applicant's response.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
Study Area			
10.A	The Fish and Shellfish Ecology EIAR chapter has considered both a 'Western Irish Sea Fish and Shellfish Ecology' Study Area, and a 'Fish and Shellfish Ecology' Study Area. It is stated that the 'Western Irish Sea Fish and Shellfish Ecology' Study Area will be used to aid in determining the baseline, and for the determination of magnitude of impacts that extend beyond the project boundary. Whilst it is appropriate that the 'Western Irish Sea Fish and Shellfish Ecology' Study Area is used in the determination of a baseline, its use may result in decreased perception of impacts to local populations and/or critical supporting habitat. Further, the 'Western Irish Sea Fish and Shellfish Ecology' Study Area is referenced across a wide range of impacts in the determination of impact magnitude and significance, even when those impacts do not extend beyond the project boundary. This has the potential to result in an underestimate of local population impacts. As such, the Board considers that while the 'Western Irish Sea Fish and Shellfish Ecology' Study Area is acceptable to establish the baseline, this study area is too large to contextualise impacts. The applicant is requested that, where impacts have been assessed against the 'Western Irish Sea Fish and Shellfish Ecology' Study Area, these are reassessed against a more appropriate study area so that impact magnitude is assessed against a more suitable frame of reference.	This request is not relevant to Appropriate Assessment or the NIS, as it relates to sandeel and Nephrops, which are not Annex II species. Updates are instead included in EIAR Addendum (chapter 9 Addendum: Fish and Shellfish)	-
Baseline Environment			
10.B	Table 9-8 of EIAR Chapter 9 indicates a number of species determined as being unlikely to occur within the study area, based on results of the 2007 Baseline Survey. Results of this survey are not presented in the EIAR, and these determinations can, therefore, not be verified. In certain cases, these findings appear to contradict those indicated in other sources, including Ellis *et al.* (2012), and therefore results of this survey should not be considered in isolation of other available data. The applicant is requested	This request is not relevant to Appropriate Assessment or the NIS as the updates are not relevant to any Annex II fish species and therefore is not relevant to this assessment (see chapter 9 Addendum: Fish and Shellfish Ecology in EIAR volume 2B Addendum for the response).	-

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	to include the 2007 Baseline Survey report/results as an Appendix in the EIAR, as well as providing a review of how the different sources were applied proportionally in the assessments.		
10.C	With regard to Atlantic herring, the Board notes the submission of Appendix 09-02: Herring Spawning Technical Report. This report identifies a wide area of habitat suitable for Atlantic herring spawning, both within and surrounding the Project Area, with a 'Main Area of Spawning Aggregation' adjacent to the northwest corner of the Project Area. The report also recommends that further data collection is undertaken "*to gain a better understanding of the specific location of the grounds within Dundalk Bay and the precise timing of the spawning events to validate the extent of the spawning period".* Data and anecdotal evidence suggest a spawning period of mid-August to March. The findings made within this report are not referenced within the EIAR, and adequate consideration of potential impacts on this herring population are not made within the assessment. The Board, therefore, requests that the applicant applies the findings of the Herring Spawning Technical Report in the impact assessment for Atlantic herring throughout the EIAR.	This request is not relevant to Appropriate Assessment or the NIS, as it relates to herring, which is not a QI species associated with any European site. Therefore, it is not included in this assessment (see chapter 9 Addendum: Fish and Shellfish Ecology in EIAR volume 2B Addendum for the response). However, the indirect effects on herring as a source of prey for SCI bird species is considered in response to 7.F.	-
10.D	Any potential mitigation measures deemed necessary as a result of the updated assessment required at B and C above should be clearly identified and considered in any updated application documentation.	No further mitigation measures other than those outlined previously will be required to reduce impacts on migratory diadromous fish species. However, additional information on noise reduction measures which will reduce impacts on fish and shellfish receptors has been added in section 6.2 of this Addendum.	-
Impacts Scoped Out of the Assessment			
10.E	The Board has concerns in terms of potential impacts which have either been scoped out for Fish and Shellfish Ecology, or have not been considered (see Table 9-11 of Chapter 9 of the EIAR):		
	i) Seabed disturbance leading to the release of sediment contaminants and resulting potential effects on fish and shellfish ecology is scoped out. The justification for scoping states that "*site*	See section 4.3 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. Additional justification has been added to justify why there is no potential for likely significant	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	specific sediment contamination levels are unknown", but that "*there is limited potential of contamination to sediments from anthropogenic activities given the levels identified within the offshore wind farm area and offshore cable corridor*". It is not clear whether data were available to support this statement. Further justification states that this impact was scoped out based on negligible impacts identified to Benthic Ecology receptors. The Board requests that the applicant review and justify the scoping out of this impact given the sensitivity of the area in terms of fish and shellfish ecology. The planning documentation should be updated accordingly.	effects (LSE) on SACs as a result of seabed disturbance leading to the release of sediment contaminants and the clearance of Unexploded Ordnance (UXO) in Table 4A-1 (superseding Table 4-3 in appendix E: Fish and Shellfish Ecology – Supporting Information). The colonisation of hard structures impact remains screened out (no LSEs), due to diadromous species not relying on hard surface communities for feeding or migration, and therefore there being no route to impact for any SACs in Table 4A-1 (superseding Table 4-3 in appendix E: Fish and Shellfish Ecology – Supporting Information).	
	ii) Impacts associated with unexploded ordnance (UXO) are not considered within the assessment of impacts within the Fish and Shellfish Ecology Chapter of the EIAR. As a source of impulsive noise, UXO has the potential for significant impacts on marine receptors, including Fish and Shellfish impact assessments, or that rationale is provided as to why it is to be scoped out. Evidence available from the relevant supporting information (e.g. Appendix 5-13: UXO Desk Study) should be referenced.		
	iii) Colonisation of hard structures is scoped out of assessment. Whilst the scoping decision suggests that the total area of hard infrastructure is likely to be "extremely small", Table 9-9 indicates that up to 50% of cables may require cable protection. It is also noted that this impact was scoped into the assessment of Benthic Ecology (EIAR Chapter 8). It is requested that the impact of the colonisation of hard structures is reconsidered and is scoped in and fully assessed.		
Injury and/or Disturbance to Fish from Underwater Noise during Pile-Driving			
10.F	The Board considers, based on the application documentation, that the assessment and consideration of underwater noise, appear under precautionary with regard to modelling and impact assessment, as follows:	The assessment of effects of injury and/or disturbance to fish from underwater noise during pile-driving has been updated to account for revised modelling undertaken in appendix C1 Addendum: Updated Subsea Noise Modelling	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		Report. This is presented in section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information, with the overall conclusion remaining unchanged.	
	i) While the use of soft start procedures is considered a mitigation for marine mammals, industry best practice would suggest that fish are to be considered a stationary receptor and, therefore, the references to '*expected fleeing behaviour*' are not relevant to fish. This approach has the potential to greatly underestimate the impact ranges on fish populations. The applicant is invited to revise the planning documentation with fish considered as stationary receptors or justify this methodology.	An additional table for fleeing and stationary receptors have been presented in section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. The overall conclusion of the potential impacts on migratory fish remains unchanged.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
	ii) It appears that there is an error in the EIAR, in that the wrong table from the Subsea Noise Technical Report (Appendix 10-02) has been transposed into Table 9-17 of the EIAR (Table 1-20 of Appendix 10-02 was transposed, but it should have been Table 1-21). The transposed data indicate reduced ranges when compared to the correct data and may result in the magnitude of impacts associated with underwater noise having been underrepresented. This should be corrected (noting a request for further changes presented in point iii below).	The corrected outputs have been inserted into section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information, with no overall change to the assessment conclusion.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
	i) With regard to the noise modelling employed in the assessment, the Board has already noted above in Section 10 H of this report that the equation used has recently been reviewed within Wood et al. (2023)[4], and that the modelling method of Weston (1971) used in the application has been found to be problematic and potentially underestimates the received levels from the noise sources. The applicant is requested to address these concerns and, in particular, to provide a justification for the modelling methodology employed. In this regard, the Board is concerned that the EIAR has adopted an under precautionary approach to underwater noise.	The assessment of effects of injury and/or disturbance to fish from underwater noise during pile-driving has been updated to account for revised modelling undertaken in appendix C1 Addendum: Updated Subsea Noise Modelling Report. This is presented in section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information, with the overall conclusion remaining unchanged.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.

Reference	Request for Further Information		Response / Reference where information is presented	Concluding statement
	ii)	Underwater noise impacts should be updated to ensure impacts are measured against the most sensitive hearing receptor group (fish with a swim bladder used in hearing e.g. Atlantic herring).	The modelling presents impact ranges for the highly sensitive Group 4 species (which includes herring and Twaite shad *Alosa fallax*) in section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. All other investigated diadromous species have lower sensitivity to this impact and therefore will be less impacted.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
	iii)	The total area anticipated to be impacted by underwater noise effects, at each dB threshold, should be presented alongside figures.	The impacted areas for the SEL_{cum} metric have been included in section 6.2.1 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
	iv)	Given the extensive distance of Temporary Threshold Shift (TTS) on fish with a swim bladder used in hearing, the location of sensitive Atlantic herring spawning grounds within the boundary of the site, and the sensitivities of the species in terms of their spawning habitat in the region, the applicant is requested to assess the possibility for the use of Noise Abatement Systems (NAS) to reduce the spatial impact of underwater noise associated with impact piling beyond soft start procedures.	This request is not relevant to Appropriate Assessment or the NIS, as it relates to herring, which is not a Qualifying Interest (QI) species associated with any European site. Therefore, it is not included in this assessment. However, the indirect effects on herring as a source of prey for SCI bird species is considered in response to 7.F	-
	v)	Further to the above, the applicant is requested to provide additional information in relation to the decision to scope out the potential disturbance to fish from underwater noise generated by wind turbines during operation and impacts to fish from geophysical survey noise generated during operational and maintenance surveys, in light of any updates to the modelling requested above and to ensure impacts are measured against the most sensitive hearing receptor group (fish with a swim bladder used in hearing e.g. Atlantic herring).	See section 4.3 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. Additional detail has been provided using the results of the updated modelling to justify screening out LSEs from operational noise from wind turbines on any SACs in the Western Irish Sea Fish and Shellfish Ecology Study Area. Specifically, the highly restricted impact ranges (i.e. within metres of the sound source) will not have any impact on the migration of diadromous fish species to and from SACs.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
Increased suspended sediment concentrations and associated sediment deposition				
10.G	The determination of magnitude of increased suspended sediments as presented in the EIAR, Section 9.10.3 of Chapter 9, excludes a number of important factors when determining potential impacts. Whilst consideration is		See section 6.3 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. Updated marine processes modelling was performed (see appendix B Addendum: Marine	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	given to suspended sediment concentrations, no quantitative assessment is made relating to spatial extent of plumes at given concentrations, or to sedimentation depth over spatial extent. Concentrations over distance, sediment settlement depths over distance, and actual peak concentrations should be presented in heatmaps. Values should also be consistent and represent the worst-case scenario (e.g. sediment concentrations are indicated to be both 500mg/l, and up to 2000mg/l within this section). Determinations of magnitude, sensitivity, and significance are required to be revised in line with and informed by provided values.	Processes Technical Report) and this has been incorporated into the magnitude section of the impact assessment in section 6.3 of appendix E Addendum Fish and Shellfish Ecology - Supporting Information. There was no change to the conclusions of magnitude of impact or significance of effect.	
Electromagnetic Fields (EMF) from Subsea Electrical Cabling			
10.H	Having regard to submissions from observers, the current understanding of the potential impacts associated with EMF in the marine environment is frequently updated via published academic research and reviews. It is requested that reference to additional and recent literature is incorporated into the assessment to ensure findings are supported by the most current understanding of potential impacts.	See section 6.5 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. A summary of the latest recent research on the effects of Electromagnetic Fields (EMFs) on fish ecology has been provided in section 6.5 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. The findings of recent research remain in line with the information provided in the NIS, and therefore the assessment conclusion has not changed.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
10.I	Background measures have been provided in microtesla, however, contextualisation of EMF magnitude is given in milligauss. Differences between these units should be discussed, or sources should be used that use similar units to allow for a comparison between baseline conditions and operational conditions. Where magnitude is assessed, further clarity is required when discussing the findings of CSA (2019), and additional explanation as to how these values compare to those anticipated in association with this development as no information relating to cable design is presented.	See section 6.5 of appendix E Addendum: Fish and Shellfish Ecology - Supporting Information. All uses of µT have been converted to mG. Additional clarification on the CSA (2019) reference has been added to the magnitude section, with reference to the project-specific magnitude.	The additional detail in appendix E Addendum: Fish and Shellfish Ecology - Supporting Information does not change the conclusions of the assessment in the NIS.
Cumulative Impact Assessment			
10.J	In terms of cumulative impacts, the applicant is requested to consider the findings of the proposed North Irish Sea Array project application documentation which potentially overlaps with the Oriel project in terms of underwater noise. This should also be considered in terms of the	See updated ICA in appendix J Addendum – Screening In-Combination Effects which considers the findings of the proposed North Irish Sea Array (NISA) project application documentation.	Consideration of additional projects, including the NISA project application information has been undertaken and there is no change to the overall conclusions of the NIS.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	potential wider ecological impacts on fish stocks/prey base, which are essential to fully assess the impact on other important ecological features such as seabirds, marine mammals and megafauna.		
10.K	Assessment of the cumulative impacts of underwater noise should be reassessed, following any changes made to underwater noise modelling, as requested in previous comments. Potential impacts on vulnerable species (e.g. Atlantic herring) should be assessed when considering potential for barrier effects restricting access to potential spawning habitat at a wider scale than presented in the application documentation and should also be considered in the context of the operational phase of the projects.	See updated ICA in appendix J Addendum – Screening In-Combination Effects.	Consideration of additional projects, including the NISA project application information has been undertaken and there is no change to the overall conclusions of the NIS.
Other			
10.L	In terms of the data validity and limitations (Section 9.7.4 of Chapter 9 of the EIAR), the Board notes that additional literature has been used to corroborate information used in older datasets used to inform the Fish and Shellfish Ecology Technical Report (Appendix 9-1 of the EIAR), and in particular, the baseline evaluation or impact assessment. The applicant is requested to provide the additional literature referred to in order to substantiate assumptions and statements.	Not relevant to NIS, as the requested information was relevant only to spawning and nursery grounds of marine species. This does not include diadromous species and therefore has not been included in this assessment.	-
10.M	There appears to be some ambiguity around the determination of magnitude of impacts in the EIAR. It is noted that where the significance of an impact is determined to fall within the category of slight/moderate, they are exclusively determined as being 'slight'. Evidence should be presented to indicate the rationale for these assessment determinations.	Not relevant to NIS, as significance conclusions in the EIAR are not included in the NIS.	-

Table 1A-5: Further Information requested relating to Birds Directive SCI species and details on the Applicant's response.

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
7.A	From the information presented, the Board note concerns that there is an over- reliance on baseline surveys to include, and exclude, important ecological features potentially affected by the project. It is noted that species "recorded in very small numbers or very infrequently during the baseline surveys are excluded because the risk of impact to their populations is considered negligible." The Board requires that a clear, evidence-based justification for the inclusion and/or exclusion of species is submitted, particularly given the risk of excluding species that are less readily sampled by the particular survey methodologies applied and given the location of the site partially within the North-west Irish Sea cSPA, and location relative to bird colonies at Rockabill SPA, Lambay Island SPA & Irelands Eye SPA.	See section 3.2 in appendix H Addendum: Offshore Ornithology: Supporting Information which provides a clear, evidence-based justification for inclusion/exclusion of species.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
7.B	It is noted that the surveys were undertaken prior to the 2022 Highly Pathogenic Avian Influenza (HPAI) season, which is known to have had significant negative impacts on range of seabird species. The applicant is requested to provide justification that the original digital area surveys and boat-based data remain relevant and appropriate at the point of submitting additional information to support the proposed development.	The baseline data continue to be relevant and appropriate for informing the assessment presented in the NIS and appendix H: Offshore Ornithology – Supporting Information. The Applicant acknowledges that there was a large scale outbreak of Highly Pathogenic Avian Influenza (HPAI) in winter 2021/22 in wetland birds (geese, swans and ducks predominately), which then moved to seabirds in the summer of 2022. This was acknowledged in the appendix H: Offshore Ornithology – Supporting Information. which stated that all of the survey data and population estimates presented within the EIAR preceded HPAI. Over the past few years, numerous scientific papers have been published on the potential impact of HPAI on various seabird populations. For instance, entire issues of the scientific journal Bird Study (Volumes 71, Issue 4, and Volume 72, Issue 1) have been dedicated to HPAI and seabird species. Research has shown that when a high level of mortality occurs at a specific colony, subsequent years often exhibit above-average productivity due to reduced	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		competition (e.g., Burke et al., 2023; Harris et al., 2024). The Applicant acknowledged the unknown short, medium and long-term effects of the 2022 HPAI outbreak as a data limitation. There is no agreed industry wide guidance on how HPAI should be considered within assessment or interpretation of results from baseline characterisation surveys. This concern is industry wide is not solely in relation to the Project. Therefore, the Applicant has considered the impact of HPAI as far as possible and in accordance with the Natural England's advice note. Natural England is the only Statutory Nature Conservation Body (SNCB) which has published guidance on how to consider HPAI, which in summary concludes that the impact would be proportionally changed (Natural England, 2024). Given that the Project presented baseline survey data from 2018-2020 and colony counts from 2015-2021 to define the breeding populations all of the impacts presented are likely to be higher than those post HPAI. Given the potential population declines at colonies following an HPAI outbreak, the number of birds recorded in the baseline surveys would decrease proportionally across the populations. Since the resulting impact is presented as a percentage change in baseline mortality, the relative impact remains unchanged.	
Reference Population			
7.C	The robustness of population calculations used within Chapter 11: Offshore Ornithology, and associated appendices, is important in assessing the potential effects of the proposed development. While the Board notes the approach of estimating reference populations employed in the EIAR, the applicant is requested to provide further detail on the breeding season populations used - including both breeding adults and juveniles / immature birds - and how the figures have been derived. At present, it is not clear how juveniles have been treated in the population	The Applicant acknowledges that this comment relates to the EIAR (see section 11.7.3 of chapter 11 Addendum: Offshore Ornithology (EIAR volume 2B Addendum)), as the broader reference populations are not used in the NIS. Instead, the reference populations for the QI's of breeding-colony Special Protection Areas (SPAs) have been derived from the latest updates to the Natura 2000 Standard Data Forms and are presented in Table 3.1 of NIS	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	estimates. The applicant should provide evidence-based justification for the method applied, which should comprise the most appropriate and precautionary method for estimating the breeding season populations to inform assessment conclusions.	appendix H: Offshore Ornithology — Supporting Information.	
Disturbance & Displacement			
7.D	The rationale for decisions to screen out bird species for assessment of disturbance and displacement if determined to have a low sensitivity to disturbance and displacement or which were recorded in low numbers is not clear, giving rise to concerns regarding the robustness of the conclusions in the EIAR and NIS. The applicant is requested to provide justification for the approaches taken for screening out in such instances.	See section 3.2 in appendix H Addendum: Offshore Ornithology: Supporting Information which provides a clear, evidence-based justification for inclusion/exclusion of species. See section 5.7.1.3 of the NIS Addendum.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
7.E	The Board notes the submission of Appendix 11- 07: Offshore Ornithology Apportioning Impacts to Individual Colonies of the EIAR which seeks to apportion predicted mortalities from displacement and collisions of the project to seabird colonies. In terms of disturbance and displacement, fours species have been identified as potentially at risk: • Common Guillemot (*Uria aalge*); • Razorbill (*Alca torda*); • Great northern Diver (*Gavia immer*); and • Northern Gannet (*Morus bassanus*); The Board notes that the applicant has assessed predicted annual mortalities for a number of species based on a single mortality rate, rather than the industry recommended range of mortality rates. Chapter 11 of the EIAR bases conclusions on a rate of 50% displacement and 1% mortality rate for auks[1], 100% displacement and 0.5% mortality for GND and 60% to 80% displacement and 1% mortality rate for gannet during the operational phase of the project. Given the location of the site partially within the North-west Irish Sea SPA (and proximity to colonies at Rockabill SPA, Lambay Island SPA & Irelands Eye SPA) the applicant is requested to update the EIAR to adopt a range of relevant mortality rates in the estimates of	• The Applicant has provided in section 5 of appendix H Addendum: Offshore Ornithology – Supporting Information, the estimated mortalities for the four species referenced in the request, based on a minimum and maximum displacement and mortality rates. • The Applicant notes that appendix H: Offshore Ornithology – Supporting Information presents a range of mortality and displacement rates for the following species for the project-alone assessment: – Common guillemot – Razorbill – Great northern diver – Northern gannet • However, the Applicant considers that drawing conclusions based solely on the maximum range of collision, displacement, and mortality rates is over-precautionary and not ecologically realistic. For example, a maximum mortality rate of 10% is not supported by any evidence and is considered excessively precautionary. Therefore, the Applicant has presented the assessment of significance based on a single point estimate in	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	predicted mortalities for relevant species, and that these be clearly presented in the EIAR.	appendix H Offshore Ornithology – Supporting Information. • In response to the RFI, the Applicant has provided in section 5 of appendix H Addendum: Offshore Ornithology the increase in baseline mortality for the project alone using the maximum displacement and mortality rates for the four species below: – Common guillemot – Razorbill – Great northern diver – Northern gannet	
7.F	Dundalk Bay is noted to be a very important foraging area for birds, likely linked to the prey resources known to exist there, including spawning habitat of the Atlantic Herring *Clupea harengus*. The rate of displacement does not appear to have been fully considered in the context of potential indirect and cumulative effects of the project on birds, such as Manx Shearwater, who forage in Dundalk Bay in large numbers, where a low rate of displacement may induce a population-scale impact. The applicant is requested to address potential changes in the distribution and abundance of important prey populations on birds.	Section 5.1 of the appendix H Addendum: Offshore Ornithology Supporting Information presents the Project-only increase in baseline mortality for Manx shearwater, calculated using precautionary maximum parameters (70% displacement; 10% mortality). It is noted, however, that Manx shearwater is not considered sensitive to displacement and that there is currently no evidence supporting any specific range of displacement rates (for example, 1–10%, 30–70%, or other values). The potential effects on fish species and their habitats have been assessed in full in EIAR Chapter 9: Fish and Shellfish Ecology (and the Addendum to this chapter). The assessment considers the potential effects on fish and shellfish populations (including herring, a key prey species for seabirds) of all project impacts including underwater sound and temporary habitat loss/disturbance and increased suspended sediment. The assessment has concluded that all effects on fish and shellfish populations would be, at worst, of slight adverse impact during the construction and operation of the Project. With specific reference to herring spawning, no significant effects are predicted on herring spawning grounds, with all effects being temporary and reversible and mitigation proposed as part of the project minimising these effects to non-significant levels. This conclusion is incorporated into the offshore ornithology assessment to evaluate the	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		indirect displacement of seabirds resulting from changes in prey availability and habitats. Section 5.2 of appendix H: Offshore Ornithology Supporting Information, based on this assessment, determines that the effects on seabirds will be negligible.	
Collision Risk			
7.G	The Board notes the submission of Appendix 11-4 – Offshore Ornithology Collision Risk Modelling (CRM) which identifies five seabird species as potentially at risk due to their recorded abundance in the offshore wind farm area and their likelihood of flying at potential collision height (PCH) between the lowest and highest sweep of the WTG rotor blades above sea level: • Northern Gannet (*Morus bassanus*); • Kittiwake (*Rissa tridactyla*); • Common gull (*Larus canus*); • Herring gull (*Larus argentatus*); and • Great black-backed gull (*Larus marinus*). It is noted that the findings of the CRM rely on limited empirical data and avoidance rates for waterbirds which are not up to date. The level of confidence with regard to avoidance rates for a significant proportion of waterbirds is very low and this should be given due consideration when drawing conclusions on impacts. The use of the original Band (2012) model in its various forms may not be justified, and the Board is concerned that the conclusion of the applicants' assessment is not supported given the limitations identified. It is recommended that more appropriate methodologies are developed and implemented to gather relevant empirical data to support the assessment of effects, including updating all parameters using the most up to date empirical data, or if not appropriate, provide comprehensive justification for the methodology employed.	The assessment followed the guidance at time of submission from the Department of Communications, Climate Action and Environment (DCCAE), Natural England and NatureScot, which is to use the Band model (2012) and its later iterations (Masden, 2015, McGregor *et al*., 2018 and Canceo, 2022). To the best of the Applicant's knowledge, no alternative has been used in impact assessments for projects in Ireland or the UK. Outside of Ireland or the UK, the Applicant has found examples of other European jurisdictions presenting the Band (2012) model or its various iterations. This includes the latest Dutch cumulative assessment (Collision effects of North Sea wind turbines on bird species within the "Kader Ecologie & Cumulatie (KEC) 5.0 by IJntema et al. (2025)) and the Swedish Kattegatt Syd project (WSP, 2022). The Applicant would like to highlight that Scottish Natural Heritage (SNH) in Scotland (NatureScot, 2023) and Natural England (Parker et al., 2022a) recommend using the Band model to predict the number of collisions. Specifically, when it comes to avoidance rates the latest guidance has been followed by using two different options: one using species-group avoidance rates from Natural England and NatureScot, and the other using species-specific avoidance rates from Ozsanlav-Harris et al. (2023). The Applicant wishes to emphasise that the recommended avoidance rates are derived from empirical studies and represent the most up-to-date scientific evidence available. The Applicant acknowledges that in August 2024, following the submission of the Project application, the SNCBs in Britain issued a new document 'Joint	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		advice note from the SNCBs regarding bird collision risk modelling for offshore wind developments', which supersedes the previous guidance. This guidance from the SNCBs comprising JNCC, Natural England, Natural Resources Wales and NatureScot provides recommendations on how the Offshore Wind Farm (OWF) industry should apply the available evidence on turbine collision risk to the impact assessment process. Within the new guidance (JNCC, 2024) some of the parameters have changed marginally (e.g. 'all gull rate' was changed from 0.993 ± 0.0003 to 0.9929 ± 0.0003 within the stochastic Collision Risk Modelling (CRM)). The Applicant has considered all changes to parameters and confirms that these changes are not significant and would not materially change the outputs from the CRM. Therefore, no updated collision risk modelling has been undertaken and the conclusions of the assessment remain unchanged.	
7.H	In terms of the estimated collisions for the above bird species, the Board notes that Natural England have accepted a 70% reduction in Northern Gannet collision mortality estimates to account for macro-avoidance at previous developments, such as Hornsea 4. However, this is applied where developments are much further from the coast and from Northern Gannet colonies. Given the proximity of the project to the coast and to the gannet colony at Ireland's Eye SPA and Lambay SPA, approximately 52km to the south of the project site and within the foraging range of this species, a more precautionary approach is recommended. The applicant is requested to consider the approach taken in relation to Northern Gannet collision estimates, so they are not reduced by 70% to account for macro-avoidance.	The Applicant had included a no macro-avoidance scenario in annex 4: Offshore Ornithology Collision Risk Modelling (CRM) (see appendix H: Offshore Ornithology Supporting Information). However, due to the implausibility for a bird to be both displaced and still be present within the site resulting in mortality due to collision, it was not presented in appendix H: Offshore Ornithology Supporting Information. In response to the request for further information and applying the precautionary approach, the Applicant has provided an updated collision assessment which does not consider macro-avoidance in section 5.3 in appendix H Addendum: Offshore Ornithology.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
7.I	The Board notes that a number of species have been screened out as being vulnerable to collision risk, where abundances are noted to be high or very high due to their flight behaviours and responses, particularly, tending to fly below the sweep of the turbine blades. It is noted that those include species associated with nearby SPAs. The applicant is requested to provide further information on the	See section 3.2 in appendix H Addendum: Offshore Ornithology – Supporting Information which provides a clear, evidence-based justification for inclusion/exclusion of species. Collision screening considered each species' collision sensitivity and local abundance, thereby focusing the assessment	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	rationale to exclude certain species in terms of the abundances identified and where, in certain conditions, they may fly higher than expected. Where a species is numerous, modelling of collision risk may produce fatality estimates that are concerning for particular populations, the Manx Shearwater (*Puffinus puffinus*) for example (a Qualifying Interest (QI) of the North-west Irish Sea SPA and the second most frequently recorded species within the Offshore Ornithological Study Area). This concern should be fully addressed and the EIAR and NIS revised accordingly.	on species for which impacts would be detectable at the population scale. On the basis of species sensitivity and observed abundance within the array area, the following species were screened out of the collision impact assessment: • Common scoter • Great northern diver • Guillemot • Manx shearwater • Puffin • Razorbill Whilst Manx shearwater were observed in very high abundance during the site-specific surveys, they were excluded from the collision risk assessment process. This decision was based on findings by Wade et al. (2016), who evaluated the vulnerability of various seabird species to collision risks, particularly in the context of offshore wind developments and other anthropogenic structures. In their study, Manx shearwaters were identified as the least vulnerable seabird species to collision impacts. This lower vulnerability rating is likely due to their specific flight behaviours, flight altitudes, and avoidance capabilities, which reduce their likelihood of colliding with man-made structures. Consequently, despite their abundance in the area, Manx shearwaters were screened out from further collision risk assessment to focus resources and attention on species with higher vulnerability. Although this species was excluded from the collision risk assessment (see 7.F), it has been included in the displacement and disturbance assessment presented in section 5.1.2 in appendix H Addendum: Offshore Ornithology – Supporting Information. In this assessment, the magnitude of effects is based on a range of minimum and maximum displacement and mortality rates.	

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
7.J	Any potential specific mitigation measures to minimise the effects of the project on birds, such as painting of turbine blades, the use of curtailment systems in particular conditions or at particular times etc, if considered appropriate, should also be included and addressed in the application documentation.	The assessment of impacts has concluded that there will be no adverse effect on site integrity for any of the SPAs assessed, either from the Project alone or in combination with other plans and projects, provided the measures included out in the Project are implemented. Therefore, no further measures over those outlined in section 6 of NIS addendum are required.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
Combined Disturbance and Displacement and Collision Risk			
7.K	**Northern Gannet (*Morus bassanus*) -** The Board notes that the overall impacts to species in terms of the predicted mortalities arising from displacement and/or collision events, are contextualised using the BDMPS as set out in Furness (2015). This area is significantly larger than the western Irish Sea and it is requested that the EIAR is revised to ensure that the assessment of predicted annual mortalities uses the western Irish Sea for context.	The Applicant acknowledges that this comment relates to the EIAR, as the wider reference populations are not used in the NIS. (see section 11.7.3 of chapter 11 Addendum: Offshore Ornithology (EIAR volume 2B Addendum)	n/a
7.L	**Red-throated diver (*Gavia stellata*) -** Red-throated diver is identified as a QI for the Northwest Irish Sea SPA and a species known to be highly sensitive to offshore wind farm developments due to displacement effects. Recent empirical evidence indicates that the species avoids a larger area than the 4km buffer afforded in the EIAR and NIS, with a 10 km buffer being recommended as per UK Joint SNCB Interim Displacement Advice Note (2022). The EIAR indicates that the species was identified in low abundance (106 birds) in the north and west of the study area during the surveys. While noting the high sensitivity of the species to disturbance and displacement however, the low abundance recorded during site-specific surveys resulted in the species being screened out for EIA purposes. However, the 'Digital video aerial survey of birds in intertidal habitats of Gormanstown December 2018 to March 2019' (HiDef, 2019), commissioned by the Marine Institute, indicates the known extent of Red-throated Diver and their densities and shows the species concentrating in the shallow Dundalk Bay waters and in and around the proposed Oriel Project area. This survey data (HiDef, 2019) suggest that notable densities of the species may be present within 10 km of the array area.	A full assessment of displacement of red-throated diver was presented within sections 5.1.1.4 (construction) and 5.1.2.5 (operation and maintenance) of the NIS appendix H: Offshore Ornithology Supporting Information, which concluded no adverse effect on the site integrity of the North-west Irish Sea Candidate Special Protection Area (cSPA). To address the request, the Applicant presents, in section 5.1.2 of appendix H Addendum: Offshore Ornithology — Supporting Information, an assessment of disturbance and displacement based on site-specific survey data within a 10 km buffer, as recommended by SNCB (2022). The results of the HiDef surveys were deemed unsuitable for inclusion in the assessment and a rationale is provided below: The Project site-specific surveys recorded peak density of red-throated diver of 0.10 birds/km^2 during the boat-based surveys and 0.09 bird/km^2 during the DAS. In comparison the HiDef surveys in 2018/2019 (HiDef, 2019) recorded up to 3.45 birds/km^2 (in February 2019) which was associated with nearshore habitats within Dundalk Bay and	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	In this regard, the Board is concerned that the EIAR does not set out the recorded density values for this species and scopes out red-throated diver for further consideration in terms of disturbance, displacement and mortality. The applicant is requested to include the HiDef surveys in the assessment of potential impacts on red-throated diver and other North-west Irish Sea SPA QI species sensitive to displacement during both construction and operational phases of the project (e.g. Great Northern Diver *Gavia immer*, Common Scoter *Melanitta nigra*), in terms of predicted mortalities based on a displacement buffer of 10km with regard to the North-west Irish Sea SPA and consider the significance of the effects on this species for all seasons, individually and combined.	potentially within 10 km of the Project. Georeferenced data is not available publicly so the Applicant is unable to directly map the data and determine how many birds were located within a 10 km buffer from the Project. Instead, the imagery was overlaid in GIS which identified that the area of highest density is around 8 km from the western boundary of the offshore wind farm area. However, the area of highest density also extends to 10 km from the offshore wind farm area. It is highly likely that where birds move away from the offshore wind farm area they would relocate into Dundalk Bay which supports this same population. The monthly surveys reported by HiDef (2019) indicate between 70-221 sightings which corresponds to a population estimate of 659 to 2,140 birds. This high level of monthly fluctuations indicates large levels of turnover with birds using multiple other areas along the east coast of Ireland. Counts within Liverpool Bay SPA also fluctuate each month indicating these birds are able to freely move between preferential areas to foraging during the winter months (HiDef, 2023). This habitat flexibility in addition to the small number of birds within the offshore wind farm area, indicates that the birds will be able to relocate to other areas to continue to forage during the winter months. The other species mentioned, common scoter and great northern diver, are not known to be impacted through displacement to 10 km; this displacement radius specifically applies to red-throated diver. The UK SNCBs recommend a 4 km displacement radius for these two species (SNCB, 2022). Therefore the Applicant is not proposing to use a 10 km buffer for common scoter and great northern divers due to the lack of evidence supporting displacement beyond 4 km. Other qualifying species (i.e. guillemot and razorbill) from the North-west Irish Sea SPA species sensitive to displacement during both construction and operational phases of the Project have been assessed in the NIS.	
7.M	**Black-legged Kittiwake (*Rissa tridactyla*) -** The Board note that Black-legged kittiwake, a species identified as	The Applicant has considered and provided an updated displacement and disturbance assessment	As presented in section 5.1 of appendix H Addendum: Offshore Ornithology –

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	being in decline, is a QI for North-west Irish Sea cSPA, as well as Lambay Island SPA and Ireland's Eye SPA, and that Black-legged Kittiwake has variable responses to offshore wind farms (OWFs). There is a colony in Northern Ireland which may also forage in this area. In this regard, the Board requests that the applicant include this species as a receptor of disturbance and displacement impacts during operation and maintenance. The scoping out of the species is considered to run contrary to the advice of NatureScot (2023) for species where both collision risk and displacement are considered. The applicant is requested to submit further information to identify and evaluate the impact of displacement of Black-legged Kittiwake in conjunction with collision risk. The application documentation should be revised to fully address the potential for significant impacts on this species.	of kittiwake in section 5.1 in appendix H Addendum: Offshore Ornithology – Supporting Information. Based on this, the Applicant considers that combined impact of collisions and displacement from the Project does not change the conclusions presented in the NIS (see appendix H: Offshore Ornithology – Supporting Information), given the very small increase in baseline mortality. The Applicant must emphasise that there is a lack of empirical evidence indicating consistent displacement of kittiwakes. Some Before-After-Control-Impact (BACI) studies have found no impact or even an increase in kittiwake density following construction (APEM, 2017; Vanerman et al., 2013 and 2023). Consequently, there is conflicting guidance among the British SNCBs: NatureScot advocates for assessing disturbance and displacement, whereas Natural England (2022a, b, and c) and Natural Resources Wales (NRW, 2025) do not. The Applicant notes in Development Applications Unit (DAU) submission to ACP on the Project (29/07/2024), a reference to the SNCB's advice to present collisions and displacement as additive. However, within the referenced SNCB advice note (Joint SNCB, 2022) kittiwake is identified as a species for which displacement assessments are not required. The Applicant considers the additive nature of both collision and displacement impacts as an impossibility as a bird cannot be both displaced and also susceptible to colliding with the turbine. Therefore, providing an additive combined impact is considered overly precautionary and likely to overestimate the impacts.	Supporting Information, the assessment predicts that the disturbance and displacement of kittiwake is not considered to have an adverse effect on the site's integrity for all SPAs assessed from the Project alone.
7.N	**Great Northern Diver (*Gavia immer*) –** The Board note that the application area is important for wintering Great Northern Divers, a species known to be vulnerable to disturbance, including from construction activities and associated vessel movements as well as during the operational phase of the project. Bird Watch Ireland raise concerns about this Annex I species who consider that the	The Applicant has fully assessed the impact on great northern diver within the NIS (see appendix H Offshore Ornithology – Supporting Information) which looked at the maximum impact on this species from the construction and operation of the Project. The assessment of impact has concluded that there are no adverse effects with the implementation of the	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	concentration of this species in the outer Dundalk Bay may reach thresholds for international importance. A 'no mitigation' approach as proposed, particularly during the construction and operational phases is not considered appropriate. The applicant is requested to address these concerns, particularly in terms of the cumulative unknowns identified in the EIAR.	measures included in the Project. Therefore, no further measures are required. As a standard practice, when impacts are assessed as not significant, mitigation measures are typically not required to address residual effects. The Applicant emphasises that construction at the landfall will not occur during winter months to reduce impacts on intertidal birds. Nearshore great northern diver will also benefit from this mitigation measure with no disturbance from works at the landfall location occurring. The Applicant acknowledges the concerns raised regarding the in-combination impacts on great northern divers. However, at present, there are no available estimates of the number of great northern diver likely to be affected by other Projects within the Cumulative Offshore Ornithology Study Area. The Applicant remains committed to ongoing engagement with relevant stakeholders and to monitoring emerging literature, incorporating new data as it becomes available.	
7.O	**Colonies at Rockabill –** the applicant is requested to provide additional information on the movement of auks (Guillemots (*Uria aalge*) and Razorbills (*Alca torda*)) from Lambay to show that there is no significant impact on the Rockabill, Lambay and Irelands Eye populations, given their range of foraging grounds, including the area of the project.	The Applicant provides the following justification as to why no additional information on the movement of auks has been provided in this Addendum. All of these colonies have been included within the assessment of significance as they are designated sites and relevant qualifying features (see Table 3 2 in appendix H: Offshore Ornithology – Supporting Information). The Applicant believes that 'additional information on the movement of auks' may refer to using site-specific tracking data from these colonies. However, it should be noted that apportioning to individual colonies does not take account of tracking work, due to small sample sizes often associated with tracking work. The use of novel data (e.g. tracking work) does not change how the impacts are assessed. The species and colonies mentioned within the RFI are within foraging range of the offshore wind farm area and therefore have been fully assessed in the NIS.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		The calculations of species foraging range uses thousands of tracks of birds throughout the UK and Ireland (Woodward et al., 2019) which is then used in a precautionary manner within the apportioning assessment (annex 7: Offshore Ornithology Apportioning Impacts to Individual Colonies in appendix H: Offshore Ornithology Supporting Information). The apportioning work indicates that 60% of razorbill and 72% of guillemot originate from Lambay and therefore 60% and 72% of the impacts are predicted to this island so have been given full consideration. Similarly for Ireland's Eye, 4% for guillemot and 9% of razorbill are from that island. The Applicant wishes to clarify that, according to the Seabird Monitoring Programme, there are no records of guillemot or razorbill nesting on Rockabill. There is no requirement to present tracking data as a large proportion of the birds located within the Offshore Ornithology Study Area are likely to originate from Lambay and Ireland's Eye and they have already been assessed as outlined above.	
7.P	**Other -** The waters in and adjacent to the proposed Oriel Wind Farm are an important resource for the western Irish Seas marine bird populations. The passage of marine birds through the development area does not appear to have been fully characterised because of the data regime adopted. It is requested that the EIAR adopt a range of relevant mortality rates in the estimates of predicted mortalities for relevant species and that the EIAR is revised to ensure that the assessment of predicted annual mortalities uses the western Irish Sea for context. It is recommended that the developer cross reference to NPWS Article 12 reports which provide information on the current status, pressures and future prospects for sea birds.	The Applicant acknowledges that this comment relates to the EIAR, as the broader reference populations are not used in the NIS. (see section 11.7.3 of chapter 11 Addendum: Offshore Ornithology in EIAR volume 2B Addendum)	n/a
7.Q	The applicant is requested to provide further analysis of the potential effects of the proposed development in relation to predicted mortalities from both collision and displacement impacts for relevant species. This should, at a minimum, incorporate the relevant available data including for example, HiDef (2019) and ObSERVE Phase II data where	Neither the HiDef (2019) study nor the ObSERVE Phase II data adequately covers the Offshore Ornithology Study Area to allow for a comprehensive baseline characterisation. As outlined by DCCAE (2018), surveys must cover at least 15% of the target area to provide a reliable population.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	appropriate. Graphical representation Population Variability Analysis (PVA) results are considered to be of assistance to interpret model outputs where appropriate.	Neither HiDef or ObSERVE Phase II were undertaken at a resolution that could characterise the offshore wind farm area and therefore are not useful for an impact assessment. For example, ObSERVE Phase II has a single transect within Stratum 5 which overlaps with the Offshore Ornithology Study Area, a single transect is not representative. Similarly, there are five transect lines from the HiDef (2019) surveys which overlap with the Offshore Ornithology Study Area, this is not representative enough to produce a population estimate which can be used within an assessment. An assessment of impact must be based on data that represents the populations found within the study area (DCCAE, 2017 and 2018). Where the increase in baseline mortality exceeded 1%, the Applicant undertook Population Viability Analyses (PVAs) to assess in-combination effects (Annex 8 Addendum: Offshore Ornithology Population Viability Analysis). Under the guidelines established for England and Wales (Parker et al., 2022b), a threshold of a 1% increase in baseline mortality triggers the requirement for a PVA. This threshold has been accepted by Natural England (NE), Natural Resources Wales (NRW) and the Joint Nature Conservation Committee (JNCC) and is widely applied in offshore wind farm assessments across the UK. NatureScot in Scotland recommends the use of a different metric to determine whether a PVA is required. A PVA is required when the assessed effect exceeds a change to the adult annual survival rate of 0.02 percentage points (for example, a reduction from 80.00% to 79.98% when apportioned collision or distributional responses are included). The Applicant is not aware of any other metric currently used to determine PVA requirements.	

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
7.R	**Light-bellied Brent Goose (*Branta bernicla hrota*) -** The Board notes the results of the vantage point surveys undertaken to establish the migratory movements of Light-Bellied Brent Geese across Dundalk Bay during the spring and autumn migration periods (EIAR Appendix 11-3: Migratory Geese Survey Report). The observed movements of birds, low and close to the shoreline, likely reflect commuting movements of flocks aligned to tidal cycles and movement between established foraging areas in Dundalk Bay and Carlingford Lough, while the significant migratory move of the 14/15th April would coincide with the northern migration of light-bellied brent geese. Autumn movements are noted to be different to the spring movements, particularly in terms of the volume of birds and sites being used from Strangford Lough and south towards Dublin and Wexford. The Board note the primary survey method of coastal vantage point surveys by human observers, at a distance of between 6-12km from the project site, and which the DAU have considered to be insufficient, with concerns that this methodology could discount the potential for the geese, and other species, to fly through the proposed array area. Reliance on published literature does not provide detailed or precise data movements, and as many of these movements occur overnight, the routes taken are not known. Therefore, and based on known flight heights and potential flightlines between the major concentrations in Strangford Lough and sites along the East Coast of Ireland, there is potential for there to be a significant potential for large numbers of Brent geese flying through the proposed array area during both day and night, over very short timescales, and particularly in autumn. The potential impact of siting wind turbines on a migratory route for this species without appropriate mitigation during such short-term events could be potentially catastrophic for Light-Bellied Brent Geese populations, the vast majority of which winter in Ireland. The applicant is requested to address these concerns in relation potential effects of the project on migrating geese. Any potential specific adaptive mitigation measures to minimise the effects of the project, particularly during the Spring and Autumn migrations and which identify the	The Applicant's surveys of light-bellied brent geese were designed to understand the timing of their movements within and outside of Dundalk Bay, rather than to assess migratory movements through the offshore wind farm area. This distinction has caused some confusion regarding the surveys' objectives. The survey aimed to observe light-bellied brent geese, along with selecting secondary species, to determine flock sizes and the timing of their movements into Dundalk Bay (see section 1.2 of annex 3: Migratory Geese Survey Report in appendix H: Offshore Ornithology Supporting Information). The Migratory Geese Survey was not intended to quantify overall migration patterns but to document movements between vantage point (VP) locations throughout Dundalk Bay. Accordingly, the Applicant reiterates that the use of VP surveys remains appropriate and justified. The Applicant undertook an assessment of migratory collision risk within annex 6: Offshore Ornithology Migratory Non-Seabirds Collision Risk Modelling, which assessed the entire population of light-bellied brent goose within Ireland and the proportion of those birds which may migrate down the east coast of Ireland. This was the best available model at the time of submission. An updated version, incorporating the work of Woodward et al. (2023) and building upon the Strategic Ornithological Support Services Migration Assessment Tool (SOSSMAT) framework, has been completed and is presented in Annex 9: Offshore Ornithology Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment. To model the movements of migratory birds within the footprint of the project, the Marine Scotland Avian Migration Collision Risk Model Shiny Application, hereafter referred to as the mCRM tool ("mCRM App"; HiDef Aerial Surveying Ltd., 2024), was employed. This Marine Scotland mCRM tool is the most advanced, robust yet precautionary way to quantify impacts to migratory species by making several	No change to conclusions previously presented in appendix H Offshore Ornithology Supporting Information

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	timings of the migrations, depletion of food supply etc, should also be included and addressed in the EIAR.	assumptions about flight paths and species avoidance rates. The mCRM tool generates robust population estimates, of birds passing through the array area, using a bootstrapping technique which randomly samples 1000 potential flight lines. These flight lines are generated from 10,000 random lines that comprise a birds' potential migration pathway to and from Ireland (and the UK). Furthermore, the default avoidance rates set within the mCRM tool are used for each species. These values have been checked by an ornithological expert (Cook per comms) and closely align with NatureScot guidance (NatureScot, 2023) which is based on several literature sources that incorporate collision data from all suitable terrestrial, coastal and marine offshore wind farms. The predicted impact is minor and not significant for Canadian light-bellied brent goose, with up to 0.012 (± 0.006 SD) individuals predicted to be impacted during the pre-breeding season and 0.012 (± 0.006 SD) individuals predicted to be impacted during the post-breeding period (when considering an avoidance rate of 0.999 ± 0.0001 SD) (North Irish Sea Array Windfarm Ltd, 2025). In relation to tracking data, although it can contribute to knowledge of the local patterns of light-bellied brent geese which potentially move across the offshore wind farm area, tracking data was not collected for the Project. Data recorded by the Irish Brent Geese Research Group shows that movement down the east coast of Ireland occurs close to land. Additional tracking work is not a requirement to complete a robust assessment on light-bellied brent goose, as the migratory collision risk modelling used to inform the assessment (see annex 6: Offshore Ornithology Migratory Non-Seabird Collision Risk Modelling in appendix H: offshore Ornithology Supporting Information) is considered a robust and comprehensive way to assess the potential for impacts. Based on the non-seabird collision risk modelling (annex 6: Offshore Ornithology Migratory Non-Seabirds Collision Risk Modelling) which takes	

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		account of the international population estimates for light-bellied brent geese, effects would be negligible (almost undetectable).	
Migratory Species – Non seabirds			
7.S	The Board notes the international importance of Ireland, including Dundalk Bay SPA, for a range of waterbird species. The AA screening report does not detail the potential impacts upon and interactions of the proposed project with migratory waterbirds, with a focus on foraging and breeding birds only. It is noted that all migrating birds have been scoped in for further assessment, which is welcome, but the applicant is requested to update the AA to include a reference to potential impacts and interactions with regard to migratory waterbirds which are SCIs of SPAs. A review of the screened-out Natura 2000 sites and water bodies is required to be undertaken to ensure that the NIS has considered all relevant pathways appropriately, as well as migratory or normal flight paths of avian species.	See appendix A Addendum: Report to Inform Screening for Appropriate Assessment.	-
7.T	The applicant is further requested to clearly address the potential for ex situ impacts upon species listed for Dundalk Bay SPA that occur outside the red-line boundary.	The potential for adverse effect on Dundalk Bay SPA has been assessed in the NIS. In this regard, consideration has been given to the implications for habitats and species located both inside and outside of Dundalk Bay SPA considered and with reference to the sites' Conservation Objectives (COs) where effects upon those habitats and/or species are liable to affect its COs. Ex-situ impacts considered, include - Indirect disturbance and displacement resulting from changes to prey and habitats. This assessment is provided in section 5.7.6.1.2 of the NIS.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
7.U	The Board has concerns regarding the methodologies employed with regard to the survey and monitoring of the movement of migratory waterbirds at key migration times. The primary survey method of coastal vantage point surveys by human observers, at a distance of between 6-12km from the project site, and which appear to primarily focus on geese, is considered to be insufficient and inappropriate to assess the migratory movements of birds through the array area, and the potential impacts on these species. In addition, the reliance on literature to fill	The Applicant's surveys of light-bellied brent geese from coastal VP surveys were designed to understand the timing of their movements within and outside of Dundalk Bay, rather than to assess migratory movements through the offshore wind farm area. This distinction has caused some confusion regarding the surveys' objectives. The survey aimed to observe light-bellied brent geese, along with selecting secondary species, to determine flock sizes and the timing of their movements into Dundalk Bay	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	knowledge gaps, while useful, does not provide adequate data to ensure a comprehensive assessment of potential effects on birds. The applicant is requested, having regard to the comments above, to address the purported existing data gap to enable the assessment of potential impacts of the proposed development on migratory birds. Radar (horizontal and vertical surveys) or similar at the Array Area during peak migration periods might be utilised to provide site-specific data, which could be used to support the applicant's current assessment and provide quantitative information on passage of birds to feed into collision modelling. Should radar not be conducted and an alternative survey methodology utilised, comprehensive justification for the alternative should be provided. Peak migration periods during which data are to be collected can be further informed through review of existing data and published literature relevant to the project area and region. Whilst the DAU makes reference to the key migration times being spring and autumn, the Board considers that migration information during the winter months would also be of assistance to the assessment (e.g. irruptive cold weather movements from the continent and UK). The applicant is invited consider this aspect for inclusion also.	(see section 1.2 of Annex 3: Migratory Geese Survey Report). The Migratory Geese Survey was not intended to quantify overall migration patterns but to document movements between VP locations throughout Dundalk Bay. Accordingly, the Applicant reiterates that the use of VP surveys remains appropriate and justified. The Applicant does not agree that there is a data gap in the assessment of migratory waterbirds, nor that site-specific data is necessary to inform the assessment of migratory birds. The Applicant undertook an assessment of migratory collision risk within Annex 6: Offshore Ornithology Migratory Non-Seabirds Collision Risk Modelling using the SOSSMAT framework, which assessed the entire population of migratory birds within Ireland and the proportion of those birds which may migrate down the east coast of Ireland. This was the best available model at the time of submission. An updated version, incorporating the work of Woodward et al. (2023) and building upon the SOSSMAT framework, has been completed and is presented in Annex 9 Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment (North Irish Sea Array Windfarm Ltd, 2025) of appendix H Addendum: Offshore Ornithology – Supporting Information. To model the movements of migratory birds within the footprint of the project, the mCRM tool ("mCRM App"; HiDef Aerial Surveying Ltd., 2024), was employed. Both of these models indicate a negligible impact when considering the movement of the entire migratory waterbird populations. Although radar surveys can offer additional site-specific data, their effectiveness is limited due to the offshore location of the project, challenges in species identification, and weather interference. Given the strong existing evidence base on migratory movements (Wright et al., 2012), such surveys would likely not alter the assessment. With regard to the	

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		inclusion of cold-weather movements, irruptive movements are considered infrequent and limited to a few broadly migrating species. This makes it unlikely that site-specific surveys would capture their timing. Therefore, collecting additional data during the winter period is unlikely to materially affect the conclusions of the assessment.	
7.V	In terms of the findings of the Migratory Non-Seabirds Collision Risk Modelling (Appendix 11-06 of the EIAR), and noting the comments in the DAU submission, the conclusions arrived at in this regard, may rely on limited empirical data and the avoidance rates applied in the model for waterbirds are not up to date. The level of confidence with regard to avoidance rates for a significant proportion of waterbirds is very low and as such, the validity of the conclusions arrived at are potentially understated. It appears therefore, that the conclusion of the NIS may not be fully supported given the limitations identified. The applicant is requested to address these concerns, having regard to the DAU submission.	The Migratory Non-Seabirds Collision Risk Modelling (Annex 6) is based on the best available evidence to date. It follows the SOSSMAT guidance, which incorporates a comprehensive review of migratory lines (Wright et al., 2012) and a range of avoidance rates drawn from empirical studies, ensuring that the assessment is grounded in the most current and reliable scientific data The Applicant presented a range of avoidance rates (in line with SOSSMAT guidance, Wright et al., 2012), between 0 and 99%. For the assessment the 95% avoidance rate was used. The avoidance rates recommended within the latest report (Table 5 of Woodward et al., 2023) indicate that the lowest avoidance rate for any species within the tool is 98.01 ± 0.32% (for mallard). The lower confidence interval of the lowest avoidance rate as determined by Woodward et al. (2023). is therefore 97.69%. The Applicant's approach of presenting 95% avoidance can therefore be deemed to be precautionary. An updated version, incorporating the work of Woodward et al. (2023) and building upon the SOSSMAT framework, has been completed and is presented in Annex 9: Offshore Ornithology Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment (in appendix H Addendum). To model the movements of migratory birds within the footprint of the project, the Marine Scotland Avian Migration Collision Risk Model Shiny Application, hereafter referred to as the mCRM tool ("mCRM App"; HiDef Aerial Surveying Ltd., 2024), was employed. The update of the mCRM presented in Annex 9: Offshore Ornithology Migratory Collision Risk	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		Modelling: Phase One Projects Cumulative Assessment predict smaller impacts for all species and there is therefore no changes to the conclusions of the assessment.	
7.U	The applicant is requested to justify the screening out for further assessment of all passerines (Table 11-15 of the EIAR), which considers the risks to migrating passerines as negligible 'due to the relative size of the project and the behaviour of the birds (e.g. passage movements restricted to twice annual events, large population sizes and flight heights typically above risk height)'. It is noted that many hundreds of thousands of migrants come to Ireland for the winter, moving west as autumn progresses and returning north and east as spring advances. The applicant is requested to provide more information and assessment with regard to these species and to consider the potential effects of the development at the project level as well as cumulatively.	The Applicant acknowledges that the potential cumulative effects of collisions involving migratory passerine birds have not been considered in the assessment. This was because collision risk to migratory passerines were scoped out during all phases of the Project as the risk was considered negligible (Table 4.3 in appendix H Offshore Ornithology – Supporting Information). The Applicant has provided additional rationale for the screening out of passerines from the offshore ornithology assessment below. When undertaking impact assessments for offshore wind farms emphasis must be placed on impacts which have the potential to have measurable impacts on the populations that are affected. There is a theoretical risk to migrating passerines, but an inability to assess how this impacts the population due to a lack of data on numbers of birds at breeding and wintering areas. There is an unknown number of birds which choose to cross the Irish Sea in autumn and spring, each time in a single flight. Therefore, there is no meaningful way to assess an impact with a large degree of confidence. The key considerations for scoping out impact on passerines are as follows: Passerines migrate at heights which are far higher than the proposed turbines (Welcker, 2019; Welcker & Vilela, 2019; Woodward et al., 2022); Passerines moving across the Irish Sea can undertake the sea crossing over a large front i.e. the entire length of both Ireland and Britain; Inability to identify species with radar analysis that results in a meaningless assessment of the species as part of the assessment, as all 'passerines' would	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
		be amalgamated, therefore assessing many millions of birds; Passerines fly at fast speeds when migrating (Welcker, 2019) and are small, which means mathematically there is a low probability of collisions occurring even if they were within collision risk heights; Finally, the Project covers a tiny portion of the potential migration route which passerine species could take, therefore the probability to collisions is insignificant at a population level.	
Terrestrial Bird Species			
7.X	Chapter 19 of the EIAR considers the potential effects of the project on onshore birds and intertidal birds and includes Appendix 19-02: Intertidal Bird Survey and Onshore Bird Survey Reports. The DAU note that the focus of data collection to support the application has been on marine-dwelling avifauna as opposed to land-based avifauna, with knowledge gaps with respect to transboundary and migratory movements of land-based avifauna in Irish waters and beyond. As such, it is noted that no new empirical data have been collected for land-based migratory birds as part of the monitoring programme, to detect and assess the level of bird migration through the proposed development site area. This would provide a better understanding of the potential impact and cumulative impacts of the project, and other ORE developments in terms of the Irish Sea. The applicant is requested to address these concerns, including those raised in the DAU submission on the project.	The assessment of migratory movements has been carried out using the Strategic Ornithological Support Services (SOSS) Migration Assessment Tool (hereafter referred to as SOSSMAT). To the Applicant's best knowledge, no alternative tools are available and the SOSSMAT tool is based on the latest scientific evidence. This tool is widely used in offshore assessments and adheres to the recommended guidelines in the UK (see Natural England's guidance (Parker et al., 2022a) and NatureScot Guidance Note 7 (NatureScot, 2023)), noting that no equivalent guidance currently exists in Ireland. Therefore, the Applicant maintains that the application documents present a robust and valid assessment of protected bird species migrating to and from Ireland, following best practice guidelines.	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
7.Y	The CRM identifies 3 terrestrial bird species as being vulnerable to wind turbines, including Corncrake (*Crex crex*), Merlin (*Falco columbarius*) and Hen Harrier (*Circus cyaneus*). However, the predictive power of the model employed is low, particularly for species that are not foraging in the offshore area. As such, the use of SOSS2 Migration Assessment Tool (SOSSMAT) may not have incorporated the most up-to-date estimates of flight speeds for migrating species and may not provide robust yearly collision estimates for land-based birds with a high degree	The assessment of migratory movements has been carried out using the SOSSMAT. This tool is widely used in offshore assessments and adheres to the recommended guidelines for offshore wind farms in the UK (see Natural England's guidance (Parker et al., 2022a) and NatureScot Guidance Note 7	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	of confidence. It is requested that the potential operational impacts of the project on migratory movements/passage of land-based birds and potential options for on-site monitoring of species, etc be addressed within the application documentation.	(NatureScot, 2023)), noting that no equivalent guidance currently exists in Ireland. The Applicant confirms that the most up-to-date flight speeds, or suitable proxies where specific flight speed data were unavailable, were used for the species assessed, including corncrake (Crex crex), merlin (Falco columbarius), and hen harrier (Circus cyaneus). Therefore, the Applicant maintains that the application documents provide a robust and valid assessment of protected bird species migrating to and from Ireland, in accordance with best practice guidelines. The Applicant reiterates that no site-specific surveys (i.e., on-site monitoring) are necessary to robustly assess the collision risk to migratory birds. The update of the mCRM presented in Annex 9: Offshore Ornithology Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment predict smaller impacts for all species and there is therefore no changes to the conclusions of the assessment.	
7.Z	In terms of proposed works within the intertidal environment, the applicant is requested to clarify the timing of works, particularly in relation to the landfall location. The Board notes that the summary of potential environment effects, mitigation and monitoring (Table 19-18 of Chapter 19: Onshore Biodiversity of the EIAR) indicates that timing of the construction/operational works may influence the magnitude in terms of commuting, foraging, breeding and migratory birds in terms of disturbance and loss or fragmentation of habitat. Noting the measures included in the project, it would appear that the timing of works will be restricted to a very short window. The applicant is therefore requested to submit a draft programme of works which provide a clear intention in terms of mitigating effects on birds.	The works at the landfall location (expected duration of approximately 12 weeks) will occur: • Within the onshore area (i.e. above the HWM) of the landfall location at any time of year, provided that vegetation removal has taken place outside of the bird nesting season (i.e. September to February). • Within the intertidal area at the landfall location between May and September (outside the peak season for intertidal birds).	No change to the overall conclusions of the NIS, i.e. there is no change to the assessment of adverse effects on the integrity of any European site(s).
Cumulative & Transboundary Effects			
7.AA	Migratory Waterbird Species: Migratory birds have not been included in the Cumulative Impact Assessment presented in the application documentation. As stated	An updated version, incorporating the work of Woodward et al. (2023) and building upon the SOSSMAT framework, has been completed and is	No change to the overall conclusions of the NIS, i.e. there is no change to the

Reference	Request for Further Information	Response / Reference where information is presented	Concluding statement
	previously (Migratory Species – Non seabirds points S to W and Terrestrial Bird Species points X to Z), the assessment of the impact on migratory birds (both terrestrial and waterbird groups) arising from the project alone appears to be insufficient, and that further data should be provided to inform the assessment. The applicant is requested to assesses cumulative impacts to migratory bird populations, considering effects of the Irish Sea Phase 1 ORE projects and other existing or currently proposed plans and projects that may affect the same migratory populations.	presented in Annex 9: Offshore Ornithology Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment. To model the movements of migratory birds within array area, the Marine Scotland Avian Migration Collision Risk Model Shiny Application, hereafter referred to as the mCRM tool ("mCRM App"; HiDef Aerial Surveying Ltd., 2024), was employed. The cumulative impact of Arklow, Dublin, Codling, NISA and Oriel is presented in Table 4.2 in Annex 9: Offshore Ornithology Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment.	assessment of adverse effects on the integrity of any European site(s).

2 PROJECT DESCRIPTION

2.1 Introduction

In response to the RFI the Applicant has made the following minor amendments to the Project:

- Changes to the realignment of the onshore cable route within the subject planning application boundary from the M1 to the onshore substation;
- Minor relocation of temporary construction compound 3 M1/Railway, located west of the M1 and the associated access. Also minor relocation of temporary access to temporary construction compound 2. River Dee at Richardstown (west);
- Reconfigure existing access to the onshore substation to TII standards to ensure no right turns onto/off the N33 (i.e. Left In-Left Out); and
- Changes to the location of the Transition Joint Bay (TJB) (options 1 and 2) at Dunany and the onshore cable route within the planning application boundary.

2.2 Project boundary

There are no changes to the Natura Impact Statement.

2.2.1 Offshore wind farm area

There are no changes to the Natura Impact Statement.

2.2.2 Offshore cable corridor

There are no changes to the Natura Impact Statement.

2.2.3 Onshore cable route

There are no changes to the Natura Impact Statement.

2.2.4 Onshore substation site

There are no changes to the Natura Impact Statement.

2.3 Project infrastructure overview

2.3.1 Offshore infrastructure

There are no changes to the Natura Impact Statement.

2.3.2 Onshore infrastructure

There are no changes to the Natura Impact Statement.

2.4 Project design and flexibility

2.4.1 Surveys to inform the project design

There are no changes to the Natura Impact Statement.

2.4.2 Design flexibility

There are no changes to the Natura Impact Statement.

2.5 Description of offshore infrastructure

2.5.1 Construction port

There are no changes to the Natura Impact Statement.

2.5.2 Site preparation activities

There are no changes to the Natura Impact Statement.

2.5.3 Wind turbines

There are no changes to the Natura Impact Statement.

2.5.4 Wind farm area layout

There are no changes to the Natura Impact Statement.

2.5.5 Foundations

The Applicant notes the absence of two units of measurement to describe 'Drill characteristics' in Table 2-4 Please see Table 2A-1 below, which shows the amendments in blue. This replaces Table 2-4 in the NIS.

Table 2A-1: Project Design parameters for monopile foundations (Replaces Table 2-4).

Element	Design parameter (WTGs + OSS)
Monopile	
Total number of structures	26 (25 WTGs + 1 OSS)
Maximum diameter of monopile (m)	9.6
Pile penetration depth (below seabed) (m)	35.0
Seabed footprint per pile (m^2)	72.4
Scour protection	
Scour protection material type	Rock
Scour protection material height (m)	1.0
Scour protection footprint per pile (m^2)	1,810
Scour protection volume per pile (m^3)	1,810
Total Project scour protection volume (m^3)	47,060
Total seabed footprint	
Total Project seabed footprint including scour protection (m^2)	47,060
Grout	
Grout volume per pile (m^3)	320
Drill characteristics	
Maximum drilling duration (days per pile)	6
Maximum drill depth (m)	35.0
Volume of drill arisings per pile (m^3)	3,200
Total Project volume of drill arisings (m^3)	83,200

The Applicant provides the following additional information to clarify the details on the proposed drive, drill and grout method for the foundation installation. This technique was chosen to minimise the time spent piling and thereby minimising potential noise impacts on marine receptors.

The drive, drill and grout method will use a system known as a MODIGA (Monopile Offshore Drilling Installation and Grouting Aid) or similar which will allow foundations to be installed through a combination of piling followed by drilling. The MODIGA installation:

- Creates an environment sheltered from the main wave action, within which the drilling tool, the monopile and grouting equipment can be inserted and operated in a safe and controlled manner;
- Controls verticality of the monopile and the drilling tool so they adhere to the required installation tolerances;
- Transfers vertical loads and torque generated by the drilling tool towards the soil; and
- Reduces noise generation through casing design.

The MODIGA is lowered to the seabed from the installation vessel and initially a sacrificial casing is inserted. The hammer piling tool is then inserted into the tool and the sacrificial casing is hammered through the unconsolidated sediments to its resistance limit which is expected to be at or close to the rockhead.

A short duration (up to a maximum of 8 hours per foundation) is required for stabilisation of a sacrificial casing within less competent seabed material (sands, gravels, boulder clays) prior to commencement of drilling within the sacrificial casing.

The drill is inserted inside the sacrificial casing, the rock is drilled out to the required embedment depth. On completion of drilling, the drilling tool is removed and the monopile is inserted into the drilled hole. The annulus between the drilled hole and the monopile is then sealed with a grout.

A sequence of graphics detailing the foundation installation sequence is provided in Figure 2A-1 and Figure 2A-2.

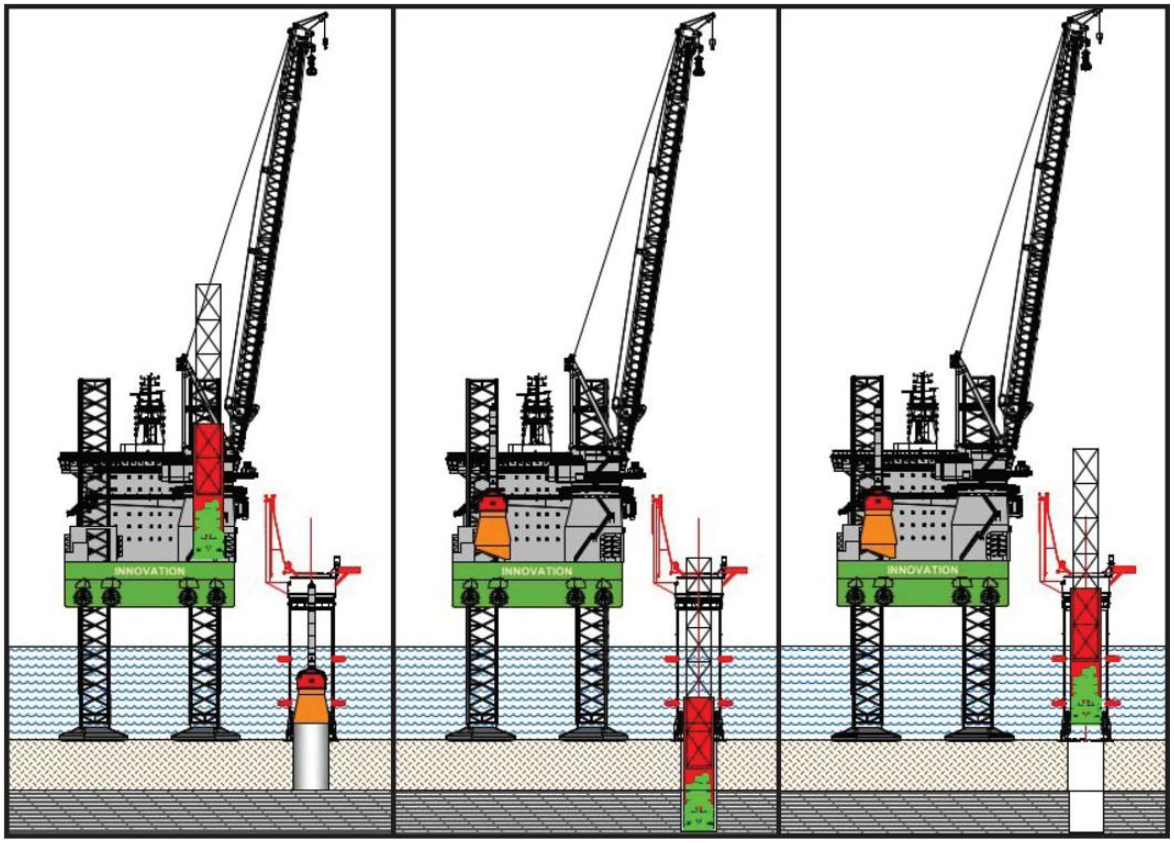


Figure 2A-1 : Installation of foundations (steps 1-3): 1. Placement of MODIGA and piling of sacrificial casing; 2. Drilling of rock to embedment depth; 3. Removal of drill.

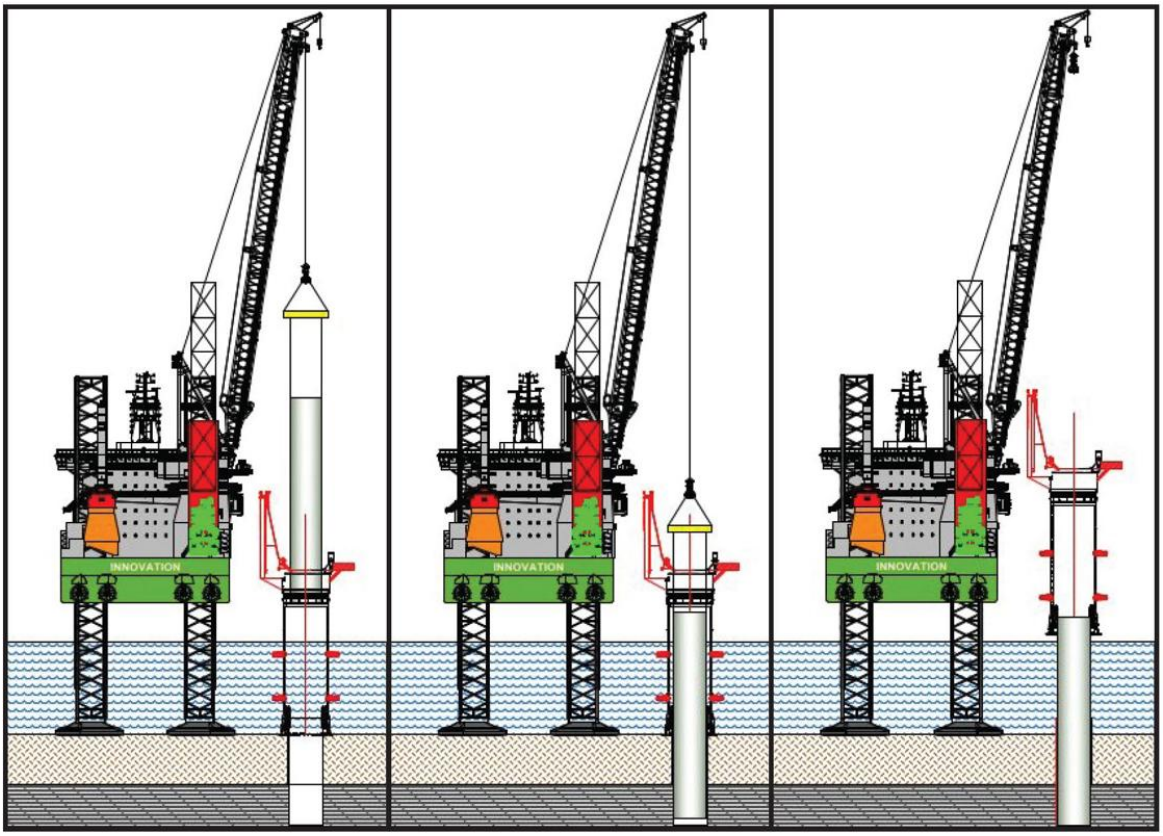


Figure 2A-2: Installation of foundations (steps 4-6): 4. Insertion of monopile; 5. Grouting of monopile, 6. Removal of MODIGA.

2.5.6 Inter-array cables

There are no changes to the Natura Impact Statement.

2.5.7 Offshore substation (OSS)

There are no changes to the Natura Impact Statement.

2.5.8 Offshore export cable

There are no changes to the Natura Impact Statement.

2.5.9 Landfall and Transition Joint Bay (TJB)

Intertidal area - export cable installation

In response to the RFI 8.G and 19.A, the Applicant has provided below further details on the reasons HDD is not the preferred option for installation of the export cable at the landfall.

A single offshore export cable is proposed for the Project (as outlined in section 2.5.8 of the NIS (2024)). This cable is rated specifically for the proposed maximum export capacity (MEC) of the wind farm (375 MW). The offshore cable export capacity would be reduced by the cable being installed in an HDD duct in comparison to an open trench. This is due to the thermal rating of the cable. HDD installation would result in the requirement for a second offshore cable to achieve the MEC with a resulting increase of environmental impacts to the subtidal and intertidal environments.

In addition, the shallow gradient of the near-shore intertidal and sub-tidal seabed on the approach to the landfall would result in a significant drilled distance for a HDD to achieve the required subtidal depth for the break-out of the cable from the seabed (5-10 m below Chart Datum). Calculations indicate an HDD distance of up to 2,300 m could be required. This is beyond the feasible drilling distance for an HDD at the diameter required for the marine offshore cable (375 mm diameter).

Transition Joint Bay (TJB)

In response to the concerns raised by ACP in RFI 6.K, 8.G and 19.A, the Applicant has adjusted the proposed location of the TJB (options 1 and 2) and realigned the route of the export cable leading to the TJB (within the planning application boundary). A description of the adjustments is provided below and replaces the description provided in this section in section 2.5.9 of the NIS (2024).

In response to concerns raised in RFI 6.K, the two options for the location of the TJB have been adjusted and are presented on Map 12 of 12 in Figure 2A-16 The two adjusted options are described below.

- **Option 1 -** As shown on Figure 2A-16 (map 12 of 12) the TJB option 1 is located approximately 300 m west of Dunany beach at an existing layby at the top of the laneway leading to the beach. This option requires a realignment of the offshore export cable route along the laneway. The adjustment of the TJB location and realignment of the export cable route for option 1 is within the planning application boundary and ensures works will avoid impacts on the sedimentary cliff.

- **Option 2** - As shown on Figure 2A-16 (map 12 of 12) the TJB option 2 is located in the field adjacent to Dunany beach at the southern boundary of Dunany Demesne. The offshore cable will be installed in a trench along approximately 120 m length of the laneway, before crossing the boundary wall of Dunany Demesne into the field. An approximate 10 m section of the boundary wall will be removed to facilitate the installation of the cable, but this will be reinstated after construction. The adjustment of the TJB location and realignment of the export cable route for option 2 is within the planning application boundary and ensures works will avoid impacts on the sedimentary cliff.

Transition Joint Bay (TJB) access track

The EirGrid functional specifications require permanent vehicular access to the TJB. For this a single vehicle width access track along the southern boundary of the field will be constructed (if option 2 is used). The

permanent access track is shortened in length as a result of the repositioned TJB (see Figure 2A-16, map 12 of 12). The existing public access lane will be used if TJB option 1 is constructed.

2.5.10 Construction vessel activities

There are no changes to the Natura Impact Statement.

2.5.11 Aids to navigation, colour, marking and lighting

There are no changes to the Natura Impact Statement.

2.5.12 Safety zones and advisory clearance distances

There are no changes to the Natura Impact Statement.

2.6 Description of onshore infrastructure

In response to RFI 18.A and the submission made by TII regarding the potential impacts of the onshore infrastructure on the N33 and M1 routes, the Applicant has realigned the position of onshore cable route along the N33 (within the planning application boundary) further away from the N33 infrastructure to ensure works will have minimal impact on N33 (see Figure 2A-16, maps 1 - 3).

Additional information to supplement the description provided in the NIS (2024) is provided in section 2.6.1 below.

2.6.1 Onshore cable

Onshore cable route

Between the M1 motorway and the proposed onshore substation site the cable will be installed along the northern side of the N33. Following engagement with TII, between the onshore substation and Joint Bay 4 (a distance of approximately 2.5 km) the onshore cable trench (and Joint Bays 1-4) will be relocated away from the N33 pavement to the northern boundary of the easement for the N33.

The construction of the N33 resulted in an access track along the northern boundary which was subsequently planted and overgrown with vegetation. This vegetation is required to be removed to facilitate the installation of the realigned cable between the onshore substation and Joint bay 4. Following the installation of the cable, the access track will be allowed to naturally revegetate.

The N33, along this section, is located on a shallow embankment (approximately 1-2 m in elevation). The location of the cable trench along the northern boundary avoids interaction with the embankment and minimises impacts on the N33 infrastructure.

Figure 2A-16 (maps 1-3) show the proposed amended onshore cable route as described above along with the proposed onshore cable route which was considered in the NIS (2024).

Cable route wayleave

There are no changes to the Natura Impact Statement.

2.6.1.1 Cable design

There are no changes to the Natura Impact Statement.

2.6.1.2 Joint bays, link boxes and communication chambers

There are no changes to the Natura Impact Statement.

2.6.2 Onshore cable installation

Site investigations

There are no changes to the Natura Impact Statement.

2.6.2.1 Preconstruction surveys

There are no changes to the Natura Impact Statement.

2.6.2.2 Construction corridor

There are no changes to the Natura Impact Statement.

2.6.2.3 Site preparation / enabling activities

There are no changes to the Natura Impact Statement.

2.6.2.4 Onshore cable trenching and ducting

There are no changes to the Natura Impact Statement.

2.6.2.5 Construction of joint bays and cable pulling

There are no changes to the Natura Impact Statement.

2.6.2.6 Cable pulling and jointing

There are no changes to the Natura Impact Statement.

2.6.2.7 Passing bays

There are no changes to the Natura Impact Statement.

2.6.2.8 Crossings

There are no changes to the Natura Impact Statement.

2.6.2.9 Temporary Construction Compounds

In response to RFI 18.A (and the submission made by TII) regarding the potential for indirect impacts on the M1, a Horizontal Directional Drill (HDD) Preliminary Design Report was prepared by an experienced contractor Geo Drilling Solutions (October, 2025). This report set out a general arrangement for the temporary works area and equipment required for HDD which proposes that drilling would take place in the compound located west of the M1 with a reception area and pipe stringing in the field to the east of the Dublin-Belfast rail line. As a result, the layout of the proposed temporary compound 3, the M1/Railway, on the west has been adjusted to ensure all infrastructure for temporary works can be facilitated. The change in layout is within the planning application boundary (see Figure 2A-16 Onshore Cable Route Map 1-3, 32 of 12 map 3 of 12). The access to this temporary compound has also been adjusted so that an existing farm access is used (see Figure 2A-16, map 3 of 12). This adjustment was made following consultation with TII.

Similarly, the access to the proposed temporary compound 2. River Dee at Richardstown, on the west has been adjusted so that an existing farm access is used (see Figure 2A-16 map 3 of 12). This adjustment was made following consultation with TII.

A Road Safety Audit (RSA) has been completed for the Project to examine the interaction of the onshore cable route and temporary accesses onto the N33. The findings of the RSA have been accepted by the Applicant and have been incorporated into the Project design.

2.6.3 Onshore substation

Location

There are no changes to the Natura Impact Statement.

2.6.3.1 Design

There are no changes to the Natura Impact Statement.

2.6.3.2 Demolition

There are no changes to the Natura Impact Statement.

2.6.3.3 Services and utilities

In response to RFI 18.A and the submission made by TII regarding concerns around the existing access onto the N33 from the onshore substation, additional information is provided under 'Access and Parking' regarding the proposed reconfiguration of the existing access to TII standards to ensure Left In-Left Out operation.

Access and Parking

This reconfigured direct access layout at the onshore substation will be designed in accordance with the geometric standards for an altered access as set out in DN-GEO-03060 Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated and compact grade separated junctions). This left-in and left-out arrangement is considered appropriate following consultation with TII and given that there are two roundabouts, one at either end of the N33 which can accommodate the turning of vehicles without crossing the N33 traffic lanes and given the low number of vehicles anticipated.

2.6.4 Onshore substation construction

There are no changes to the Natura Impact Statement.

2.6.5 Commissioning of onshore infrastructure

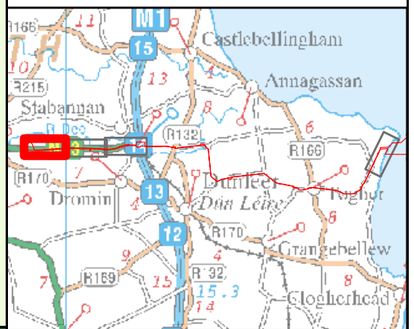
There are no changes to the Natura Impact Statement.

Legend

- Planning Application Boundary
- Proposed Amended Onshore Cable Route
- Proposed Onshore Cable Route
- Proposed Joint Bay Locations
- Proposed Transition Joint Bay Option One
- Proposed Transition Joint Bay Option Two
- Line Cable Interface Mast (LCIM)
- Compound 1 - GIS
- Compound 2 - AIS
- Cable Pulling Temporary Hardstand
- Temporary Construction Compound (substation)
- Temporary Construction Compound (underground cable installation)
- Temporary Storage Area
- Temporary Construction Area
- Amended Temporary Accesses
- Proposed Temporary Accesses

Note: The Applicant has proposed an amended onshore cable route (between the onshore substation and joint bay 4; and the section between L2226 and the M1 (at joint bay 8)) and also amended two temporary accesses (onto the N33) in response to a further info

Data Sources: OWL; OSi.



Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title

Figure 2A-16: Onshore Cable Route

Map 1 of 12

RPS
A TETRA TECH COMPANY

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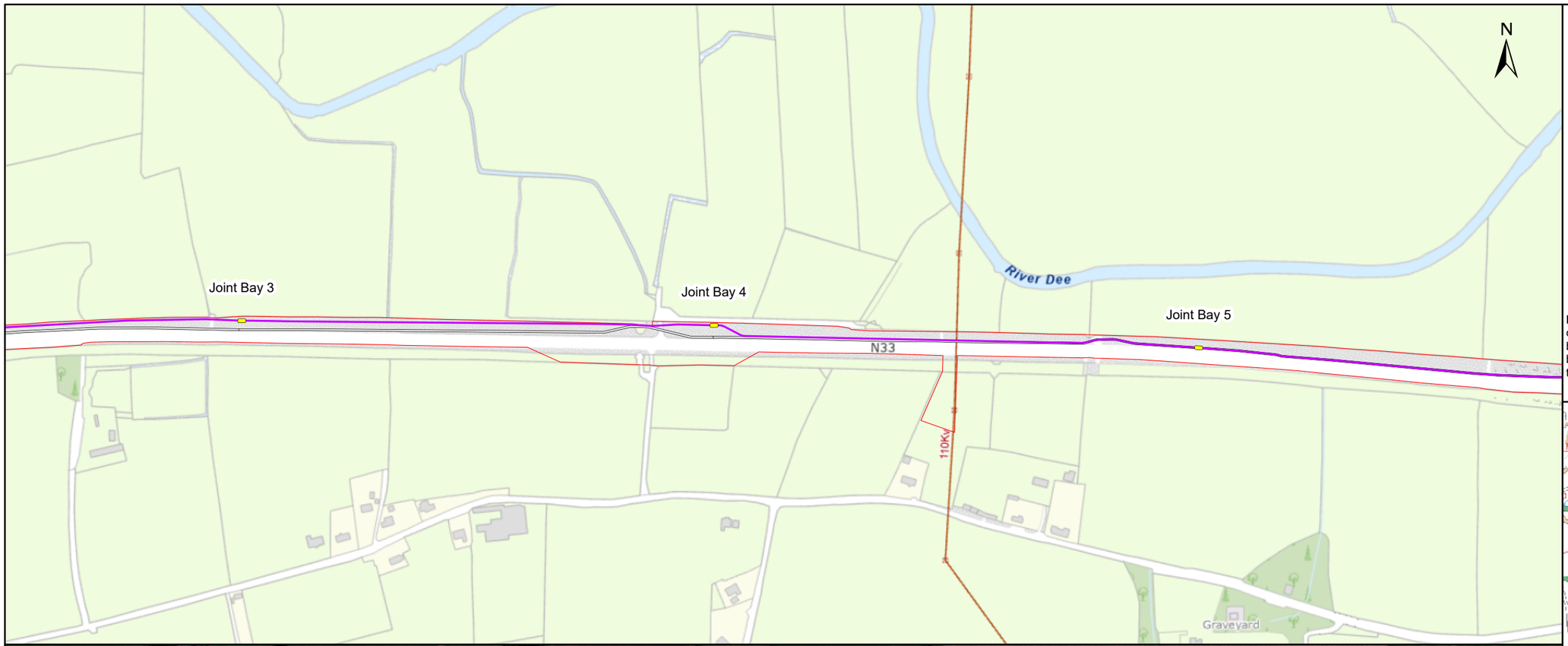
Issue Details

Drawn By: NR	**Project No.** MDR1520c
Checked By: CC	**File Ref:**
Approved By: CC	MDR1520c-RPS-AP-XX-D-Z-0037.A1.C01
Scale: 1:6,000 @ A3	**Projection:**
Date: 11/12/2025	ITM (IRENET95)



Legend

- Planning Application Boundary
- Proposed Amended Onshore Cable Route
- Proposed Onshore Cable Route
- Proposed Joint Bay Locations
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- Proposed Transition Joint Bay Option Two

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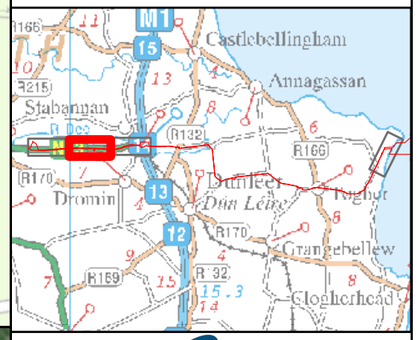

Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title

Figure 2A-16: Onshore Cable Route

Map 2 of 12

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Legend

- Planning Application Boundary
- Proposed Amended Onshore Cable Route
- Proposed Onshore Cable Route
- Proposed Joint Bay Locations
- Proposed Transition Joint Bay Option One
- Proposed Transition Joint Bay Option Two
- Temporary Construction Compounds
- Amended Proposed HDD Compounds
- Proposed HDD Compounds
- Amended Temporary Accesses
- Proposed Temporary Accesses
- High Pressure Transmission Gas Main
- Onshore Cable Crossing 1-8

Note: The Applicant has proposed an amended onshore cable route (between the onshore substation and joint bay 4; and the section between L2226 and the M1 (at joint bay 8)) and also amended two temporary accesses (onto the N33) in response to a further info

Data Sources: OWL; OSi.

Client

ORIEL WINDFARM
OFFSHORE RENEWABLE ENERGY

Project

Oriel Wind Farm Project

Title

Figure 2A-16: Onshore Cable Route

Map 3 of 12

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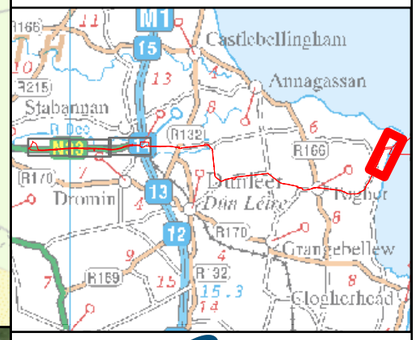

Legend

- Planning Application Boundary
- Proposed Amended Onshore Cable Route
- Proposed Onshore Cable Route
- Proposed Joint Bay Locations
- Proposed Passing Bay
- Amended Proposed Transition Joint Bay Option 1
- Amended Proposed Transition Joint Bay Option 2
- Proposed Transition Joint Bay Option One
- Proposed Transition Joint Bay Option Two
- Temporary Construction Compounds
- Amended Temporary Accesses
- Proposed Temporary Accesses

Note: The Applicant has proposed amended locations for the Transition Joint Bays (options 1 and 2) in response to a further information request from An Coimisiún Pleanála

Data Sources: OWL; OSi.

Client

ORIEL WINDFARM
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Project

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Figure 2A-16: Onshore Cable Route

Map 12 of 12

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Issue Details

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Checked By: CC	**File Ref:**
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Scale: 1:6,000 @ A3	**Projection:**
Date: 11/12/2025	ITM (IRENET95)

2.7 Construction programme

A high level indicative programme is presented in Figure 2-30 in the NIS (2024). The timelines for commencement are now expected to occur two to three years later than shown. Offshore construction is expected to commence in Q4 2028/Q1 2029 and onshore construction commencement in Q2 2028 subject to consent.

2.7.1 Construction working hours

The Applicant would like to clarify that the construction hours outlined in section 2.7.1 of the NIS (2024) relate to the onshore construction activities only and so should read:

The proposed hours of onshore construction are as follows:

- Monday to Saturday (inclusive) – 8:00am to 6:00pm; and
- Sunday and Bank Holidays – no operations and no associated lighting other than that required for security or safety.

Specific activities such as large concrete pours or delivery of large equipment (e.g. transformers) which require specific road control may occur outside these hours. The local authority and affected local stakeholders will be informed prior to these activities.

Offshore construction will not be limited to working hours and may take place over 24-hours, seven days a week.

2.7.2 Construction employment

There are no changes to the Natura Impact Statement.

2.8 Operational and maintenance phase

2.8.1 Offshore activities

There are no changes to the Natura Impact Statement.

2.8.2 Onshore activities

There are no changes to the Natura Impact Statement.

2.9 Decommissioning phase

2.9.1 Offshore infrastructure decommissioning

There are no changes to the Natura Impact Statement.

2.9.2 Onshore decommissioning

There are no changes to the Natura Impact Statement.

2.10 Environmental management

2.10.1 Measures included in the Project

There are no changes to the Natura Impact Statement.

2.10.2 Management plans

A number of the management plans listed in Table 2-33 of the NIS (2024) required updates to respond to the further information requested. Table 2A-2 listed those plans for which an Addendum has been prepared.

Table 2A-2: Management plans with further information provided in Addenda.

Management Plan	Submission stage	Purpose	Addendum to Management plan prepared in response to RFI?
Construction Environmental Management Plan (CEMP)	At least six months prior to construction.	The CEMP provides information relating to the environmental management during the construction of the onshore infrastructure of the Project.	Yes, appendix 5-1 Addendum: CEMP
Environmental Management Plan (EMP) (including Marine Pollution Contingency Plan)	At least six months prior to construction.	The EMP provides the overarching framework for environmental management during the construction and operational phases of the Project.	Yes, appendix 5-2 Addendum: EMP and Annex 2 in appendix 5-2.
Marine Invasive Non-Native Species Management Plan (MINNSMP)	At least six months prior to construction.	The MINNSMP sets out the approach to invasive species management and mitigation in respect of the Project, providing an outline of the measures proposed to be implemented to facilitate biosecurity control and to minimise potential impacts on the local and wider environment.	No
Marine Mammal Mitigation Plan (MMMP)	At least six months prior to construction.	The MMMP includes details of the refined piling methodology and anticipated duration of pile-driving, details of soft-start piling procedures and anticipated maximum piling energy required, and details of any mitigation and monitoring to be employed during pile-driving.	Yes, appendix 5-4 Addendum: Marine Mammal Mitigation Plan (in response to RFI 9).
Marine Megafauna: Vessel Code of Conduct	At least six months prior to construction.	The Vessel Code of Conduct provides best practice guidelines to be followed in cases of any interaction between vessels and marine megafauna within Irish waters.	No

2.10.3 Residues, emissions and waste

There are no changes to the Natura Impact Statement.

2.10.4 Natural resources

There are no changes to the Natura Impact Statement.

2.10.5 Health and Safety

There are no changes to the Natura Impact Statement.

3 METHODOLOGY

3.1 Appropriate Assessment guidance

There are no changes to the Natura Impact Statement.

3.2 Relevant European sites

There are no changes to the Natura Impact Statement.

3.2.1 Zone of influence

3.2.1.1 Terrestrial and freshwater

There are no changes to the Natura Impact Statement.

3.2.1.2 Marine processes

There are no changes to the Natura Impact Statement.

3.2.1.3 Benthic, subtidal and intertidal ecology

There are no changes to the Natura Impact Statement.

3.2.1.4 Offshore ornithology

A total of 31 bird species were recorded during the site-specific surveys undertaken between May 2018 and September 2020, of which 22 are qualifying features of SPAs listed in Table 3-1 (in appendix H: Offshore Ornithology Supporting Information (2024). The 22 qualifying features also are presented in Table 3-2 (repeated below in Table 3A-1). Further details of the baseline characterisation for each species are included in annex 1: Offshore Ornithology Technical Report, and Annex 2: Ornithological and Marine Megafauna Aerial Survey Results.

When determining which species to assess in the NIS for each impact (disturbance and displacement, and collision), the Applicant applied a screening process based on species abundance recorded during the site-specific surveys and their sensitivity to effects.

Where seabirds were not recorded at all over the duration of site-specific surveys (19 surveys), it is considered objectively reasonable using expert judgement to exclude them from further assessment. Seabirds not recorded would likely not use the offshore wind farm area in numbers large enough to warrant further consideration. Therefore the seabirds, and their relevant SPAs, which were not recorded at all during site-specific surveys have been excluded from further assessment.

The total abundance presented in Table 3-2 (repeated below in Table 3A-1) is derived from summing all records during the site-specific surveys. The level of abundance is categorised as follows: very low < 49 individuals; low: 50 to 199; moderate: 200 to 999; high: 1000 to 4,999 and very high: > 5,000.

If a qualifying feature was present in very low numbers (<49 individuals recorded throughout the combined site-specific surveys) it is concluded that no adverse impact would occur during any phase of the Project (these species are highlighted in grey).

Accordingly, the following species were excluded from the assessment of effects in the NIS due to very low abundance in the Offshore Ornithology Study Area (Table 3-2):

- Arctic tern: one bird recorded;
- Black-headed gull: seven birds recorded;
- Little gull: one bird recorded; and

- Sandwich tern: 19 birds recorded.

Species recorded in low numbers (50 to 199 individuals) across all site-specific surveys (19 surveys), are presented within Table 3-2 (NIS (2024) to understand the importance of the sites to the SPA populations (these species are highlighted in yellow). To account for small populations of species recorded in low numbers a further screening of SPAs within the connectivity range is presented in below in Table 3A-1 for species which were defined as “low” abundance.

A species was taken forward to further assessment (e.g. an assessment of collision risk or disturbance and displacement) if the peak count during one survey represents >10% of a single SPA’s population. At least 10 % of a single SPA’s population was used as in reality the birds would come from multiple different SPAs (and non-SPA) colonies and therefore presuming that all individuals within the survey area are from one SPA is highly unlikely and not realistic.

For species with the peak count during one survey representing <10% of a single SPA’s population, further screening was undertaken based on the sensitivity and distribution of the species within the Offshore Ornithology Study Area (Table 3-2 (NIS, 2024), (repeated below in Table 3A-2)). Due to the sensitivity of red-throated diver to disturbance and that the cable corridor overlaps with the North-west Irish Sea SPA, this species and site, are taken through to further assessment. However, the following species were not taken for further assessment:

- Common tern. Low sensitivity to disturbance and displacement; Moderate sensitivity to collision. Low abundance (77 birds). The peak count on a single survey was 21 birds (recorded in September 2018 and August 2019 during the post-breeding migration).
- Cormorant. Despite moderate sensitivity to disturbance, the species' low abundance (78 birds) meant further assessment was unnecessary.
- Fulmar. The species is not considered susceptible to collisions or displacement and is therefore excluded from further assessment.
- Lesser black-backed gull. Given the low numbers a collision risk assessment was not required.
- Puffin. Low sensitivity to disturbance & displacement; Very low sensitivity to collision. Low abundance (72 birds). Puffin were recorded in 12 of the 24 months of surveys, which coincided with the breeding period and post-breeding migration. The highest count recorded during a Digital Aerial Surveys (DAS) survey was 24 birds in September 2020, coinciding with post-breeding migration. Only two sightings were recorded inside the array area during the DAS surveys conducted between April and September 2020. Only five birds (across four sightings) were recorded in the array area during boat-based surveys conducted between May 2018 and May 2020. Puffin are considered susceptible to displacement, along with other auk species; however, given the small number present within the array area (two to four birds), further assessment of displacement was not considered necessary as the species was distributed outside the array area.

Species which were recorded in at least moderate numbers (>200 individuals), are automatically taken through for additional assessment (these species are highlighted in green) (see section 5.7). It should be noted that assessments for other wind farm projects may take a different approach to what is outlined above due to the differences in geographic location and peak site-specific survey counts for seabirds. Differences in seabird peak counts between projects is expected to vary and will result in differences in which seabirds are included/ excluded for further assessment.

Table 3A-1: Qualifying features recorded during the site-specific boat-based surveys and/or DAS (Table 3-2 from appendix H: Offshore Ornithology Supporting Information (2024)).

Species	Total abundance in Offshore Ornithology Study Area during site-specific surveys	Peak count during one survey	SPA(s) for which the species is designated with connectivity to the Project	Taken through to additional assessment
Arctic tern	1 Very low	1	North-west Irish Sea Rockabill	No
Black-headed gull	24 Very low	11	North-west Irish Sea Dundalk Bay	No
Common gull	580 Moderate	137	North-west Irish Sea Dundalk Bay	Yes
Common scoter	2,222 High	2,005	North-west Irish Sea	Yes
Common tern	77 Low	21	North-west Irish Sea Carlingford Lough Rockabill	See Table 3A-2
Cormorant	78 Low	18	North-west Irish Sea Skerries Island	See Table 3A-2
Fulmar	61 Low	21	North-west Irish Sea Howth Head Coast Lambay Island Seas off Wexford Saltee Islands Horn Head to Fanad Tory Island West Donegal Coast Mingulay and Berneray Beara Peninsula Shiant Isles St Kilda Duvilllaun Islands Deenish Island and Scariff Island	See Table 3A-2
Gannet	1,718 High	247	Ailsa Craig Seas off Wexford Saltee Islands Grassholm	Yes
Guillemot	24,301 Very high	6,163	North-west Irish Sea Lambay Island Ireland's Eye Howth Head Coast Wicklow Head Rathlin Island	Yes
Great black-backed gull	908 Moderate	126	North-west Irish Sea	Yes
Great northern diver	945 Moderate	285	North-west Irish Sea	Yes
Herring gull	730 Moderate	165	North-west Irish Sea Dundalk Bay River Nanny Estuary and Shore Skerries Island Lambay Island	Yes

Species	Total abundance in Offshore Ornithology Study Area during site-specific surveys	Peak count during one survey	SPA(s) for which the species is designated with connectivity to the Project	Taken through to additional assessment
			Ireland's Eye	
Kittiwake	1,199 High	238	North-west Irish Sea Lambay Island Ireland's Eye Howth Head Coast Wicklow Head Rathlin Island Ailsa Craig Seas off Wexford Saltee Islands North Colonsay and Western Cliffs Horn Head to Fanad Helvick Head to Ballyquin	Yes
Lesser black-backed gull	52 Low	20	North-west Irish Sea Lambay Island Ailsa Craig Morecambe Bay and Duddon Estuary Ribble and Alt Estuaries Seas off Wexford Saltee Islands	See Table 3A-2
Little gull	1 Very low	1	North-west Irish Sea	No
Manx shearwater	9,736 Very high	2,094	North-west Irish Sea Irish Sea Front Copeland Islands Glannau Aberdaron ac Ynys Enlli Skomer, Skokholm and the Seas off Pembrokeshire Rum St Kilda Deenish Island and Scariff Island Seas off Wexford	Yes
Puffin	72 Low	24	North-west Irish Sea Lambay Island Seas off Wexford Saltee Islands Skomer, Skokholm and the Seas off Pembrokeshire	See Table 3A-2
Razorbill	3,195 High	439	North-west Irish Sea Lambay Island Ireland's Eye Howth Head Coast Wicklow Head Rathlin Island	Yes
Red-throated diver	134 Low	27	North-west Irish Sea	See Table 3A-2
Sandwich tern	19 Very low	3	Carlingford Lough Strangford Lough	No

Table 3A-2: Importance to the site for species recorded in low numbers during the site-specific surveys (Table 3-3 from appendix H: Offshore Ornithology Supporting Information (2024)).

Species	Peak count during one survey	SPA	SPA population (at destination)	Peak count as a % of the SPA population	Taken through to further assessment
Common tern	21	North-west Irish Sea	See Carlingford Lough SPA and Rockabill SPA		
		Carlingford Lough	339 pairs	3.1	No
		Rockabill	1,940 pairs	0.5	No
		Total SPA population	2,279 pairs	0.5	No
Cormorant	18	North-west Irish Sea	N/A	N/A	No
		Skerries Island	558 pairs	1.6	No
Fulmar	21	North-west Irish Sea	See Lambay Island SPA		
		Lambay Island	635 pairs	1.7	No
		Seas off Wexford	See Saltee Islands SPA		
		Saltee Islands	525 pairs	2.0	No
		Horn Head to Fanad	1,974 pairs	0.5	No
		Tory Island	641 pairs	1.6	No
		West Donegal Coast	1,879 pairs	0.6	No
		Mingulay and Berneray	12,500 pairs	0.1	No
		Beara Peninsula	575 pairs	1.8	No
		Shiant Isles	6,820 pairs	0.2	No
		St Kilda	62,820 pairs	<0.1	No
		Duvilllaun Islands	1,150 pairs	0.9	No
		Deenish Island and Scariff Island	325 pairs	3.2	No
		Total SPA population	89,844 pairs	<0.1	No
Lesser black-backed gull	20	North-west Irish Sea	See Lambay Island SPA		
		Lambay Island	309 pairs	3.2	No
		Ailsa Craig	1,800 pairs	0.6	No
		Morecambe Bay and Duddon Estuary	4,860 pairs	0.2	No
		Ribble and Alt Estuaries	1,800 pairs	0.6	No
		Seas off Wexford	See Saltee Islands SPA		
		Saltee Islands	175 pairs	5.7	No
		Total SPA population	9,119 pairs	0.1	
Puffin	24	North-west Irish Sea	See Lambay Island SPA		
		Lambay Island	265 individuals	9.1	No
		Seas off Wexford	See Saltee Islands SPA		
		Saltee Islands	1,822 individuals	1.3	No
		Skomer, Skokholm and the Seas off Pembrokeshire	9,500 pairs	0.1	No
		Total SPA population	21,087 individuals	0.1	No
Red-throated diver	27	North-west Irish Sea	827 individuals	3.3	Yes for precaution due to the cable corridor overlapping the SPA.

3.2.1.5 Fish and shellfish

There are no changes to the Natura Impact Statement.

3.2.1.6 Marine Mammals and Megafauna

In response to RFI 9.AA, justification has been provided below regarding the omission of the Lower River Shannon SAC and the West Connacht Coast SAC from the screening process.

As detailed in appendix A Report to Inform Screening for Appropriate Assessment (2024), the Regional Marine Mammal and Megafauna Study Area is defined by the Irish sea geographic area (which includes a 100 km range from the Project, as per appendix A Report to Inform Screening for Appropriate Assessment). This captures the highly mobile nature of marine mammals that range over large distances and therefore it was important to understand the ecology of marine mammals in this wider geographic context. This is important where the ZoI for a given impact (e.g. subsea noise) may extend beyond the more localised Marine Megafauna Study Area. The Lower River Shannon SAC and West Connacht Coast SAC are located outside of this study area, on the west coast of Ireland. In line with the screening approach detailed in appendix A Report to Inform Screening for Appropriate Assessment, the potential for LSEs on these SACs was therefore excluded at the screening stage and they were not considered in the NIS.

The Lower River Shannon SAC and West Connacht Coast SAC are located in the West Coast of Ireland Management Unit (MU), as defined by Inter-Agency Marine Mammal Working Group (IAMMWG) (2023), rather than the Irish Sea MU which covers the Irish Sea geographic area. Whilst individuals can feasibly interchange between MUs and are not demographically independent, IAMMWG (2023) states 'MUs provide an indication of the most relevant spatial scales at which impacts of marine plans and developments (both alone and cumulatively) should be assessed for the key cetacean species in UK waters'. The approach adopted to screening (See appendix A: Report to Inform Screening for Appropriate Assessment) therefore aligns with this guidance. As reported in the latest ObSERVE report (Paradell *et al.*, 2024), in Irish waters, three distinct populations occur (Atlantic pelagic, west coast and Shannon), corresponding to separate management units, based on low genetic, social and, importantly, dispersal between populations (Louis *et al.*, 2015, Mirimin *et al.*, 2011, Nykänen *et al.*, 2018, Nykänen *et al.*, 2020). There is considered to be a low likelihood that bottlenose dolphin potentially impacted by the Project would be part of these SAC populations and so there is no potential for a LSE on the site integrity at the Lower River Shannon SAC and West Connacht Coast SAC.

Furthermore, the NIS (2024) concluded that there will be no adverse effect on the integrity of any European site(s) due to the Project alone, which included SACs in the Irish Sea located in greater proximity to the Project (i.e. Cardigan Bay/Bae Ceredigion SAC and Sarnau/Pen Llyn a`r Sarnau SAC). Given the increased distance to the Lower River Shannon SAC and the West Connacht Coast SAC, impacts would be less, therefore supporting the screening out of the potential for likely significance effects on the Lower River Shannon SAC and West Connacht Coast SAC.

3.2.2 Source-pathway-receptor model

There are no changes to the Natura Impact Statement.

3.2.3 Adverse effect on integrity

There are no changes to the Natura Impact Statement.

3.2.4 Consideration of ex-situ effects

There are no changes to the Natura Impact Statement.

3.2.5 Conservation objectives

An updated review of Conservation Objectives for European sites was completed in November 2025. Any changes are included in the assessment contained within this Addendum.

3.2.6 In-combination effects

There are no changes to the Natura Impact Statement.

3.2.6.1 Approach to 'in-combination assessment (ICA)

There are no changes to the Natura Impact Statement.

3.2.6.2 Engagement with Phase 1 Project developers

Post application, the Applicant has continued to engage with the other east coast Phase 1 Developers. The applicants discussed the approach to updating the ICA and sharing of information relevant to the topic assessments including ornithology, marine mammals and marine processes.

For the ICA, the published data from the other Applicant's application documents has been used to inform the updated assessment. Migratory collision risk modelling has also been completed for the Phase one Projects to inform the ICA (see Annex 9 in appendix H Addendum: Offshore Ornithology – Supporting Information). It examines the potential project-specific and cumulative impacts of all the Phase One projects on migratory bird species.

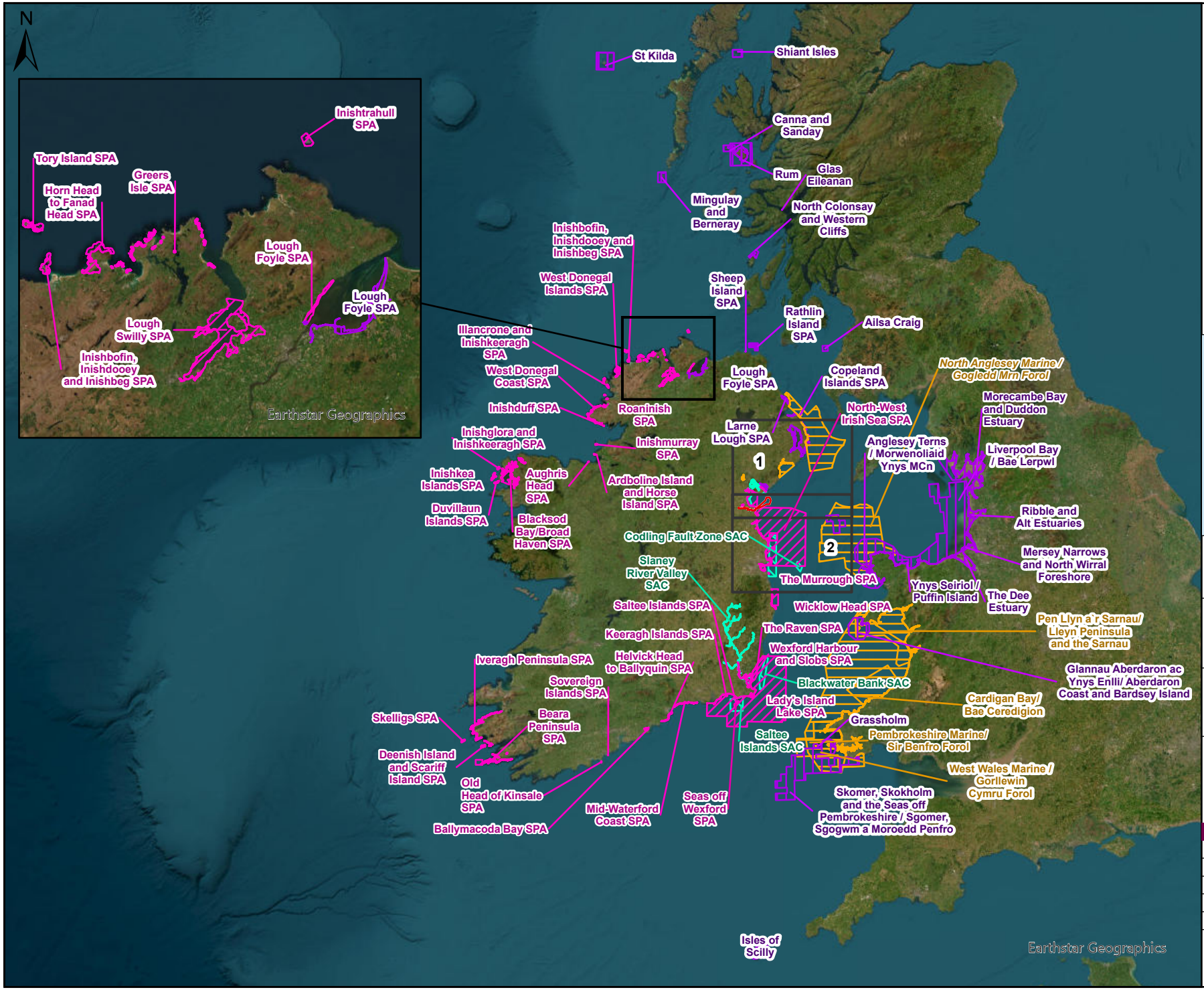
4 STAGE 1 SUMMARY AND FINDINGS OF THE REPORT TO INFORM SCREENING FOR APPROPRIATE ASSESSMENT

4.1 Key findings

In response to RFI 7.S, other migratory birds, have now been screened in within the Report to Inform Screening for Appropriate Assessment Addendum, and therefore have been assessed as part of this Addendum. This has resulted in the following additional European sites screened in for appropriate assessment. The SPAs listed below for further consideration are shown alongside all other European sites identified for Stage 1 Screening Appraisal in Figure 4A-1, while Table 4A-1 summarises the relevant SCIs for each site.

Special Protection Areas:

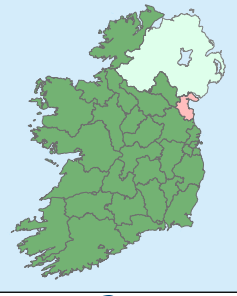
- Ardboline Island and Horse Island SPA (IE004135)
- Illancrone and Inishkeeragh SPA (IE004132)
- Inishtrahull SPA (IE004100)
- Inishbofin, Inishdooey and Inishbeg SPA (IE004083)
- Inishmurray SPA (IE004068)
- Inishkea Islands SPA (IE004004)
- Iveragh Peninsula SPA (IE004154)
- Mid-Waterford Coast SPA (IE004193)
- Roaninish SPA (IE004121)



Legend

- Planning Application Boundary
- Special Protection Area (United Kingdom)
- Special Area of Conservation (United Kingdom)
- Special Protection Area (Ireland)
- Special Area of Conservation (Ireland)
- Map Pages

Data Sources: OWL, NPWS, JNCC



Client

ORIEL WINDFARM
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Project

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Title

Figure 4A-1: European sites identified for Stage 1 Screening Appraisal (Overview map)

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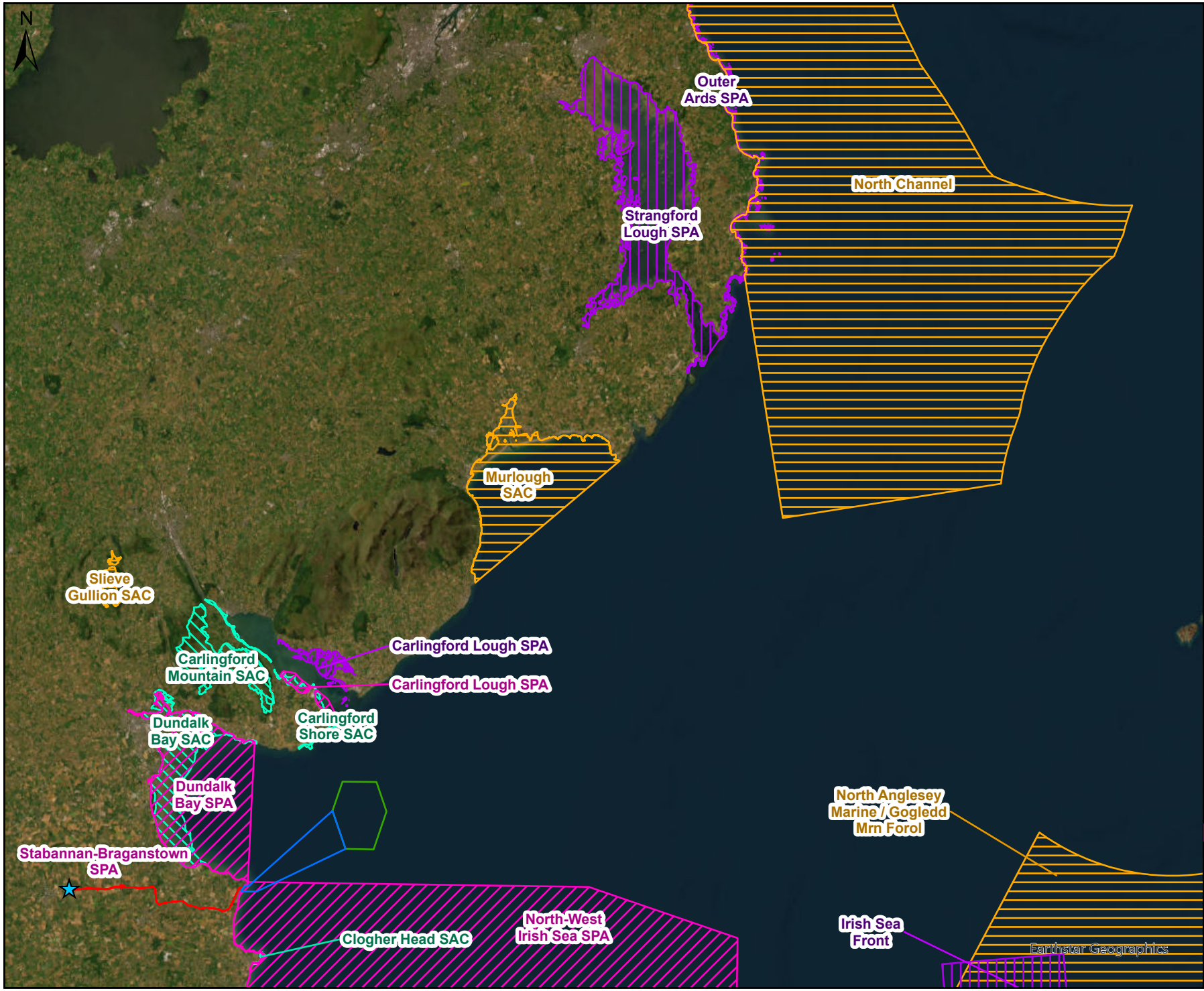
Date: 06/01/2026	



Legend

- Planning Application Boundary
- Offshore Cable Corridor
- Offshore Wind Farm Area
- Onshore Substation Site
- Special Area of Conservation (United Kingdom)
- Special Protection Area (United Kingdom)
- Special Protection Area (Ireland)
- Special Area of Conservation (Ireland)

Data Sources: OWL, NPWS, JNCC

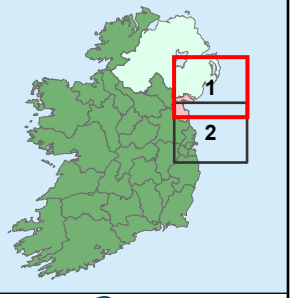


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Figure 4A-1: European sites identified for Stage 1 Screening Appraisal Map 1 of 2

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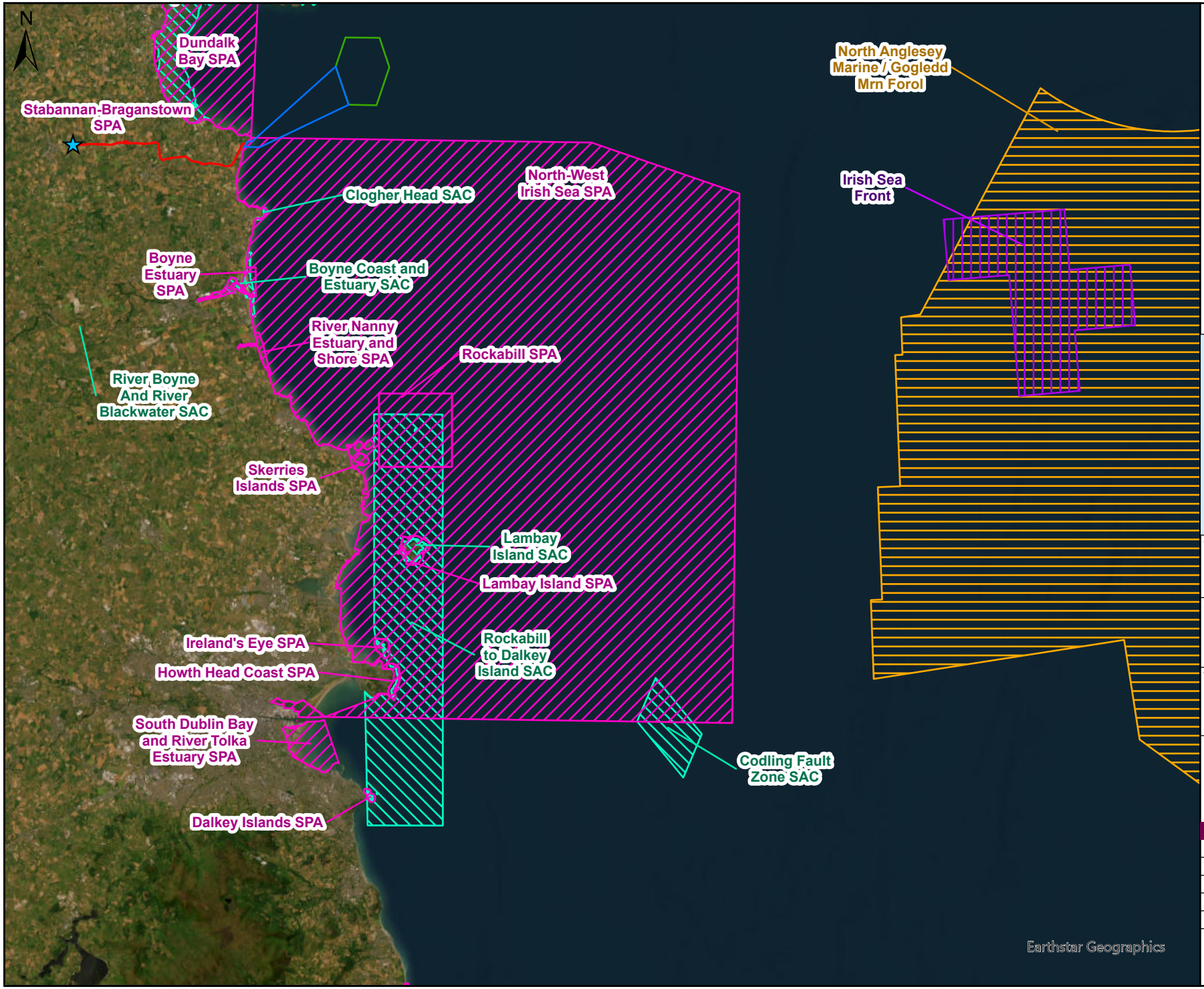

Legend

- Planning Application Boundary
- Offshore Cable Corridor
- Offshore Wind Farm Area
- Onshore Substation Site
- Special Area of Conservation (United Kingdom)
- Special Protection Area (United Kingdom)
- Special Protection Area (Ireland)
- Special Area of Conservation (Ireland)

Data Sources: OWL, NPWS, JNCC

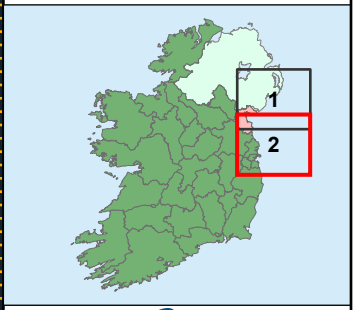

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Figure 4A-1: European sites identified for Stage 1 Screening Appraisal Map 2 of 2

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Date: 06/01/2026	

Table 4A-1: Summary of Stage 1 Screening Appraisal for SPAs.

Special Conservation Interests	Relevant European Site(s) (code)
Barnacle Goose (*Branta leucopsis*) [A045]	Horn Head to Fanad Head SPA (IE004194)
	Duvillaun Islands SPA (IE004111)
	Inishtrahull SPA (IE004100)
	Inishbofin, Inishdooey and Inishbeg SPA (IE004083)
	West Donegal Islands SPA (IE004230)
	Illancrone and Inishkeeragh SPA (IE004132)
	Roaninish SPA (IE004121)
	Inishmurray SPA (IE004068)
	Ardboline Island and Horse Island SPA (IE004135)
	Inishglora and Inishkeeragh SPA (IE004084)
	Inishkea Islands SPA (IE004004)
	Shiant Isles SPA (UK9001041)
Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Lough Foyle SPA (UK9020031)
	Lough Foyle SPA (IE004087)
	Wexford Harbour and Slobs SPA (IE 004076)
	Ribble and Alt Estuaries SPA (UK9005103)
Chough (*Pyrrhocorax pyrrhocorax*) [A346]	Glannau Aberdaron ac Ynys Enlli SPA (UK9013121)
	West Donegal Coast SPA (IE004150)
	Horn Head to Fanad Head SPA (IE004194)
	Mid-Waterford Coast SPA (IE004193)
	Helvick Head to Ballyquin SPA (IE004192)
	Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051)
	North Colonsay and Western Cliffs SPA (UK9003171)
	Iveragh Peninsula SPA (IE004154)
	Beara Peninsula SPA (IE004155)
Coot (*Fulica atra*) [A125]	Wexford Harbour and Slobs SPA (IE004076)
	Lough Swilly SPA (IE004075)
Corncrake (*Crex crex*) [A122]	Inishbofin, Inishdooey and Inishbeg SPA (IE004083)
	West Donegal Islands SPA (IE004230)
	Tory Island SPA [IE004073];
Eider (*Somateria mollissima*) [A063]	Lough Foyle SPA (IE004087)
Gadwall (*Anas strepera*) [A051]	Lady's Island Lake SPA (IE004009)
Golden eagle (*Aquila chrysaetos*) [A091]	Rum SPA (UK9001341)
Goldeneye (*Bucephala clangula*) [A067]	Wexford Harbour and Slobs SPA (IE004076)
	Lough Swilly SPA (IE004075)
Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Horn Head to Fanad Head SPA (IE004194)
	The Raven SPA (IE004019)

Special Conservation Interests	Relevant European Site(s) (code)
	Wexford Harbour and Slobs SPA (IE004076)
	Lough Swilly SPA (IE004075)
Greenshank (*Tringa nebularia*) [A164]	Lough Swilly SPA (IE004075)
Grey Heron (*Ardea cinerea*) [A028]	Lough Swilly SPA (IE004075)
	Wexford Harbour and Slobs SPA (IE004076)
Hen Harrier (*Circus cyaneus*) [A082]	Wexford Harbour and Slobs SPA (IE004076)
Leach's petrel (*Oceanodroma leucorhoa*) [A015]	St Kilda SPA (UK9001031)
Little egret (*Egretta garzetta*) [A026]	Morecambe Bay and Duddon Estuary SPA (UK9020326)
Little Grebe (*Tachybaptus ruficollis*) [A004]	Wexford Harbour and Slobs SPA (IE 004076)
Mediterranean gull (*Larus melanocephalus*) [A176]	Morecambe Bay and Duddon Estuary SPA (UK9020326)
	Seas off Wexford SPA (IE004237)
Peregrine (*Falco peregrinus*) [A103]	Rathlin Island SPA (UK9020011)
	West Donegal Coast SPA (IE004150)
	Horn Head to Fanad Head SPA (IE004194)
	Mid-Waterford Coast SPA (IE004193)
	Helvick Head to Ballyquin SPA (IE004192)
	Iveragh Peninsula SPA (IE004154)
Pink-footed goose (*Anser brachyrhynchus*) [A040]	Ribble and Alt Estuaries SPA (UK9005103)
	Morecombe Morecambe Bay and Duddon Estuary SPA (UK9020326)
Purple Sandpiper (*Calidris maritima*) [A148]	Rockabill SPA (IE004014)
	Skerries Island SPA (IE004122)
	Inishkea Islands SPA (IE004004)
Ruff (*Philomachus pugnax*) [A151]	Morecombe Morecambe Bay and Duddon Estuary SPA (UK9020326)
	Ribble and Alt Estuaries SPA (UK9005103)
Scaup (*Aythya marila*) [A062]	Lough Swilly SPA (IE004075)
	Wexford Harbour and Slobs SPA (IE004076)
Short-eared Owl (*Asio flammeus*) [A222]	Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051)
Shoveler (*Anas clypeata*) [A056]	Lough Swilly SPA (IE004075)
Slavonian Grebe (*Podiceps auritus*) [A007]	Blacksod Bay/Broad Haven SPA (IE004037)
Whooper Swan (*Cygnus cygnus*) [A038]	Lough Foyle SPA (UK9020031)
	Lough Swilly SPA (IE004075)
	Lough Foyle SPA (IE004087)
	Wexford Harbour and Slobs SPA (IE004076)
	Morecambe Bay and Duddon Estuary SPA (UK9020326)
	Ribble and Alt Estuaries SPA (UK9005103)
Wigeon (*Anas penelope*) [A050]	The Murrough SPA (IE004186)
	Lough Foyle SPA (UK9020031)

Special Conservation Interests	Relevant European Site(s) (code)
	Lough Swilly SPA (IE004075)
	Lough Foyle SPA (IE004087)
	Wexford Harbour and Slobs SPA (IE004076)
	Ribble and Alt Estuaries SPA (UK9005103)
	Ballymacoda Bay SPA (IE004023)

4.2 Conclusion

The Stage 1 appraisal to inform screening for Appropriate Assessment (see appendix A Addendum) has been updated, as summarised above; however, the conclusions remain that, having regard to the methodology employed and the findings of the appraisal (see section 4.1), it cannot be excluded, on the basis of objective scientific information, individually or in combination with other projects, that the Project will have LSEs on European sites.

5 STAGE 2 APPRAISAL FOR APPROPRIATE ASSESSMENT: NATURA IMPACT STATEMENT

5.1 Required information

There are no changes to the Natura Impact Statement.

5.1.1 Project

There are no changes to the Natura Impact Statement.

5.1.2 Linkages to European sites

There are no changes to the Natura Impact Statement.

5.2 Annex I Habitats

5.2.1 European sites within the ZoI

5.2.1.1 Brief description of relevant sites

There are no changes to the Natura Impact Statement.

5.2.1.2 Conservation objectives

The following relevant European sites have updated SSCO documents:

- Lambay Island SAC (IE000204) (NPWS, 2024a; Version 2 17/12/2024)

There are no changes to QI's or attributes arise from the update to this SSCO.

5.2.2 Baseline environment

The updated baseline environment for QI habitats has been fully characterised in appendix I Addendum: Onshore Biodiversity – Supporting Information. Details on the site-specific surveys are included in section 2.3 of appendix I Addendum: Onshore Biodiversity – Supporting Information.

An additional survey of the habitats at the cliff at Dunany with cognisance of the presence of Dunany Point pNHA and the potential for the presence of Annex I habitat was carried out in May 2025. Following a review of the baseline characterisation for CS3 Sedimentary sea cliffs, this habitat meets the requirements (three positive indicator species) for the species composition associated with vegetated sea cliffs of the Atlantic and Baltic coasts [1230]. However, the revised location of the TJB (options 1 and 2) at the landfall location will now avoid CS3 Sedimentary sea cliffs entirely, avoiding any potential impacts on this habitat (see section 2.5.9 of this Addendum).

5.2.2.1 Data validity and limitations

A further habitat, protected flora, and invasive alien plant and animal survey was undertaken in May 2024 and July 2025. As outlined in the NIS, data is considered valid for 18 months to three years from the period of survey.

5.2.3 Project design parameters

There is one change to the project design parameters for potential impact 'Removal and/or fragmentation of important ecological features' in the NIS (see section 4-1 in appendix I Addendum: Onshore Biodiversity Supporting Information). As a result of the realignment of the onshore cable route (see section 2.6.1) there is a requirement for additional removal of vegetation between joint bays 1-4. However, this does not affect the assessment on Annex I habitats.

5.2.4 Measures included in the Project

In addition to the measures included in the Project, the following measures will be implemented at the landfall location where the offshore cable corridor traverses Dunany Point pNHA and CB1 Shingle and gravel bank habitat to ensure protection of the Annex I habitat:

- Due to the occurrence of CB1 Shingle and gravel bank habitat within a dynamic and changing coastal environment, a pre-construction habitat survey will be undertaken to identify any future potential for this habitat to correspond with Annex I habitat in the Habitats Directive;
- During construction, a suitably qualified and experienced ecologist will supervise the works within Dunany Point proposed Natural Heritage Area (pNHA) CB1 Shingle and gravel bank habitat, ensuring that CB1 Shingle and gravel habitat layers including cobble, pebble, gravel and sand required for removal to facilitate the offshore cable route, are stored by their respective particle size for later reinstatement; and
- Post-construction, that reprofiling and reinstatement of the affected shingle beach area is completed.

5.2.5 Assessment of Project against conservation objectives

There are no changes to the assessment of the Project against conservation objectives on review of the supplementary information provided on the baseline environment appendix I: Onshore Biodiversity – Supporting Information.

Therefore, there are no changes to the conclusions of the NIS i.e. there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

5.3 Annex II Marine Mammals and Megafauna

5.3.1 European sites within the ZoI

There are no changes to the Natura Impact Statement.

5.3.2 Baseline environment

There are no changes to the Natura Impact Statement.

5.3.2.1 Data validity and limitations

There are no changes to the Natura Impact Statement.

5.3.3 Project design parameters

There are no changes to the Natura Impact Statement.

5.3.4 Measures included in the Project

The MMMP has been updated and includes information on project commitments to reduce sound levels and the potential application of NAS (see appendix K Addendum: Management Plans (appendix 5-4 Addendum: Marine Megafauna Mitigation Plan)).

In addition to the measures included in the Project presented in section 5.3.4 of the NIS (2024), the Project is committed to the use of NAS for the purpose of reducing sound levels from construction piling.

The Project will use a drive-drill methodology for the monopile installation which minimises the piling duration. For each monopile, a sacrificial casing will be piled into place to stabilise the upper unconsolidated sediments. A rotary drill is then inserted inside the sacrificial casing which will drill down to the full embedment depth required for the monopile. The drill is then removed and the monopile inserted and grouted into place. For the short duration of impact piling of the sacrificial casing, the Project proposes to use a casing option known as a MODIGA. The MODIGA will be placed on the seabed into which the sacrificial casing will be lowered. A hammer pile will then be inserted into the MODIGA and the sacrificial casing

hammer piled through the unconsolidated sediments. The proposed MODIGA will lower sound through the casing design.

Furthermore, in an abundance of caution, for the short duration of impact hammer piling, the Project will use the MODIGA with internal bubble ring system as its additional noise abatement solution (see section 6.2.1 below, 'additional mitigation measures').

In response to RFI 9.E, detail on phased piling as part of a Piling Strategy (prepared in collaboration with other offshore windfarms in the western Irish Sea) is provided.

The Phase 1 projects have also committed to implementing phased piling as part of a Piling Strategy should construction programmes overlap. As detailed in Table 5-10 of the NIS (2024), the Applicant commits to implementing phased piling alongside other adjacent offshore wind farms in the western Irish Sea as part of a Piling Strategy. This strategy will be prepared post consent and will set out measures for collaboration with other projects to reduce the potential for an in-combination effect. This will include a stepped strategy which follows the mitigation hierarchy - avoid, reduce, mitigate. Consequently, if phased piling is required a collaborative approach will be explored and information presented to demonstrate how a phased piling approach can contribute to the reduction in underwater sound from piling. The aim is to minimise the potential for permanent auditory injury to marine mammals and minimise the area of habitat affected by underwater noise at any one time.

In response to RFI 9.F, appendix K Addendum: Management Plans (appendix 5-4 Addendum: Marine Megafauna Mitigation Plan), the Applicant confirms that the MMMP has been prepared in accordance with the National Parks and Wildlife Service (NPWS (2014)) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. The Applicant confirms the MMMP complies with all aspects of NPWS (2014) guidance, and has provided further detail below.

For piling, the MMMP states, 'as per the NPWS (2014) guidance, a 30-minute constant effort pre-piling search will be undertaken'. The Applicant specifies a 1,000 m mitigation zone for piling, in line with the NPWS (2014) guidance which states 'pile driving activity shall not commence if marine mammals are detected within a 1,000 m radial distance of the pile driving sound source, i.e., within the Monitored Zone'. For the revised underwater noise modelling (see appendix C-1 Addendum: Updated Subsea Noise Modelling Report) the maximum range over which PTS was predicted to occur was 653 m (SPL_{pk}) (for Annex II species). As such the maximum injury range for SPL_{pk} is predicted to be less than the standard 1,000 m mitigation zone for pile-driving proposed by NPWS (2014). As detailed in the MMMP, in addition to visual and acoustic monitoring, an ADD will be deployed at the start of the pre-piling search in close proximity to the pile to be installed. The ADD will be activated for a minimum period of 15 minutes to allow animals sufficient time to disperse, while also minimising the additional noise produced by the device and emitted into the marine environment. Visual and acoustic monitoring will continue throughout the ADD deployment to ensure that marine mammals have left the mitigation zone prior to the start of piling.

As set out in 'additional mitigation measures' section 6.2.1 below, the outputs of the illustrative NAS modelling (undertaken in response to RFI 9.A.iii) are set out in detail in appendix C-3 Addendum: NAS Comparison Technical Note - Marine Mammals, Megafauna and Fish, clearly demonstrate the potential for measurable reductions in auditory injury, TTS and disturbance impact ranges/areas. Given the range of reductions demonstrated (see Figure 3-6 in appendix C-3 Addendum: NAS Comparison Technical Note - Marine Mammals, Megafauna and Fish) it is expected that application of NAS available at the time of construction will produce similar results. Furthermore, given that the impact assessment has concluded no adverse effects on site integrity for marine mammals, it is considered that any application of NAS would simply further reduce the magnitude of effect on marine mammals for PTS, TTS and disturbance. Despite the assessment of injury and/or disturbance to marine megafauna from underwater noise during pile driving concluding no adverse effects on marine mammals and megafauna, the Project is committed to the consideration of noise abatement measures for the purpose of reducing sound levels from construction piling and subsequently a MODIGA with internal air bubble has been included in the additional mitigation measures (under section 6.2.1).

The Applicant will comply with NPWS (2014) regulations on delaying soft start if an animal is sighted in the mitigation zone. Soft start for piling shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the Marine Mammal Observer (MMO) and will be followed by the appropriate soft start (and ramp up procedure) which will include continued monitoring by the

MMO. As detailed in section 1.6.1 of the MMMP, if marine megafauna are detected within the mitigation zone during the pre-piling search or soft-start, piling will not commence or at least the hammer energy should not be further increased until at least 30 minutes after the last visual or acoustic detection of the animal.

With regards to soft starts for piling, this will involve the implementation of lower hammer energies (i.e. approximately 10-15% of the maximum hammer energy) at the beginning of the piling sequence before energy input is 'ramped up' (increased) over time to required higher levels, as detailed in Table 1.4 of appendix 5-4 Addendum: Marine Megafauna Mitigation Plan (see appendix K Addendum: Management Plans). This aligns with the NPWS (2014) guidance on pile driving which states 'in commencing a pile driving operation where the output peak sound pressure level (in water) from any source including equipment testing exceeds 170 dB re: 1µPa @1m an appropriate Ramp-up Procedure (i.e., "soft-start") must be used'. As detailed in section 1.6.1 of appendix 5-4 Addendum: Marine Megafauna Mitigation Plan, the ADD will be turned off immediately after the piling activity has commenced and the soft start is the gradual, incremental increase of piling power over a minimum of 20 minutes, in line with NPWS (2014) guidance which states 'over a period of 20 to 40 minutes'. If for any reason there is a break in piling activity for greater than 10 minutes, then the pre-piling search and ADD activation, and a full soft start and ramp up procedure should be repeated before piling recommences. Section 1.6.2 in appendix 5-4 Addendum: Marine Megafauna Mitigation Plan details the piling reporting requirements as per the NPWS (2014) guidelines, which includes operations reports, MMO/ Passive Acoustic Monitoring (PAM) reports.

For geophysical surveys (e.g. MBES) the NPWS (2014) guidance details that 'acoustic surveying using the above equipment shall not commence if marine mammals are detected within a 500 m radial distance of the sound source intended for use, i.e., within the Monitored Zone'. The MMMP confirms with the NPWS (2014) guidance (see sections 1.5.2 and 1.6.3 of appendix 5-4 Addendum: Marine Megafauna Mitigation Plan); mitigation for injury during geophysical site investigation surveys from a conventional vessel will involve the use of MMOs and PAM to ensure that the risk of injury over the defined mitigation zone (of 500 m) is reduced in line with the NPWS (2014) guidance. The maximum injury range (PTS) was 227 m for harbour porpoise (and 449 m for TTS, for harbour porpoise), which lies well within the 500 m mitigation zone. As detailed in section 1.6.3 of the MMMP, a constant effort pre-survey search will be undertaken by at least two accredited and experienced MMOs and a PAM Operator to monitor the specified 500 m radial mitigation zone to minimise the likelihood of marine mammals being present within this range. The MMO shall conduct pre-start-up visual monitoring at least 30 minutes before the geophysical survey is due to commence (in accordance with section 4.3.4(ii) of the NPWS (2014) guidance) and shall not commence until at least 30 minutes have elapsed with no marine mammals detected by the MMO within the mitigation zone. In line with section 4.3.4(ii) of NPWS (2014), sound-producing activities will only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, has been achieved. In accordance with NPWS (2014), where effective visual monitoring, as determined by the MMO, is not possible (including in circumstances in which poor visibility prevents the 500 m mitigation zone from being visually monitored) the sound-producing activities shall be postponed until effective visual monitoring is possible (see section 1.6.3 of the MMMP).

In line with NPWS guidance (point 10 in Section 4.3.4ii), the MMMP confirms if there is a break in sound output for a period greater than 30 minutes (e.g. due to equipment failure, shut-down, survey line or station change) then all pre-survey monitoring and a subsequent soft-start procedure (where appropriate) will be undertaken. As per point 11 in Section 4.3.4ii of the NPWS guidance, the MMMP states for higher output survey operations which have the potential to produce injurious levels of underwater sound (including the MBES methods expected to be employed in geophysical surveying for the Project), there will be a regulatory requirement to adopt a shorter 5-10 minute break limit after which period all pre-survey monitoring and a subsequent soft-start (where appropriate following pre-survey monitoring) shall recommence as for start-up.

The MMMP states a soft start will also be implemented where this is within technical capabilities of the survey equipment, in line with section 4.3.4 (i). Seismic surveys in NPWS (2014). This can include ramp up from a lower energy start up, or the device shall be switched "on" and "off" in a consistent sequential manner over a period of 20 minutes prior to commencement of the full necessary output. The Applicant confirms in all cases where a soft-start is employed the delay between the end of the soft-start and the necessary full output must be minimised to prevent unnecessary high-level sound introduction into the environment, in line with paragraph 9, under 4.3.4 (i) Seismic surveys in NPWS (2014).

Section 1.6.4 of the MMMP details the geophysical acoustic surveying reporting requirements as per the NPWS (2014) guidelines, which includes operations reports, MMO/PAM reports and standard data forms.

In addition, the Applicant confirms the use of distance estimation formula will follow the same approach suggested for distance estimation by the JNCC (JNCC, 2017) (as discussed in MMOA (2024)) and will use standard trigonometric equations for calculation. The MMMP has been updated for clarity (see appendix K Addendum: Management Plans (appendix 5-4 Addendum: Marine Megafauna Mitigation Plan)).

5.3.5 Assessment of Project against conservation objectives

As outlined in section 1, for the 'Assessment of the Project against conservation objectives', where there is a change in the assessment in the NIS, the text from the NIS is repeated and changes arising from the further information (where they relate to the assessment) are shown in blue (e.g. example text). Where text from the NIS (2024) has been superseded or is no longer relevant, this text has been included in this Addendum with a strikethrough (e.g. ~~example text~~) in order to present the changes as clearly as possible. Where there is no change to the assessment then, this is noted as 'There are no changes to the Natura Impact Statement'. One new potential impact is assessed for Annex II marine mammals & megafauna on the potential for injury and/or disturbance to marine megafauna from operational underwater noise. This is outlined under the heading 'Injury and/or disturbance to marine megafauna from operational underwater noise' in blue text.

The prediction of adverse effects on site integrity during construction, operational and maintenance, and decommissioning phases of the Project is outlined in Table 5-11 (see Table 5A-1 below with changes shown in blue text).

Table 5A-1: Table 5-11: Prediction of adverse effects on site integrity during the construction, operational and maintenance, and decommissioning phases of the Project.

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
Slaney River Valley SAC (IE000781) (NPWS, 2011a; Version 1 21/10/2011); (NPWS, 2018a)			
Harbour Seal (*Phoca vitulina*) [1365]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities; Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	Siltation rate changes, dumping, depositing of dredged deposits (J02.11); Pollution to surface waters (limnic, terrestrial, marine & brackish) (H01).	**Access to suitable habitat** -Potential identified. **Breeding behaviour** -None predicted as Project avoids activity within and/or removal of this habitat **Moulting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Resting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Disturbance** -Potential identified.
Rockabill to Dalkey Island SAC (IE003000) (NPWS, 2013a; Version 1 07/05/2013) (NPWS, 2019a)			
Harbour porpoise (*Phocoena phocoena*) [1351]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities	Utility and service lines (D02); Noise nuisance, noise pollution (H06.01).	**Access to suitable habitat** -Potential identified. **Disturbance** -Potential identified.

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
	Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.		
Lambay Island SAC (IE000204) (NPWS, 2013d; Version 1 22/07/2013); (NPWS, 2019e)			
Grey Seal (*Halichoerus grypus*) [1364]	Injury and/or disturbance to from underwater noise during pile-driving; Injury and/or disturbance to from vessel and other construction activities; Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys;[5] Injury and/or disturbance to marine megafauna from operational underwater noise.	None relevant.	**Access to suitable habitat** -Potential identified. **Breeding behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Moulting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Resting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Disturbance** -Potential identified.
Harbour Seal (*Phoca vitulina*) [1365]			**Access to suitable habitat** -Potential identified. **Breeding behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Moulting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Resting behaviour** -None predicted as Project avoids activity within and/or removal of this habitat. **Disturbance** -Potential identified.
Harbour porpoise (*Phocoena phocoena*) [1351]			**Access to suitable habitat** -Potential identified. **Disturbance** -Potential identified.

[5] This effect pathway was excluded in error from Table 5-11 in the NIS. However, the assessment was provided.

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
Murlough SAC (UK0016612) (DAERA, 2018; Version 4 November 2018); (JNCC, 2015a)			
Harbour Seal (*Phoca vitulina*) [1365]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	Pollution to surface waters (limnic, terrestrial, marine & brackish) (H01); Changes in abiotic conditions (M01); Biocenotic evolution, succession (K02); Problematic native species (I02); Invasive non-native species (I01).	**Population** -Potential identified. **Pups** -None predicted as Project avoids activity within and/or removal of this habitat. **Haul-outs** -None predicted as Project avoids activity within and/or removal of this habitat. **Disturbance** -Potential identified.
North Channel SAC (UK0030399) (JNCC, 2019a; February 2019) (JNCC, 2019b)			
Harbour porpoise (*Phocoena phocoena*) [1351]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	Marine water pollution (H03)	**Viable component of site** -None predicted as Project avoids activity within and/or removal of this habitat. **Disturbance** -Potential identified. **Supporting habitats and processes** -None predicted as Project avoids activity within and/or removal of this habitat. **Availability of prey** -Potential identified.
North Anglesey Marine/Gogledd Môn Forol SAC (UK0030398) (JNCC, 2019c; March 2019); (JNCC, 2019d)			
Harbour porpoise (*Phocoena phocoena)* [1351]	Injury and/or disturbance to a from underwater noise during pile-driving; Injury and/or disturbance to from vessel and other construction activities;	Marine water pollution (H03).	**Viable component of site** -None predicted as Project avoids activity within and/or removal of site. **Disturbance** -Potential identified. **Supporting habitats and processes**

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
	Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.		-None predicted as Project avoids activity within and/or removal of supporting habitat. **Availability of prey** -Potential identified.
Codling Fault Zone SAC (IE003015) (NPWS, 2023c)			
Harbour porpoise (*Phocoena phocoena)* [1351]	Injury and/or disturbance to a from underwater noise during pile-driving; Injury and/or disturbance to from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	In the absence of an updated Natura 2000 Data Form which includes harbour porpoise, relevant site-level threats have been derived from a review of the ARCs (activities requiring consent)[6], and include the following: • Blasting, drilling, dredging or otherwise removing or disturbing fossils, rock, minerals, mud, sand, gravel or other sediment; • Introduction, or re-introduction, of plants or animals not found in the area; and • Undertaking active acoustic surveys in the marine environment.	**Access to suitable habitat** -Potential identified. **Disturbance** -Potential identified.
West Wales Marine/Gorllewin Cymru Forol SAC (UK0030397) (NWR and JNCC, 2019) (JNCC, 2019e)			
Harbour porpoise (*Phocoena phocoena*) [1351]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources;	Marine water pollution (H03).	**Viable component of site** -None predicted as Project avoids activity within and/or removal of site. **Disturbance** -Potential identified. **Supporting habitats and processes** -None predicted as Project avoids activity within and/or removal of supporting habitat. **Availability of prey** -Potential identified.

[6] Codling Fault Zone SAC – Activities Requiring Consent (ARCs): chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.npws.ie/sites/default/files/protected-sites/amendment_notifications/AN003015.pdf

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
	Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.		
Blackwater Bank SAC (IE002953) (NPWS, 2023b)			
Harbour porpoise (*Phocoena phocoena)* [1351]	Injury and/or disturbance to a from underwater noise during pile-driving; Injury and/or disturbance to from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	In the absence of an updated Natura 2000 Data Form which includes harbour porpoise, relevant site-level threats have been derived from a review of the ARCs[7] and include the following: • Blasting, drilling, dredging or otherwise removing or disturbing fossils, rock, minerals, mud, sand, gravel or other sediment; • Introduction, or re-introduction, of plants or animals not found in the area; and • Undertaking active acoustic surveys in the marine environment.	**Access to suitable habitat** -Potential identified. **Disturbance** -Potential identified.
Lleyn Peninsula and the Sarnau/Pen Llyn a`r Sarnau SAC (UK0013117) (NRW, 2018a) (JNCC, 2015i)			
Bottlenose Dolphin (*Tursiops truncatus*) [1349] Grey Seal (*Halichoerus grypus*) [1364]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance to from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater	Pollution to surface waters (limnic, terrestrial, marine & brackish) (H01); Marine water pollution (H03); Invasive non-native species (I01); Changes in abiotic conditions (M01); Other human intrusions and disturbances (G05).	**Population** -Potential identified. **Range (within site)** -None predicted as Project avoids activity within and/or removal of site. **Supporting habitats and species** -None predicted as Project avoids activity and /or removal of supporting habitat. -Potential identified as result of underwater noise e.g., pile driving, site investigation surveys, vessel movements and other construction activities.

[7] Blackwater Bank SAC – Activities Requiring Consent (ARCs): chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.npws.ie/sites/default/files/protected-sites/amendment_notifications/AN002953.pdf

Relevant Qualifying Interest	Effect pathway(s)	Relevant Site-level Threat	Potential Adverse Effect(s) to relevant QI
	noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.		
Cardigan Bay/Bae Ceredigion SAC (UK0012712) (NRW, 2018b) (JNCC, 2015)			
Bottlenose Dolphin (*Tursiops truncatus*) [1349] Grey Seal (*Halichoerus grypus*) [1364]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	Other human intrusions and disturbances (G05); Marine water pollution (H03); Invasive non-native species (I01).	**Population** -Potential identified. **Range (within site)** -None predicted as Project avoids activity within and/or removal of site. **Supporting Habitats and Species** -None predicted as Project avoids activity and /or removal of supporting habitat. -Potential identified as result of underwater noise e.g., pile driving, site investigation surveys, vessel movements and other construction activities.
Pembrokeshire Marine/Sir Benfro Forol SAC (UK0013116) (NRW, 2018c; JNCC, 2015b)			
Grey Seal (*Halichoerus grypus*) [1364]	Injury and/or disturbance from underwater noise during pile-driving; Injury and/or disturbance from vessel and other construction activities Changes in the fish and shellfish community affecting prey resources; Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys; Injury and/or disturbance to marine megafauna from operational underwater noise.	Human induced changes in hydraulic conditions (J02); Other human intrusions and disturbances (G05); Pollution to surface waters (limnic, terrestrial, marine & brackish) (H01); Changes in abiotic conditions (M01); Invasive non-native species (I01); Marine water pollution (H03).	**Population** -Potential identified. **Range (within site)** -None predicted as Project avoids activity within and/or removal of site. **Supporting habitats and species** -None predicted as Project avoids activity and /or removal of supporting habitat. -Potential identified as result of underwater noise e.g., pile driving, site investigation surveys, vessel movements and other construction activities.

5.3.5.1 Construction/decommissioning phase

Suitable habitat, disturbance, population, availability of prey, supporting habitats and species

Injury and/or disturbance from underwater noise during pile-driving

A summary of the criteria (acoustic thresholds) for the onset of injury PTS and TTS and disturbance used in the marine mammal noise assessment is provided in Table 6-3 and Table 6-4 of appendix F: Marine Mammals and Megafauna – Supporting Information.

A detailed underwater noise modelling assessment has been carried out to investigate the potential for injurious and behavioural effects on qualifying marine mammal features as a result of piling (impulsive sounds), using the latest criteria which is drawn upon in the assessment presented below. Whilst the assessment undertaken as part of the NIS considered the best available advice at the time, advances have been made in the field of underwater sound modelling since the assessment was carried out, particularly in the field of noise generated by piling activities. Therefore a revised noise assessment for impact piling was carried out to remodel the injury ranges associated with piling to present the most scientifically rigorous and up to date results using the recent research presented by Wood *et al*. (2023). Full details of this approach are provided in appendix C-1 Addendum: Updated Subsea Noise Modelling Report ~~appendix C: Subsea Noise Technical Report~~.

In summary, the dual criteria (SPL_{pk} and SEL_{cum}) approach was employed in the subsea noise assessment in order to estimate the ranges over which PTS and TTS could occur and to assess the potential for auditory injury (PTS and TTS) to occur in marine mammals. Injury ranges were predicted based on (i) exposure to SPL_{pk} from a single hammer strike at different energy levels; and (ii) a marine mammal being exposed to impulsive noise from multiple hammer strikes over a prolonged period (SEL_{cum}). Noting that using a threshold for the onset of TTS would typically result in overestimates of potential ranges at which ecologically significant effects could occur; this, coupled with the precautionary assumptions in the model, particularly with respect to the SEL_{cum} metric, means that estimates of TTS are likely to be unrealistic and therefore should be interpreted with caution. For disturbance, subsea noise modelling was undertaken using a dose-response approach with SEL single-strike (SEL_{ss}) contours modelled in 5 dB increments to determine the number of animals that may potentially respond behaviourally to received noise levels during piling (noting that approaches for pinnipeds and cetaceans differ). As above, noise modelling adopted a precautionary approach at all stages and such layering of conservatism is likely to lead to a very precautionary assessment.

Injury-Harbour Porpoise

As detailed above, revised Project specific noise modelling (appendix C-1 Addendum: Updated Subsea Noise Modelling Report ~~appendix C: Subsea Noise Technical Report~~) was conducted for all marine mammal species. The noise assessment considered the maximum adverse spatial scenario of installation of 9.6 m diameter monopiles with a hammer energy of 3,500 kJ. The piling parameters and resulting source sound levels for monopiles are set out in Table 6-1 of appendix F: Marine Mammals and Megafauna – Supporting Information.

Based on the modelling, the resultant injury (PTS and TTS) ranges for marine mammal species have been set out in Table 6A-1 (which supersedes Table 6-5) and Table 6A-2 (which supersedes Table 6-6) of appendix F: Addendum Marine Mammals and Megafauna – Supporting Information. The number of marine mammals potentially affected by PTS or TTS as a result of pile drilling have been calculated based on the most up to date species-specific density estimates and where ranges for density estimates have been applied numbers have been based on the upper density value as a precautionary approach. Estimates of abundance within associated Management Units (MU) have been used to present these values as a proportion of the population.

With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, harbour porpoise could be affected by PTS (SPL_{pk}) out to 653 m ~~236 m~~ ~~(i.e. 7.85 x 10^{-5} - 0.0004% of the population)~~ and TTS (SPL_{pk}) out to 1,051 m ~~344 m~~ ~~(i.e. 0.0002 - 0.0008% of the population)~~, which equates to ~~less than one~~ up to two harbour porpoise ~~in both cases~~ for PTS (i.e. 0.0028% of the MU) and up to five

harbour porpoise (i.e.. 0.0074% of the MU) for TTS (using the higher density estimate based on site-specific surveys).

With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, harbour porpoise could be affected by PTS (SEL_{cum}) out to 815 m ~~168 m~~ ~~(i.e. 3.97 x 10^{-5} - 0.0002 of the population)~~ and TTS (SEL_{cum}) out to a maximum of 14,500 m ~~5,980~~ ~~(i.e. 0.0504 - 0.239% of the population)~~. PTS predictions found that ~~less than one~~ up to three harbour porpoise (i.e. 0.0045% of the MU) would be affected by PTS (using the higher density estimate based on site-specific surveys), while TTS using the SEL_{cum} threshold suggests that between 185 ~~32~~ (based upon the SCANS-IV density estimate) and 879 ~~150~~ (based upon the site-specific density estimate) harbour porpoise (0.030% – 1.41% ~~0.0504 - 0.239%~~ of the population) may be within the ensonified area. These numbers represent very small proportions of the MU populations.

The assessment shows that over the ensonified area, only small numbers of harbour porpoise animals are likely to occur within the injury zones. With measures in place including soft start and an MMMP (section 5.3.4), the range of effect reduces and the possibility of PTS diminishes within the distance which can be managed via the MMMP. The possibility of TTS may extend beyond the distance which can be managed by the MMMP, however this TTS effect as described above is considered to be an overestimation of the impact which accounts for a level of conservatism built into the subsea noise model. Furthermore, harbour porpoise exposed to noise levels that have the potential to induce TTS are likely to actively avoid hearing damage by moving away from the area. To reduce the risk of permanent and temporary auditory injury (PTS and TTS), designed-in and management measures (controls) will be implemented as part of a MMMP (see section 5.3.4). It should be noted that the modelled ranges and the numbers of animals affected set out above do not include consideration of noise abatement mitigations offered by the MODIGA with internal air bubble ring technology, as set out in section 6.2.1 'additional mitigation measures', which will offer substantial reductions in noise levels beyond those assumed in the assessments (e.g. soft start initiation etc.). There will be no adverse effects.

In addition to the measures included in the Project, an ADD which has been shown to be effective in deterring marine mammals from proximity to piling which may result in injury (McGarry *et al.,* 2017; Gordon *et al.,* 2019) will be implemented as part of the MMMP, subject to discussion with stakeholders. The use of an ADD is considered as mitigation and discussed in section 6.

On this basis, in light of site COs for harbour porpoise and with the implementation of measures included in the Project and an ADD, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Injury-Bottlenose dolphin

With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, bottlenose dolphin could be affected by PTS (SPL_{pk}) out to 71 m ~~41 m~~ ~~(i.e. up to 8.29 x 10^{-5} % of the IAMMWG, 2023[8] abundance estimate or 1.49 x 10^{-5}% of the SCANS IV abundance estimate)~~ and TTS (SPL_{pk}) out to 114 m ~~59 m~~ ~~(i.e. up to 0.0002% of the IAMMWG, 2023 abundance estimate or 3.09 x 10^{-5} % of the SCANS IV abundance estimate)~~, which equates to less than one bottlenose dolphin in all cases (i.e. up to 0.0013% of the IAMMWG, 2023 abundance estimate or 0.000045% of the SCANS IV abundance estimate).

The threshold for PTS (SEL_{cum}) with regards to bottlenose dolphin was not exceeded. With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, bottlenose dolphin could be affected by TTS (SEL_{cum}) out to 21 m ~~12 m~~ ~~(i.e. up to 7.10 x 10^{-6} % of the IAMMWG, 2023 abundance estimate or 1.28 x 10^{-6} % of the SCANS IV abundance estimate)~~. TTS predictions using the SEL_{cum} threshold found that less than one bottlenose dolphin may be in the ensonified area (i.e. up to 0.000004% of the IAMMWG, 2023 abundance estimate or 0.00004% of the SCANS IV abundance estimate).

The assessment shows that over the ensonified area, it is likely that less than one individual bottlenose dolphin will occur within the injury zones. With measures in place including soft start and an MMMP (section 5.3.4), the range of effect reduces and the possibility of TTS diminishes within the distance which can be

managed via the MMMP. In relation to PTS, the threshold was not exceeded for SEL_{cum} but was exceeded for SPLpk (though only by 71 m). Furthermore, bottlenose dolphin exposed to noise levels that have the potential to induce TTS are likely to actively avoid hearing damage by moving away from the area. To reduce the risk of permanent and temporary auditory injury, designed-in and management measures will be implemented as part of a MMMP (see section 5.3.4). It should be noted that the modelled ranges and the numbers of animals affected set out above do not include consideration of noise abatement mitigations offered by the MODIGA technology, as set out in section 5.3.4, which will offer substantial reductions in noise levels beyond those assumed in the assessments (e.g. soft start initiation etc.). There will be no adverse effects.

In addition to the measures included in the Project, an Acoustic Deterrent Device (ADD) which has been shown to be effective in deterring marine mammals from proximity to piling which may result in injury (McGarry *et al.,* 2017; Gordon *et al.,* 2019) will be implemented as part of the MMMP, subject to discussion with stakeholders. The use of an ADD is considered as mitigation and discussed in section 6.

On this basis, in light of site COs for bottlenose dolphin and with the implementation of measures included in the Project and an ADD, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Injury-Seals

With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, both grey seal and harbour seal could be affected by PTS (SPL_{pk}) out to 183 m ~~86 m (i.e. up to 0.0001% of the grey seal population and up to 0.0004% of the harbour seal population)~~, and TTS (SPL_{pk}) out to 295 m ~~126 m (i.e. up to 0.0003% of the grey seal population and 0.0009% of the harbour seal population)~~, which equates to less than one seal in both cases (i.e. up to 0.0007% of the grey seal population and up to 0.0018% of the harbour seal population for PTS, 0.0017% of the grey seal population and 0.0047% of the harbour seal population for TTS).

With the implementation of measures included in the Project (section 5.3.4) such as soft start initiation, both grey seal and harbour seal could be affected by PTS (SEL_{cum}) out to 11 m ~~19 m (i.e. up to 6.3 x 10^{-6} % of the grey seal population and up to 1.94 x10^{-5}% of the harbour seal population)~~ and TTS (SEL_{cum}) out to 5,520 m ~~1,330 m (i.e. up to 0.031% of the grey seal population and up to 0.095% of the harbour seal population)~~.. PTS predictions found that less than one seal could be affected by PTS in both cases (i.e. up to 0.000002% of the grey seal population and up to 0.000007% of the harbour seal population), while TTS using the SEL_{cum} threshold suggests that up to ~~two~~ 36 grey seal (i.e. ~~0.0031%~~ 0.61% of the population) and up to ~~two~~ 27 harbour seal (i.e. ~~0.095%~~ 1.64% of the population) may be within the ensonified area. These numbers represent very small proportions of the MU populations.

The assessment shows that over the ensonified area, only small numbers of grey and harbour seals are likely to occur within the injury zones. With measures in place including soft start and an MMMP (section 5.3.4), the range of effects reduces and the possibility of PTS diminishes within the distance which can be managed via MMMP. The possibility of TTS may extend beyond the distance which can be managed by the MMMP, however this TTS effect as described above is considered to be an overestimation of the impact which accounts for a level of conservatism built into the subsea noise model. Furthermore, grey and harbour seal exposed to noise levels that have the potential to induce TTS are likely to actively avoid hearing damage by moving away from the area. To reduce the risk of permanent and temporary auditory injury, designed-in and management measures will be implemented as part of a MMMP (see section 5.3.4). It should be noted that the modelled ranges and the numbers of animals affected set out above do not include consideration of noise abatement mitigations offered by the MODIGA technology, as set out in section 5.3.4, which will offer substantial reductions in noise levels beyond those assumed in the assessments (e.g. soft start initiation etc.). There will be no adverse effects.

In addition to the measures included in the Project, an Acoustic Deterrent Device (ADD) which has been shown to be effective in deterring marine mammals from proximity to piling which may result in injury (McGarry *et al.,* 2017; Gordon *et al.,* 2019) will be implemented as part of the MMMP, subject to discussion with stakeholders. The use of an ADD is considered as mitigation and discussed in section 6.

On this basis, in light of site COs for grey seal and harbour seal and with the implementation of measures included in the Project and an ADD, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-Harbour Porpoise

Based on a dose-response approach (Graham *et al.,* 2017) within unweighted SEL_{ss} contours and a threshold-based approach (National Marine Fisheries Service (NMFS), 2005), within revised unweighted SEL_{ss} noise contours (appendix C-1 Addendum: Updated Subsea Noise Modelling Report), the number of marine mammals predicted to be disturbed as a result of impact piling of monopiles have been set out in Table 6-14 and 6A-15 (superseding Table 6-9) of appendix F: Addendum Marine Mammals and Megafauna – Supporting Information. In particular, since the original NIS was undertaken, only the use of the strong disturbance threshold (160 dB re 1 µPa SPL_{rms}) is recommended for assessment of behavioural disturbance (NMFS, 2025) and therefore consideration of mild disturbance is inherently conservative.

Applying a dose-response approach (Graham *et al.,* 2017), the most conservative estimate of disturbance predicted that between ~~153 and 725~~ 497 (using SCANS-IV density) and 2,360 (using site-specific density) harbour porpoise have the potential to be disturbed by piling (representing ~~0.245% to 1.160%~~ 0.79% to 3.77% of the MU population). However, this represents the maximum number across the entire range of disturbance responses (from slight changes in behaviour, such as changes in swimming speed or direction through to displacement). For example, considering the area within which a strong disturbance response could occur (out to a threshold of 160 dB re 1µ Pa (rms), a maximum of up to 256 harbour porpoise may be affected representing 0.41% of the MU population.

~~The threshold-based approach derived using NMFS criteria suggests that only 64 harbour porpoise are predicted to experience strong disturbance (above 160 dB re 1µ Pa (rms)) representing 0.101% of the MU population, whilst up to 2,111 are predicted to experience mild disturbance (140 - 160 dB re 1µ Pa (rms)) representing 3.76% of the population (see Table 6-9 in appendix F: Marine Mammals and Megafauna – Supporting Information).~~

Strong and mild disturbance contours (160 dB re 1µ Pa (rms) and 140 dB re 1µ Pa (rms), respectively) modelled for the Project are predicted to extend to a maximum of ~~3.2 and 17 km~~ 11.4 and 92.4 km from the Project, respectively (see appendix F: Marine Mammals and Megafauna – Supporting Information), noting that much of the respective contours fall far closer to the source and this represents the furthest possible distance. It must also be noted that the mild disturbance contours far exceed the most recent updated 2025 effective deterrent ranges (EDRs) for monopiles without noise abatement (JNCC, 2025), and further support the over-conservative nature of mild disturbance thresholds (NMFS, 2025). Furthermore, recent work from (Thompson *et al.*, 2025) suggests that the "deterrence" effect of unabated piling is nowhere near the 20 km EDR.

With revised noise modelling, there is some overlap of mild disturbance contours with the several harbour porpoise SACs (North Anglesey Marine SAC and Rockabill to Dalkey Islands SAC) but no overlap of the strong disturbance contour with any European site with marine mammals listed as a qualifying feature. Acknowledging the limitations of the single step-threshold approach for strong disturbance and mild disturbance (i.e. does not account for inter-, or intra-specific variance or context-based variance), harbour porpoise within the area modelled as 'strong disturbance' would be most sensitive to behavioural effects (whilst mild disturbance is not considered likely to lead to a 'significant' disturbance response (NMFS, 2005)). According to the behavioural response severity matrix suggested by Southall *et al.* (2021) such low level disturbance (scoring between 0 to 3 on a 0 to 9 scale) could lead to mild disruptions of normal behaviours, but prolonged or sustained behavioural effects, including displacement are unlikely to occur. ~~This shows that the modelled Project disturbance contours do not overlap with any European site with marine mammals listed as a qualifying feature. Acknowledging the limitations of the single step-threshold approach for strong disturbance and mild disturbance (i.e. does not account for inter-, or intra-specific variance or context-based variance), harbour porpoise within the area modelled as 'strong disturbance' would be most sensitive to behavioural effects.~~ Although harbour porpoise may be able to avoid the ~~disturbed~~ area of strong disturbance and forage elsewhere, there may be a potential effect on reproductive success of some individuals. It is anticipated that there would be some adaptability to the elevated noise levels from piling and therefore survival rates are not likely to be affected. Harbour porpoise is deemed to have some sensitivity to strong and mild disturbance but piling only comprises a small fraction of the construction period, and the proportion of the population to be affected at any one time by strong disturbance is likely to be small.

It should also be noted that the modelled disturbance contours (for both strong and mild disturbance) and the numbers of animals affected as set out above do not include consideration of noise abatement mitigations offered by the MODIGA technology, as set out in section 5.3.4. This additional mitigation will offer substantial reductions in noise levels (and therefore behavioural response ranges/contours) from those considered within the assessment, further reducing the potential for adverse effects. On this basis, in light of site COs for harbour porpoise and with the implementation of measures included in the Project (including a drill-drive technology and use of MODIGA technology, see section 5.3.4), there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-Bottlenose dolphin

Disturbance is expected to affect fewer bottlenose dolphin during piling, however the bottlenose dolphin population estimates (n=293, from IAMMWG, 2023; and n=8,326, derived from Gilles *et al.,* 2023) are significantly smaller than the relevant harbour porpoise population (n=62,517).

Therefore, based on a dose-response approach (Graham *et al.,*2017), disturbance of up to 417 bottlenose dolphin (based on the SCANS-IV density estimate of 0.235 animals per km^2) represents 5.01% of the combined SCANS-IV blocks estimate (abundance estimate derived from Gilles *et al.,* 2023). This represents the most robust estimate as it is based upon the most recent density (and more precautionary density) estimate from the latest 2022 SCANS-IV survey, and it is most appropriate to compare against the abundance estimate derived from the same dataset (8,326 bottlenose dolphin based upon SCANS-IV Blocks CS-D and CS-E). Disturbance of up to 82 animals (based on the smaller SCANS-III DSE of 0.046 animals per km^2) represents 27.85% of the Irish Sea MU (abundance estimate derived from IAMMWG, 2023, based upon SCANS-III estimates) ~~the most conservative estimate of disturbance predicted that between 26 and 129 bottlenose dolphin have the potential to be disturbed by piling (representing 8.63% of the IAMMWG, 2023 abundance estimate or 1.5449 % of the SCANS IV abundance estimate)~~.

The threshold-based approach derived using NMFS criteria suggests that ~~only~~ a maximum of ~~12~~ 46 bottlenose dolphin are predicted to experience strong disturbance (above 160 dB re 1µ Pa (rms)) representing ~~0.134%~~ 0.54% of the population ~~whilst up to 374 are predicted to experience mild disturbance (140 - 160 dB re 1µ Pa (rms)) representing 4.482 % of the population~~.

Strong and mild disturbance contours (160 dB re 1µ Pa (rms) and 140 dB re 1µ Pa (rms), respectively) modelled for the Project are predicted to extend to a maximum of 11.4 km and 92.4 km from the Project, respectively (see appendix F Addendum: Marine Mammals and Megafauna – Supporting Information), noting that much of the respective contours fall far closer to the source and this represents the furthest possible distance. It must also be noted that the mild disturbance contours far exceed the most recent updated 2025 effective deterrent ranges (EDRs) for monopiles without noise abatement (JNCC, 2025), and further support the over-conservative nature of mild disturbance thresholds (NMFS, 2025). Furthermore, recent work from (Thompson *et al.*, 2025) suggests that the “deterrence” effect of unabated piling is nowhere near the 20 km EDR.

With revised noise modelling, there is no overlap of strong or mild disturbance contours with the bottlenose dolphin SACs. ~~Strong and mild disturbance contours (160 dB re 1µ Pa (rms) and 140 dB re 1µ Pa (rms), respectively) modelled for the Project are predicted to extend to 3.2 km and 17 km from the Project, respectively (see appendix F: Marine Mammals and Megafauna – Supporting Information). This shows that the modelled Project disturbance contours do not overlap with any European site with marine mammals listed as a qualifying feature.~~

Bottlenose dolphin are not thought to be as vulnerable to disturbance as harbour porpoise, as foraging requirements are less frequent. Bottlenose dolphin likely to be foraging in the area form part of the Irish Sea (IS) MU, which is far smaller, and therefore any effect on the individual is more likely to have an impact at the population level. Bottlenose dolphin could tolerate the effects of disturbance and whilst there may be some impacts on reproduction in the area of ‘strong disturbance’ there is not likely to be an impact on survival rates with some tolerance built up over the course of the piling. It is anticipated that animals would return to previous activities once the impact had ceased, even when taking into account the PDP. While bottlenose dolphin is deemed to have some sensitivity to strong and mild disturbance, piling only comprises a small fraction of the construction period (i.e. maximum no. of days piling is 26 days), and the proportion of the

population (0.54%) ~~(i.e. 0.134% - 4.482%)~~ and to be affected at any one time by strong disturbance is likely to be small.

It should also be noted that the modelled disturbance contours (for both strong and mild disturbance) and the numbers of animals affected as set out above do not include consideration of noise abatement mitigations offered by the MODIGA technology, as set out in section 5.3.4. This additional mitigation will offer substantial reductions in noise levels (and therefore behavioural response ranges/contours) from those considered within the assessment, further reducing the potential for adverse effects. On this basis, in light of site COs for bottlenose dolphin and with the implementation of measures included in the Project (including a drill-drive technology, see section 5.3.4), there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-Seals

Applying a dose-response approach (Whyte *et al.,* 2020), the most conservative estimate of disturbance predicted that up to ~~21~~83 grey seal (~~0.357%~~ 1.40% of the Grey Seal Reference Population (GSRP)) and up to ~~16~~ 71 harbour seal (up to ~~0.979%~~ 4.30% of the Harbour Seal Reference Population (HSRP)) have the potential to be disturbed by piling. The threshold-based approach derived using NMFS criteria suggests that of these, up to ~~18~~ 81 grey seal and ~~14~~ 112 harbour seal have the potential to experience strong disturbance (above 160 dB re 1µ Pa (rms)) representing up to ~~0.30%~~ 1.38% and ~~0.812%~~ 6.83% of the GSRP and HSRP populations, respectively. Up to 33 grey seal, and 25 harbour seal have the potential to experience mild disturbance (140 - 160 dB re 1µ Pa (rms)) representing up to 0.55% and 1.49% of the GSPR and HSPR populations, respectively.

Mild disturbance for seals has previously been considered theoretically to occur over a larger area than strong disturbance and therefore has the potential to affect larger numbers of each species. However, Whyte *et al.,* (2020) showed for harbour seal, that beyond 25 km (below 145 dB re 1µ Pa (rms)) from the piling noise source, no significant changes in seal density were detected. Therefore, revised modelling (~~Figure 6-3 and Figure 6-4~~ see appendix F Addendum: Marine Mammals and Megafauna - Supporting Information) has predicted ~~that modelled Project disturbance contours do not overlap with any European site with marine mammals listed as a qualifying feature and the range of effect in which strong and mild disturbance could occur is not likely to extend to haul-out sites in the vicinity of the offshore wind farm area for either grey seal or harbour seal~~ that the range of effect in which strong disturbance could occur is not likely to extend to haul-out sites in the vicinity of the offshore wind farm area for either grey seal or harbour seal, regardless of whether piling occurs at the east or the west of the offshore wind farm area.

With revised noise modelling, there is some overlap of mild disturbance with the several SACs designated for grey seal and harbour seal (Murlough SAC and Lambay Island SAC) but no overlap of the strong disturbance contour with any European site with grey seal or harbour seal listed as a qualifying feature (see appendix F: Marine Mammals and Megafauna - Supporting Information). Acknowledging the limitations of the single step-threshold approach for strong disturbance and mild disturbance (i.e. does not account for inter-, or intra-specific variance or context-based variance), marine mammals within the area modelled as 'strong disturbance' would be most sensitive to behavioural effects (whilst mild disturbance is not considered likely to lead to a 'significant' disturbance response (NMFS, 2005)). According to the behavioural response severity matrix suggested by Southall *et al.* (2021) such low level disturbance (scoring between 0 to 3 on a 0 to 9 scale) could lead to mild disruptions of normal behaviours, but prolonged or sustained behavioural effects, including displacement are unlikely to occur.

Strong disturbance could result in displacement of seals from an area. Mild disturbance constitutes only slight changes in behaviour, such as changes in swimming speed or direction, and is unlikely to result in population-level effects. Although there is likely to be alternative foraging sites for both harbour seal and grey seal, barrier effects as a result of installation of monopiles could either prevent seals from travelling to forage from haul-out sites, particularly at Carlingford Lough, or force seals (particularly harbour seal) to travel greater distances than is usual. Grey seal and harbour seal are deemed to have some sensitivity to strong and mild disturbance, but piling only comprises a small fraction of the construction period (i.e. maximum no. of days piling is 26 days), and the proportion of the population (i.e. ~~0.055%~~ 1.38% – ~~1.49%~~ 6.83%) to be affected at any one time by strong disturbance is likely to be small.

It should also be noted that the modelled disturbance contours (for both strong and mild disturbance) and the numbers of animals affected as set out above do not include consideration of noise abatement mitigations

offered by the MODIGA technology, as set out in section 5.3.4. This additional mitigation will offer substantial reductions in noise levels (and therefore behavioural response ranges/contours) from those considered within the assessment, further reducing the potential for adverse effects. On this basis, in light of site COs for grey seal and harbour seal and with the implementation of measures included in the Project (including a drill-drive technology, see section 5.3.4), there will be no adverse effect on the integrity of any European site(s) resulting from disturbance to seals from underwater noise during pile-driving, due to the Project alone and no reasonable scientific doubt remains as to the absence of such effects. Any potential for adverse effects on the integrity of European sites have been mitigated through the measures described in section 5.3.4.

Injury (auditory injury and collision risk)- Harbour Porpoise

There are no changes to the Natura Impact Statement.

Injury (auditory injury and collision risk)- Bottlenose Dolphin

There are no changes to the Natura Impact Statement.

Disturbance-Bottlenose Dolphin

There are no changes to the Natura Impact Statement.

Disturbance-Seals

There are no changes to the Natura Impact Statement.

Changes in the fish and shellfish community affecting marine mammal prey resources

There are no changes to the Natura Impact Statement.

5.3.5.2 Operational and maintenance phase

Suitable habitat, disturbance, population, availability of prey, supporting habitats and species

Injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys

Routine geophysical surveys are planned to allow inspection of offshore infrastructure foundations, inter-array cables and offshore cable corridor during the operational and maintenance phase of the Project, and these have the potential to cause direct or indirect effects (including injury or disturbance) on marine mammal species. An underwater noise modelling assessment was carried out to investigate the potential for injurious and behavioural effects on marine mammals as a result of geophysical surveys using the latest criteria (Popper *et al.,* 2014) (appendix C: Subsea Noise Technical Report), which is drawn upon in the assessment below.

For sonar-like sources the signal is highly directional, acting like a beam, and is emitted in pulses. Sonar-based sources are considered as continuous (non-impulsive) because they generally comprise a single (or multiple discrete) frequency as opposed to a broadband signal with high kurtosis, high peak pressures and rapid rise times.

Injury- Harbour Porpoise

As detailed above, Project specific noise modelling (appendix C: Subsea Noise Technical Report) was conducted. The noise assessment was based upon the likely parameters of the equipment expected to be employed. Here, the Kongsberg EM710 MBES unit has been modelled operating at 105 kHz, 231 dB re 1µPa re 1 m (rms) in Table 6-11 of appendix F: Marine Mammals and Megafauna – Supporting Information.

Ultra-short Baseline (USBL) positioning systems may be used during routine geophysical surveys during the operational and maintenance phase of the Project and appendix F Addendum: Marine Mammals and

Megafauna – Supporting Information therefore includes an additional assessment of the potential impact from USBL on marine mammals and megafauna, for both auditory injury (PTS) and TTS.

Based on the modelling, the resultant injury (PTS and TTS) ranges for harbour porpoise have been set out in Table 6-12 of appendix F: Marine Mammals and Megafauna – Supporting Information and for the USBL in Table 6A-17 of appendix F Addendum: Marine Mammals and Megafauna – Supporting Information. The impact ranges of harbour porpoise potentially affected by PTS or TTS as a result of operational and maintenance phase site investigation surveys have been calculated based on the most up to date species-specific density estimates which are based on comparison to Southall *et al*., (2019) SEL thresholds.

With the implementation of measures included in the Project (see section 5.3.4), harbour porpoise could potentially be affected by PTS (SEL thresholds dB re 1 μPa^2s) out to 227 m and TTS (SEL thresholds dB re 1 μPa^2s) out to ~~449 m~~ 1,284 m (USBL) from the sound source. Due to low predicted injury ranges, for all marine mammal species, there is the potential for no more than one animal to experience PTS ~~or TTS~~as a result of routine geophysical surveys. For TTS, there is the potential for no more than seven harbour porpoise (as a VHF species, based on SEL_{cum} metric) to experience TTS as a result of routine geophysical surveys (based on USBL). It must be highlighted sonar-like sources such as USBL have very strong directivity which effectively means that there is only potential for injury when a marine mammal is directly underneath the sound source. Once the animal moves outside of the main beam, there is no potential for injury. The same is true in many cases for TTS where an animal is only exposed to enough energy to cause TTS when inside the direct beam from the equipment.

The geophysical surveys are considered to be short term as inspection of inter-array cables and offshore cables will be undertaken across a survey campaign duration of up to 14 days per survey (i.e. one 14-day survey window for inspection of inter-array cables; one 14-day survey window for inspection of export cable), up to a maximum of once every five years over the 40-year lifetime of the Project. Similarly, inspection of offshore wind turbine foundations will be conducted up to a maximum of every five years during the Project lifespan, and each survey campaign will last up to 14 days. If all survey campaigns were to be carried out consecutively, this would represent a maximum of 42 days of geophysical surveying every five years, however actual surveying is not expected to occur for the entire survey window, as time has been included here to account for weather and technical downtime. To reduce the potential risk of permanent and temporary auditory injury, designed-in and management measures will be implemented as part of a MMMP including application of Department of Arts Heritage and the Gaeltacht (DAHG) (2014) guidance (see section 5.3.4).

Overall, with measures included in the project applied, the impact of operational and maintenance phase geophysical site investigation surveys is predicted to be of very limited spatial extent, of medium-term and intermittent. Whilst the impact itself would occur during the operational and maintenance phase only, the effect of PTS should it occur, would be permanent. The effect of TTS and the impact itself (i.e. during the geophysical surveys) is reversible. The impact could lead to PTS and/or TTS in a small number of animals but this would not be at a scale that would lead to any measurable population-level effects. The magnitude for PTS and TTS is, therefore, considered to be low.

On this basis, in light of site COs for harbour porpoise and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Injury-Bottlenose Dolphin

There are no changes to the Natura Impact Statement.

Injury-Seals

There are no changes to the Natura Impact Statement.

Disturbance-Harbour Porpoise

There are no changes to the Natura Impact Statement.

Disturbance-Bottlenose Dolphin

There are no changes to the Natura Impact Statement.

Disturbance-Seals

There are no changes to the Natura Impact Statement.

Injury and/or disturbance to marine megafauna from vessels and other construction activities

There are no changes to the Natura Impact Statement.

Changes in the fish and shellfish community affecting marine mammal prey resources

There are no changes to the Natura Impact Statement.

Injury and/or disturbance to marine megafauna from operational underwater noise

An assessment of potential impacts from operational noise is presented in section 6.5.1 in appendix F Addendum: Marine Mammals and megafauna, in response to RFI 9.M.

Noise from operational wind turbines comes in two forms; the aerodynamic sound from the blades moving through the air leading to the characteristic 'swish-swish' sound and the mechanical sound associated with machinery housed in the nacelle of the wind turbine (Marmo *et al.*, 2013). As aerodynamic sound travels through the surrounding air to the interface between the air and water, due to the large impedance contrast it is almost entirely reflected and therefore little aerodynamic sound enters the marine environment.

However sound levels from operating windfarms are likely to be audible to marine mammals. Operational noise is primarily low frequency (well below 1 kHz) (Thomsen *et al.*, 2006) and for the majority of marine mammal species, the hearing sensitivity below 1 kHz is relatively poor. The low frequency noise may be more likely to overlap with the hearing range of LF cetacean species such as minke whale. Minke whale communication signals have been demonstrated to be below 2 kHz (Edds-Walton, 2000, Gedamke *et al.*, 2001, Mellinger *et al.*, 2000, Risch *et al.*, 2013, Risch *et al.*, 2014) with the most sensitive hearing range (the region with thresholds within 40 dB of best sensitivity) to extend from 30 to 100 Hz up to 7.5 to 25 kHz, depending on the specific model (Tubelli *et al.*, 2012).

Noise modelling (see appendix C-1 Addendum: Updated Subsea Noise Modelling Report) is based on a wind farm with 25 monopile foundations, each with 15 MW capacity resulting in a cumulative capacity of 375 MW. Underwater sound from the operational wind turbine generators has been estimated based on the methodology presented in Tougaard *et al.* (2020), with modelling conducted using an empirical approach based on turbine power, wind speed and distance from the wind turbine to estimate received sound level (see appendix C-1 Addendum: Updated Subsea Noise Modelling Report) as no detailed data from the manufacturer on underwater sound emissions from the specific turbines was available. The most important factor explaining measured Sound Pressure Leve (SPL) levels from operational turbines is distance to the turbines, with smaller effects of wind speed and turbine size (Tougaard *et al.*, 2020). Tougaard *et al.* (2020) highlights noise is well below ambient levels unless it is very close to the individual turbines in locations with high ambient noise from shipping or high wind speeds.

Modelling was performed for the maximum potential wind turbine size using a 10 m/s wind speed (it should be noted that during periods of higher wind speeds the sound level produced by the wind turbines will increase, although it is likely that the ambient sound levels will also increase due to higher wind speeds and wave conditions during these periods, which may result in additional masking of wind turbine sounds).

The calculated injury ranges (PTS and TTS) for marine mammals are based on 24 hours exposure for a static animal, presented in Table 6A-24 in appendix F Addendum: Marine Mammals and Megafauna. It should be noted that it is highly unlikely that a marine mammal would stay static for 24 hours or even a few hours, and this is therefore a highly precautionary assessment.

Beyond the zone of injury, noise levels are such that they no longer result in physical injury but can result in disturbance to marine mammal behaviour. Noise modelling predicted that potential disturbance to marine mammals could occur within approximately 170 m of each wind turbine, based on the threshold of 120 dB re 1 µPa (rms).

Injury-Harbour Porpoise

The PTS and TTS threshold was not exceeded for harbour porpoise and therefore no injury to harbour porpoise will occur from operational underwater noise. There will be no adverse effects.

On this basis, in light of site COs for harbour porpoise, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Injury-bottlenose dolphin

The PTS and TTS threshold was not exceeded for bottlenose dolphin and therefore no injury to bottlenose dolphin will occur from operational underwater noise. There will be no adverse effects.

On this basis, in light of site COs for bottlenose dolphin, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Injury-seals

The PTS threshold was not exceeded for seal species. Seals have been reported as foraging around operational wind turbine structures most likely due to the growth of benthic communities on the introduced hard substrate (Russell *et al.*, 2014). For TTS, modelling suggested that seals would need to remain within 10 m of an operational wind turbine for a period of 24 hours for the TTS threshold to be exceeded.

On this basis, in light of site COs for grey seal and harbour seal, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-Harbour Porpoise

Noise modelling predicted that potential disturbance to marine mammals could occur within approximately 170 m of each wind turbine, based on the threshold of 120 dB re 1 µPa (rms). Therefore the impact is predicted to be of highly localised spatial extent (up to 170 m extent), with marine mammals able to move out of the area of disturbance if required, and whilst effects may be of long term duration (over the lifetime of the project) these will be intermittent and reversible as individuals move through the wider environment.

On this basis, in light of site COs for harbour porpoise, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-bottlenose dolphin

Noise modelling predicted that potential disturbance to marine mammals could occur within approximately 170 m of each wind turbine, based on the threshold of 120 dB re 1 µPa (rms). Therefore the impact is predicted to be of highly localised spatial extent (up to 170 m extent), with marine mammals able to move out of the area of disturbance if required, and whilst effects may be of long term duration (over the lifetime of the project) these will be intermittent and reversible as individuals move through the wider environment.

On this basis, in light of site COs for bottlenose dolphin, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance-seals

Noise modelling predicted that potential disturbance to marine mammals could occur within approximately 170 m of each wind turbine, based on the threshold of 120 dB re 1 µPa (rms). Therefore, the impact is predicted to be of highly localised spatial extent (up to 170 m extent), with marine mammals able to move out of the area of disturbance if required, and whilst effects may be of long term duration (over the lifetime of the project) will be intermittent and reversible as individuals move through the wider environment.

On this basis, in light of site COs for grey seal and harbour seal, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

5.4 Annex II Terrestrial and Freshwater Mammals

5.4.1 European Sites within the ZoI

There are no changes to the Natura Impact Statement.

5.4.2 Baseline environment

There are no changes to the Natura Impact Statement.

5.4.2.1 Data validity and limitations

A further otter survey was undertaken in July 2025. As outlined in the NIS, data is considered valid for 12 months from the period of survey.

5.4.3 Project design parameters

There are no changes to the Natura Impact Statement.

5.4.4 Measures included in the Project

There are no changes to the Natura Impact Statement.

5.4.5 Assessment of Project against conservation objectives

In response to the RFI, the most up-to-date research into EMF impacts on fish receptors has been presented in section 6.5.1 of appendix E Addendum: Fish and Shellfish Supporting Information. However, this does not change the conclusions of the NIS, that there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

5.5 Annex II Fish Species

5.5.1 European Sites within the ZoI

5.5.1.1 Brief description of relevant European sites

There are no changes to the Natura Impact Statement.

5.5.1.2 Conservation Objectives

There are no changes to the Natura Impact Statement.

5.5.2 Baseline environment

There are no changes to the Natura Impact Statement.

Appendix I Addendum: Onshore Biodiversity – Supporting Information provides details on the aquatic surveys completed in 2023 and 2025.

The baseline aquatic environment has been updated, but those updates have not resulted in any changes to the assessment of Annex II Fish (section 5.5) and Annex II Invertebrates (section 5.6) in the NIS. There are no changes to the conclusions in the NIS i.e. there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

5.5.2.1 Data validity and limitations

There are no changes to the Natura Impact Statement.

5.5.3 Project design parameters

5.5.3.1 Above high water mark

There are no changes to the Natura Impact Statement.

5.5.3.2 Below high water mark

There are no changes to the Natura Impact Statement.

5.5.4 Measures included in the Project

5.5.4.1 Above high water mark

See section 5.2.4 for measures related to onshore biodiversity.

5.5.4.2 Below high water mark

There are no changes to the Natura Impact Statement.

5.5.5 Assessment of Project against conservation objectives

There are no changes to Table 5-19 in the Natura Impact Statement.

As outlined in section 1, for the 'Assessment of the Project against conservation objectives', where there is a change in the assessment in the NIS, the text from the NIS is repeated and changes arising from the further information (where they relate to the assessment) are shown in blue (e.g. example text). Where text from the NIS (2024) has been superseded or is no longer relevant, this text has been included in this Addendum with a strikethrough (e.g. ~~example text~~) in order to present the changes as clearly as possible. Where there is no change to the assessment then, this is noted as 'There are no changes to the Natura Impact Statement'.

5.5.5.1 Construction/decommissioning phases

Distribution: extent of anadromy and larvae

The focus of this CO is that rivers should be accessible from coastal and estuarine waters to allow the migration of adults in order to prevent them being limited to spawning habitat in the lower stretches of a river. The Project will not introduce any barriers to the movement of fish but could have potential effects as a result of increased suspended sediment (i.e. habitat disturbance) and disturbance as a result of underwater noise during pile-driving. Such effects could occur on individuals attempting upstream migration from marine waters, therefore indirectly affecting anadromous distribution and larvae fish species.

Increases of suspended sediments and associated sediment deposition are predicted to occur as a result of the installation/removal of foundations and installation/removal of inter-array and export cables. Modelling of suspended sediments associated with the foundation installation showed low levels of suspended sediments with peaks of 100 mg/l extending beyond the offshore wind farm area in all modelled events (see appendix B: Marine Processes Technical Report). The average sediment concentration beyond the immediate vicinity of the offshore wind farm area are generally less than 30 mg/l with most of the sediment plume envelope having a suspended sediment concentration of less than 10 mg/l. In terms of the installation of the inter-array cables, sediment modelling showed a peak concentration of 2,000 mg/l in the immediate vicinity of cable installation, with averages less than 3 mg/l, which is comparable to background levels (i.e. see appendix B: Marine Processes Technical Report). Sediment plumes (inter-array cables) are only expected to persist for a maximum of 2-3 hours in any location. Sedimentation will occur in the immediate vicinity of the inter-array cable installation activities, with no discernible levels of sedimentation modelled to occur beyond the offshore wind farm area. For the offshore cable, modelling showed peak concentrations of 300mg/l which is equivalent to turbidity levels during storm conditions. Sediment plumes (offshore cable) are only expected to persist for a maximum of 3-4 hours in any location (as the tide turns). Sedimentation will occur in the immediate vicinity of the offshore cable installation activities.

Updated marine processes modelling was carried out and is presented in appendix B Addendum: Marine Processes Technical Report. The updated modelling confirmed that much of the drilled material associated with the installation of the monopiles would settle in the immediate vicinity of the installation at maximum levels of 100 mm, and a depth of 0.3 mm of deposition at a range of several hundred metres. This is due to the slow drilling rate of 0.25 m/hour allowing fines to be widely dispersed while larger material settles at the release point.

The updated modelling also confirmed installation of offshore cables would lead to distribution of the sediment with an expected deposition depth of less than 20 mm, with the majority of sediment settling close to cable trenches, and final settled depths expected to be less than 5 mm beyond the offshore cable corridor route. All other model outputs remained the same and with respect to impacts on diadromous fish receptors, the magnitude is unchanged from appendix E: Fish and Shellfish Ecology Supporting Information.

Increased SSC and associated sediment deposition are predicted to be localised, of temporary short-term duration and of a low magnitude. Migratory fish species known to occur in the area are expected to have some tolerance to naturally high SSC, given their migration routes typically pass through estuarine habitats for which background SSC are considerably higher than those expected in the offshore areas of the western Irish Sea Fish and Shellfish Ecology Study Area. As it is predicted that construction activities associated with the Project will produce temporary and short lived increases in SSC, any migratory fish species should only be temporarily affected (if they are affected at all). Any adverse effects on these species are likely to be short-term behavioural effects (i.e. avoidance) and are not expected to create a barrier to migration to rivers or estuaries used by these species in the western Irish Sea Fish and Shellfish Ecology Study Area. All migratory fish receptors within the Fish and Shellfish Ecology Study Area are deemed to be of low vulnerability, high recoverability and of international importance. The sensitivity of the receptor is therefore, considered to be low.

Disturbance is expected to occur in the form of underwater noise as a result of construction and decommissioning activities such as the installation of foundations and pile driving within the offshore wind farm area. Subsea noise modelling was undertaken with full details presented in appendix C: Subsea Noise Technical Report. Table 6-1 of appendix E sets out the criteria for onset injury/disturbance to fish due to impulsive piling based on Popper *et al.* (2014). Table 6A-1 ~~6-2~~ and Table 6A-2 ~~6-3~~ of appendix E Addendum: Fish and Shellfish Ecology Supporting Information display the predicted injury/disturbance range for peak sound pressure levels (SPL_{pk}) and cumulative sound exposure level (SEL_{cum}), respectively, using updated noise modelling parameters and modelling the piling impact to the west of the offshore wind farm area instead of to the east (although the modelling location is unlikely to materially affect the impact ranges across the array area).

For peak pressure noise levels when piling energy is at its maximum (i.e. 3,500 kJ), recoverable injury to fish may occur within approximately 1,101 m ~~357 m~~ of the piling activity. The potential for mortality or mortal injury to fish eggs would also occur at distances of up to 1,101 m ~~357 m~~. It should be noted that these ranges are the maximum ranges for the maximum hammer energy, and it is unlikely that injury/disturbance will occur in this range due to the implementation of soft starts during piling operations (see section 5.5.4). These measures will allow fish to move away from the areas of highest noise levels, before they reach a level that would cause an injury/disturbance. The initial injury/disturbance ranges for soft start initiation ~~are~~ will be considerably lower than the maximum set out here ~~(i.e. approximately 118 m to approximately 172 m)~~.

~~For cumulative noise levels over a period of 24 hours, recoverable injury/disturbance to fish may occur within approximately 20 m of the piling activity, while for eggs and larvae mortality could occur to ranges of up to 362 m~~. The risk of fish injury/disturbance will also be considerably lower due to the hammer energies being lower than the absolute maximum modelled, the expected fleeing behaviour of fish from the area affected when exposed to high levels of noise and the soft start procedure which will be employed for all piling to ensure that fish have sufficient time to vacate the areas where injury may occur prior to noise levels reaching that level. Disturbance in fish species can also trigger a behavioural responses such as startle responses (also known as C-turn responses), strong avoidance behaviour, changes in swimming or schooling behaviour or changes of position in the water column.

The modelled outputs show that noise attenuation is rapid with distance from foundation location. They also indicate that, based on a behavioural response occurring at levels in excess of 160 dB re 1 µPa SPL_{peak}, fish may exhibit behavioural responses within approximately 13 to 22 km ~~7 km~~ from the source, ~~which would not fully extend to the coastline~~. ~~Therefore,~~ Due to the intermittent nature of piling activities and the limited area

within which behavioural effects could occur, there is a large area for fish to navigate along the coast whilst avoiding the noise ~~source~~ emissions when migrating to and from rivers in which these species may spawn (e.g. River Boyne and River Blackwater SAC). As such, there is no potential for diadromous species to experience barriers to migration when moving from freshwater systems into and within the marine environment and vice versa. In summary, proposed piling activities are unlikely to result in mortality of fish or barrier effects.

The implementation of the soft start procedure will result in fish swimming away from the noise source prior to piling noise reaching maximum energy levels. Behavioural responses are also more likely to be observed for gadoids and eels, herring, sprat and shads within hundreds to thousands of metres from the piling source during piling activity before returning to baseline conditions on completion of works. Given the varying levels of sensitivity associated with identified fish receptors (e.g. lamprey- fishes lacking swim bladders. These species are only sensitive to particle motion, not sound pressure and show sensitivity to only a narrow band of frequencies) are deemed to be of low vulnerability and medium recoverability. The sensitivity of these fish receptors is therefore considered to be low.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Adult spawning fish

There are no changes to the Natura Impact Statement.

Out-migrating smolt abundance

There are no changes to the Natura Impact Statement.

5.5.5.2 Operational and maintenance phase

Distribution: extent of anadromy and larvae

The focus of this CO is that rivers should be accessible from coastal and estuarine waters to allow the migration of adults in order to prevent them being limited to spawning habitat in the lower stretches of a river. During the operational phase, potential effects may arise due to changes in EMF.

Changes in EMF from subsea electrical cabling has been identified as an impact during the operational and maintenance phase of the Project as it has the potential to emit a localised EMF, potentially affecting the sensory mechanisms of some species of fish, particularly electrosensitive and magneto-sensitive species such as Annex II migratory fish species.

As described in appendix E: Fish and Shellfish Ecology – Supporting Information, the strength of the magnetic field (and consequently, induced electrical fields) decreases rapidly horizontally and vertically with distance from source (i.e. within a few metres from the cable). A recent study conducted by CSA (2019) found that inter-array and export cables buried between depths of 1 m to 2 m reduces the magnetic field at the seabed surface four-fold. A number of field study observations have also found no evidence that fish species are either attracted or repelled to EMF from energised power cables (Love *et al.,* 2016). The most up-to-date research into EMF impacts on fish receptors has been presented in section 6.5.1 of appendix E Addendum: Fish and Shellfish Supporting Information, but these were not directly measuring impacts on the diadromous fish assessed in the NIS. However, the broad conclusions of the research was non-significant effects on all fish receptors, which aligns with the existing research for the diadromous fish as presented in the NIS.

In relation to lamprey, they possess specialised ampullary electroreceptors that are sensitive to weak, low frequency electric-fields (Bodznick and Northcutt, 1981; Bodznick and Preston, 1983), but information regarding what use they make of the electric sense is limited. Chung-Davidson *et al*. (2008) found that weak electric fields may play a role in the reproduction of sea lamprey and it was suggested that electrical stimuli mediate different behaviours in feeding-stage and spawning-stage individuals. This study (Chung-Davidson *et al.*, 2008) showed that migration behaviour of sea lamprey was affected (i.e. adults did not move) when stimulated with electrical fields of intensities of between 2.5 and 100 mV/m, with normal behaviour observed at electrical field intensities higher and lower than this range (Chung-Davidson *et al.*, 2008). These levels

were considerably higher than modelled induced electrical fields expected from AC subsea cables, which are expected to be considerably lower (i.e. potentially by an order of magnitude; CSA, 2019).

In relation to salmon, it has been found to possess magnetic material of a size suitable for magnetoreception, and can use the earth's magnetic field for orientation and direction finding during migration (Gill and Bartlett, 2010; CSA, 2019). Research conducted at the Trans Bay cable, a DC undersea cable near San Francisco, California, found that migration success and survival of chinook salmon (*Oncorhynchus tshawytscha*) was not impacted by the cable. However, behavioural changes were noted when these fish were near the cable (Kavet *et al.,* 2016) with salmon appearing to remain around the cable for longer periods. These studies demonstrate that while DC undersea power cables can result in altered patterns of fish behaviour, these changes are temporary and do not interfere with migration success or population health.

In relation to shad, research is limited when compared to that of Atlantic salmon and lamprey. However, shad are generally pelagic fish in their marine phase – they will swim in the middle/top of the water column, often occurring in shoals with other clupeid species, i.e. herring and sprat. As such, they are not considered as vulnerable to EMF associated with buried cables on the seabed. As described below, any effects of EMF will be limited to within a few metres from the seabed, so it is unlikely they would be affected.

In summary, the range over which these species can detect EMFs is limited to metres (CSA, 2019, see Figure 9) and any effects in this range, should they occur at all, will be temporary and not affect migration to or from SACs.

The impact of EMFs is predicted to be of local spatial extent (restricted to within a few metres of buried cables), long term duration (i.e. the lifetime of the Project), continuous and irreversible during the operational and maintenance phase (EMFs will not be present once the project is decommissioned). As impacts would be limited in spatial extent, and the migration of lamprey, salmon and shad would remain unaffected the magnitude is therefore, considered to be low.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Adult spawning fish

There are no changes to the Natura Impact Statement.

Out-migrating smolt abundance

There are no changes to the Natura Impact Statement.

5.6 Annex II Invertebrates

5.6.1 European Sites within the ZoI

There are no changes to the Natura Impact Statement.

5.6.2 Baseline environment

There are no changes to the Natura Impact Statement.

5.6.2.1 Data validity and limitations

A further otter survey was undertaken in July 2025. As outlined in the NIS, data is considered valid for 18 months from the period of survey.

5.6.3 Project design parameters

There are no changes to the Natura Impact Statement.

5.6.4 Measures included in the Project

There are no changes to the Natura Impact Statement.

5.6.5 Assessment of Project against conservation objectives

There are no changes to the Natura Impact Statement.

5.7 Birds Directive SCI Species

5.7.1 Scoping of effects

In response to RFI 7.S, other migratory birds, now screened in the Report to Inform Screening for Appropriate Assessment – Addendum (appendix A Addendum), have been included here as an additional section 5.7.1.3.

5.7.1.1 Seabirds

In response to RFI 7.A a clear, evidence-based justification for inclusion/exclusion of species is provided in section 3.2 of appendix H Addendum: Offshore Ornithology – Supporting Information.

5.7.1.2 Shorebirds

There are no changes to the Natura Impact Statement.

5.7.1.3 Other migratory birds

All other migratory birds screened in during the Stage 1 appraisal to inform screening for Appropriate Assessment (see section 4) have been brought forward for Stage 2 assessment and are listed in Table 5A-2.

Where other migratory birds were not recorded at all over the duration of site-specific surveys, it is considered objectively reasonable using expert judgement to exclude them from further assessment. For other migratory birds that were recorded in very small numbers or very infrequently (i.e. eider — peak count 5 individuals; greenshank — peak count 2 individuals; and, peregrine — peak count 1 individual) throughout the combined site-specific surveys, it is concluded that no adverse impact would occur during any phase of the Project and have been excluded from any further assessment as the risk of additional mortality in their populations is considered negligible (see appendix H: Offshore Ornithology – Supporting Information).

All other migratory species are therefore scoped out of further assessment within the NIS.

Table 5A-2: Other migratory birds and relevant European sites included for further assessment at Stage 2.

Relevant Qualifying Interests	Peak count during one survey	Relevant European Site(s) (code)	Taken through to further assessment
Barnacle Goose (*Branta leucopsis*) [A045]	0	Horn Head to Fanad Head SPA (IE004194)	No
		Duvillaun Islands SPA (IE004111)	
		Inishtrahull SPA (IE004100)	
		Inishbofin, Inishdooey and Inishbeg SPA (IE004083)	
		West Donegal Islands SPA (IE004230)	
		Illancrone and Inishkeeragh SPA (IE004132)	
		Roaninish SPA (IE004121)	

Relevant Qualifying Interests	Peak count during one survey	Relevant European Site(s) (code)	Taken through to further assessment
		Inishmurray SPA (IE004068)	
		Ardboline Island and Horse Island SPA (IE004135)	
		Inishglora and Inishkeeragh SPA (IE004084)	
		Inishkea Islands SPA (IE004004)	
		Shiant Isles SPA (UK9001041)	
Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	0	Lough Foyle SPA (UK9020031)	No
		Lough Foyle SPA (IE004087)	
		Wexford Harbour and Slobs SPA (IE 004076)	
		Ribble and Alt Estuaries SPA (UK9005103)	
Chough (*Pyrrhocorax pyrrhocorax*) [A346]	0	Glannau Aberdaron ac Ynys Enlli SPA (UK9013121)	No
		West Donegal Coast SPA (IE004150)	
		Horn Head to Fanad Head SPA (IE004194)	
		Mid-Waterford Coast SPA (IE004193)	
		Helvick Head to Ballyquin SPA (IE004192)	
		Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051)	
		North Colonsay and Western Cliffs SPA (UK9003171)	
		Iveragh Peninsula SPA (IE004154)	
		Beara Peninsula SPA (IE004155)	
Coot (*Fulica atra*) [A125]	0	Wexford Harbour and Slobs SPA (IE004076)	No
		Lough Swilly SPA (IE004075)	
Corncrake (*Crex crex*) [A122]	0	Inishbofin, Inishdooey and Inishbeg SPA (IE004083)	No
		West Donegal Islands SPA (IE004230)	
		Tory Island SPA [IE004073];	
Eider (*Somateria mollissima*) [A063]	5	Lough Foyle SPA (IE004087)	No

Relevant Qualifying Interests	Peak count during one survey	Relevant European Site(s) (code)	Taken through to further assessment
Gadwall (*Anas strepera*) [A051]	0	Lady's Island Lake SPA (IE004009)	No
Golden eagle (*Aquila chrysaetos*) [A091]	0	Rum SPA (UK9001341)	No
Goldeneye (*Bucephala clangula*) [A067]	0	Wexford Harbour and Slobs SPA (IE004076)	No
		Lough Swilly SPA (IE004075)	
Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	0	Horn Head to Fanad Head SPA (IE004194)	No
		The Raven SPA (IE004019)	
		Wexford Harbour and Slobs SPA (IE004076)	
		Lough Swilly SPA (IE004075)	
Greenshank (*Tringa nebularia*) [A164]	2	Lough Swilly SPA (IE004075)	No
Grey Heron (*Ardea cinerea*) [A028]	0	Lough Swilly SPA (IE004075)	No
		Wexford Harbour and Slobs SPA (IE004076)	
Hen Harrier (*Circus cyaneus*) [A082]	0	Wexford Harbour and Slobs SPA (IE004076)	No
Leach's petrel (*Oceanodroma leucorhoa*) [A015]	0	St Kilda SPA (UK9001031)	No
Little egret (*Egretta garzetta*) [A026]	0	Morecambe Bay and Duddon Estuary SPA (UK9020326)	No
Little Grebe (*Tachybaptus ruficollis*) [A004]	0	Wexford Harbour and Slobs SPA (IE 004076)	No
Mediterranean gull (*Larus melanocephalus*) [A176]	0	Morecambe Bay and Duddon Estuary SPA (UK9020326)	No
		Seas off Wexford SPA (IE004237)	
Peregrine (*Falco peregrinus*) [A103]	1	Rathlin Island SPA (UK9020011)	No
		West Donegal Coast SPA (IE004150)	
		Horn Head to Fanad Head SPA (IE004194)	
		Mid-Waterford Coast SPA (IE004193)	
		Helvick Head to Ballyquin SPA (IE004192)	
		Iveragh Peninsula SPA (IE004154)	
	0	Ribble and Alt Estuaries SPA (UK9005103)	No

Relevant Qualifying Interests	Peak count during one survey	Relevant European Site(s) (code)	Taken through to further assessment
Pink-footed goose (*Anser brachyrhynchus*) [A040]		Morecombe Morecambe Bay and Duddon Estuary SPA (UK9020326)	
Purple Sandpiper (*Calidris maritima*) [A148]	0	Rockabill SPA (IE004014)	No
		Skerries Island SPA (IE004122)	
		Inishkea Islands SPA (IE004004)	
Ruff (*Philomachus pugnax*) [A151]	0	Morecombe Morecambe Bay and Duddon Estuary SPA (UK9020326)	No
		Ribble and Alt Estuaries SPA (UK9005103)	
Scaup (*Aythya marila*) [A062]	0	Lough Swilly SPA (IE004075)	No
		Wexford Harbour and Slobs SPA (IE004076)	
Short-eared Owl (*Asio flammeus*) [A222]	0	Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051)	No
Shoveler (*Anas clypeata*) [A056]	0	Lough Swilly SPA (IE004075)	No
Slavonian Grebe (*Podiceps auritus*) [A007]	0	Blacksod Bay/Broad Haven SPA (IE004037)	No
Whooper Swan (Cygnus cygnus) [A038]	0	Lough Foyle SPA (UK9020031)	No
		Lough Swilly SPA (IE004075)	
		Lough Foyle SPA (IE004087)	
		Wexford Harbour and Slobs SPA (IE004076)	
		Morecambe Bay and Duddon Estuary SPA (UK9020326)	
		Ribble and Alt Estuaries SPA (UK9005103)	
Wigeon (*Anas penelope*) [A050]	0	The Murrough SPA (IE004186)	No
		Lough Foyle SPA (UK9020031)	
		Lough Swilly SPA (IE004075)	
		Lough Foyle SPA (IE004087)	
		Wexford Harbour and Slobs SPA (IE004076)	
		Ribble and Alt Estuaries SPA (UK9005103)	
		Ballymacoda Bay SPA (IE004023)	

5.7.2 European Sites within the ZoI

5.7.2.1 Brief description of relevant European sites

There are no changes to the Natura Impact Statement.

5.7.2.2 Conservation objectives

Since the submission of the planning application in May 2024, a number of detailed COs (previously First Order Site-specific Conservation Objectives) for European sites referenced in the Report to Inform Screening for Appropriate Assessment (2024), have become available. A review of site specific COs for the relevant SPAs was completed in order to account for any updates since May 2024. Although alternative attributes are now detailed as part of the update to SSCOs in Table 5A-3, these attributes are considered to be fully nested within those detailed with the NIS. Therefore, no new assessment of these attributes is required.

Table 5A-3 identifies any updated CO attributes which could potentially be adversely affected by the Project, for relevant SCIs scoped into the Stage 2 assessment (i.e. SCIs in relation to which it could not be excluded, based on objective information following screening, that the Project would have LSEs). Updates are outlined in blue text. This table should be read in conjunction with Table 5-28 in the NIS (2024).

Table 5A-3: Conservation Objective Attributes for relevant Birds Directive SCI species.

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
Deenish Island and Scariff Island SPA (IE004175) (NPWS, 2025a; Version 1; 25/04/2025)		
Manx Shearwater (*Puffinus puffinus*) [A013]	To maintain or restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Horn Head to Fanad Head SPA (IE004194) (NPWS, 2025b; Version 1; 06/06/2025)		
Kittiwake (*Rissa tridactyla*) [A188]	To ~~maintain or restore~~ restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Howth Head Coast SPA (IE 004113) (NPWS, 2024a; Version 1; 29/10/2024)		
Kittiwake (*Rissa tridactyla*) [A188]	To ~~maintain or restore~~ restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
		Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Ireland's Eye SPA (IE 004117) (NPWS, 2024b; Version 1; 12/11/2024)		
Guillemot (*Uria aalge*) [A199]	To maintain or restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Herring Gull (*Larus argentatus*) [A184]		
Kittiwake (*Rissa tridactyla*) [A188]		
Razorbill (*Alca torda*) [A200]		
Lambay Island SPA (IE004069) (NPWS, 2024c; Version 1; 19/11/2024)		
Guillemot (*Uria aalge*) [A199]	To maintain or restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Razorbill (*Alca torda)* [A200]		
Shag (*Phalacrocorax aristotelis*) [A018]		
Kittiwake (*Rissa tridactyla*) [A188]		
Herring Gull (*Larus argentatus*) [A184]		~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Winter population trend Distribution: extent of available nesting options within the SPA Winter spatial distribution Forage spatial distribution, extent, abundance and availability (winter and breeding) Disturbance at breeding or wintering sites Disturbance at areas ecologically connected to the colony

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
		Winter roost spatial distribution and extent Supporting winter habitat: area and quality Barriers to connectivity (winter and breeding)
Skelligs SPA (IE004007) (NPWS, 2025c; Version 1; 02/05/2025)		
Manx Shearwater (*Puffinus puffinus*) [A013]	To ~~maintain or restore~~ maintain the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity
Skerries Islands SPA (IE004122) (NPWS, 2024d; Version 1; 19/11/2024)		
Cormorant (*Phalacrocorax carbo*) [A017]	To maintain or restore the favourable conservation condition	~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Winter population trend Distribution: extent of available nesting options within the SPA Winter spatial distribution Forage spatial distribution, extent, abundance and availability (winter and breeding) Disturbance at the breeding or wintering sites Disturbance at areas ecologically connected to the colony Winter roost spatial distribution and extent Supporting winter habitat: area and quality Barriers to connectivity and site use (winter and breeding)
Herring Gull (*Larus argentatus*) [A184]		~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Winter population trend Distribution: extent of available nesting options within the SPA Winter spatial distribution

Relevant Qualifying Interests	Site Specific Conservation Objective	Site Specific Attributes Potentially Affected by the Project
		Forage spatial distribution, extent, abundance and availability (winter and breeding) Disturbance at the breeding or wintering sites Disturbance at areas ecologically connected to the colony Roost spatial distribution and extent Supporting winter habitat: area and quality Barriers to connectivity and site use winter and breeding)
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]		~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Winter population trend Winter spatial distribution Disturbance at wintering site Barriers to connectivity and site use Forage spatial distribution, extent and abundance Roost spatial distribution and extent Supporting habitat: area and quality
Shag (*Phalacrocorax aristotelis*) [A018]		~~Population dynamics~~ ~~Natural range~~ ~~Sufficiently large habitat~~ Breeding population size Productivity rate Distribution: extent of available nesting options within the SPA Forage spatial distribution, extent, abundance and availability Disturbance at the breeding site Disturbance at areas ecologically connected to the colony Barriers to connectivity

5.7.3 Baseline environment

The Applicant has carefully considered the concerns raised regarding the data validity and limitations however, the Applicant is satisfied that the data and baseline characterisation is valid and robust. The baseline site characterisation is based on over two years' of data collection and is therefore considered to be sufficiently robust to undertake an impact assessment in line with NatureScot (2023) guidance, Natural England (2022) and DCCAE (2018). Natural England (2022) in their guidance document strongly advised collection of data at least on a once-monthly basis over 24 consecutive months allows calculation of monthly population estimates / densities with two replicates per month across years. Furthermore, a comprehensive assessment of survey-data validity was undertaken during preparation of the EIAR and NIS addenda to confirm the robustness of the baseline site-specific surveys. A technical review was undertaken to compare seabird densities recorded during the Oriel Wind Farm Project's DAS in 2020 with those from the Clogherhead Wind Farm Project's DAS conducted in 2021 and 2022. Both survey campaigns covered an overlapping area, providing a direct basis for comparison. The report found that when comparing the Project DAS and Clogherhead DAS data within the Study Area there is a clear pattern that Oriel DAS recorded a greater density of birds, when looking at both the average and maximum density per month. Therefore, the

Applicant confirms that the site-specific surveys used in this assessment remain valid and robust for evaluating impacts.

The Applicant remains committed to ongoing engagement with relevant stakeholders and to monitoring emerging literature, incorporating new data as it becomes available.

5.7.3.1 Data validity and limitations

5.7.3.1.1 Seabirds

There are no changes to the Natura Impact Statement.

5.7.3.1.2 Shorebirds

There are no changes to the Natura Impact Statement.

5.7.4 Project design parameters

5.7.4.1 Onshore/Intertidal ornithology

There are no changes to the Natura Impact Statement.

5.7.4.2 Offshore ornithology

There are no changes to the Natura Impact Statement.

5.7.5 Measures included in the Project

5.7.5.1 Onshore/Intertidal ornithology

There are no changes to the Natura Impact Statement.

5.7.5.2 Offshore ornithology

There are no changes to the Natura Impact Statement.

5.7.6 Assessment of Project against conservation objectives

As outlined in section 1, for the 'Assessment of the Project against conservation objectives', where there is a change in the assessment in the NIS, the text from the NIS is repeated and changes arising from the further information (where they relate to the assessment) are shown in blue (e.g. example text). Where text from the NIS (2024) has been superseded or is no longer relevant, this text has been included in this Addendum with a strikethrough (e.g. ~~example text~~) in order to present the changes as clearly as possible. Where there is no change to the assessment then, this is noted as 'There are no changes to the Natura Impact Statement'.

5.7.6.1 Construction/decommissioning phase

5.7.6.1.1 Shorebirds

There are no changes to the Natura Impact Statement.

5.7.6.1.2 Seabirds

All relevant seabirds are discussed in this section. It should be noted that all seabirds discussed either have the potential to occur within the offshore wind farm area or were noted to occur during dedicated aerial and boat surveys. The reference populations for the SCIs of breeding colony SPAs have been derived from the latest updates to the Natura 2000 Standard Data Forms and are provided in appendix H: Offshore Ornithology – Supporting Information. Marine SPAs (specifically the North-west Irish Sea SPA and Irish Sea Front SPA) have not had the population defined. Both of the marine SPAs provide protection for foraging birds during the breeding season or aggregations of wintering individuals during the non-breeding period. Therefore, the total population of each of the marine SPAs is defined by the combined breeding population,

for which it protects, and the entire winter Biologically Defined Minimum Population Scales (BDMPS) due to increase mobility of birds during the wintering period (Furness, 2015).

Population; Measurable Change

Disturbance and displacement

Seabirds listed in Table 5-32 have been included for assessment under the conservation attribute 'population' (i.e. species as a viable component of the site, population dynamics, breeding population/population size, breeding population abundance, population trend and measurable change, and non-breeding population size) as part of 22 SPA's, namely:

the North-west Irish Sea SPA (IE004236), Ailsa Craig SPA (UK9003091), Deenish Island and Scariff Island SPA (IE 004175), Dundalk Bay SPA (IE004026), Glannau Aberdaron ac Ynys Enlli SPA (UK9013121), Grassholm SPA (UK9014041), Helvick Head to Ballyquin SPA (IE004192), Horn Head to Fanad Head SPA (IE004194), Howth Head Coast SPA (IE 004113), Ireland's Eye SPA (IE 004117), Lambay Island SPA (IE004069), Rathlin Island SPA (UK9020011), River Nanny Estuary and Shore SPA (IE004158), Rum SPA (UK9001341), Saltee Islands SPA (IE004002), Skelligs SPA (IE004007), Skerries Islands SPA (IE004122), Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051), St Kilda SPA (UK9001031), Horn Head to Fanad Head SPA (IE004194), North Colonsay and Western Cliffs SPA (UK9003171) and Wicklow Head SPA (IE004127).

In terms of 'population' the overall focus of this CO is that the long-term population trends and population abundances of seabirds and breeding seabirds should be stable or increasing with no significant declines seen. In terms of 'measurable change', this is the measured decline in a population, whereby a population should not and will not drop by more than 25% of the previous year's figures in any one year (~~CCW~~, Tyldesley and Hoskin, 2008). Disturbance and displacement (i.e. installing foundations, wind turbines, inter-array cabling and associated vessel movements) and changes to prey/habitat (i.e. temporary habitat loss, underwater noise and suspended sediment) as a result of construction activities within the offshore environment have the potential to effect the population of the following seabirds (Table 5-32): gannet, guillemot, razorbill, herring gull, Manx shearwater, kittiwake, common gull, red-throated diver, great northern diver and common scoter, and great black-backed gull.

A screening assessment (see appendix H: Offshore Ornithology – Supporting Information) for construction disturbance and displacement has been carried out for each of the above species with consideration of the species' sensitivity rating and abundance in the Offshore Ornithology Study Area (see section 3.1). Only species that were recorded in abundances within the offshore wind farm area of moderate, or above (i.e. level of abundance is categorised as follows: very low < 49 individuals; low: 50 to 199; moderate: 200 to 999; high: 1000 to 4,999 and very high: > 5,000), and with a sensitivity of moderate or above will be assessed in this section (see appendix H: Offshore Ornithology – Supporting Information for abundances). Therefore, guillemot, razorbill, red-throated diver and great northern diver are discussed further below.

Disturbance and displacement – Guillemot (all seasons)

During the breeding season, based on a mean-peak densities of 10.3 to 21.4 birds/km^2 within an area of 12.56 km^2, there would be approximately 129 to 269 birds at risk of temporary disturbance and displacement during one or two breeding seasons during which construction would occur.

During the non-breeding season, based on a mean-peak density of 30.5 to 61.9 birds/km^2 within an area of 12.56 km^2, there would be approximately 383 to 777 birds birds at risk of temporary disturbance and displacement during one or two non-breeding seasons during which construction would occur.

Following the guidance presented by the SNCB (2022), the recommended displacement rate for auk species is between 30 % and 70 %, while advice provided by NatureScot recommends a displacement rate of 60 % and a mortality rate of 1 % (from Marine Scotland Scoping opinion for Seagreen development in the Firth of Forth). For the purposes of this report and considering the temporary and intermittent nature of the construction disturbance, the impact is assessed in the context of 50 % displacement rate and 1 % mortality rate.

Based on these rates, the construction of the offshore wind farm and offshore cable would result in additional mortality of:

- Breeding season: ~~6.5 to 13.4~~ 0.65 to 1.38[9] birds; and
- Non-breeding season: ~~19.2 to 38.9~~ 1.92 to 3.89 birds.

Based on the 70% displacement rate and 10% mortality rate, the construction of the offshore wind farm and offshore cable would result in additional mortality of:

- Breeding season: 9.0 to 18.8 birds; and
- Non-breeding season: 26.8 to 54.4 birds.

Due to the lesser estimate of potential mortality during construction than during operational and maintenance, it was not deemed necessary to apportion the impact on the SPAs for which guillemot is a qualifying feature. As the increase in baseline mortality during the ~~operational and maintenance~~ construction[10] phase is <1 %, the impact during the construction phase is not considered to have an adverse effect on the site's integrity for all SPAs assessed from the Project alone.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – Razorbill (all seasons)

During the breeding period, based on a mean-peak densities of 0.25 to 5.6 birds/km^2 within an area of 12.56 km^2, there would be approximately 3 to 70 birds at risk of temporary disturbance and displacement during one or two breeding seasons during which construction would occur.

During the non-breeding period, based on a mean-peak density of 9.6 to 10.5 birds/km^2 within an area of 12.56 km^2, there would be approximately 121 to 132 birds at risk of temporary disturbance and displacement during one or two non-breeding seasons during which construction would occur.

Following the guidance presented by the SNCB (2022), the recommended displacement rate for auk species is between 30% and 70% and mortality between 1 and 10%, while advice provided by NatureScot recommends a displacement rate of 60% and a mortality rate of 1% (from Marine Scotland Scoping opinion for Seagreen development in the Firth of Forth). For the purposes of this assessment and considering the temporary and intermittent nature of the construction disturbance, the impact is assessed in the context of 50% displacement rate and 1% mortality rate.

However, the maximum impact has also been included in the context of a 70% displacement rate and 10% mortality rate, given the location of the site partially within the North-west Irish Sea SPA and proximity to colonies, Lambay Island SPA & Irelands Eye SPA. It is important to consider that drawing conclusions based solely on the maximum range of displacement and mortality rates is excessively precautionary and not ecologically realistic.

Based on these rates, the construction of the offshore wind farm and offshore cable would result in additional mortality of:

- Breeding season: 0.2 to 3.5 birds; and
- Non-breeding season: 6.0 to 6.6 birds.

[9] The incorrect data was shown in error in the NIS (2024).

[10] The incorrect phase was referred to in error in the NIS (2024)

Based on the 70% displacement rate and 10% mortality rate, the construction of the offshore wind farm and offshore cable would result in additional mortality of:

- Breeding season: 0.2 to 4.9 birds; and
- Non-breeding season: 8.5 to 9.2 birds.

Due to the lesser estimate of potential mortality during construction than during operational and maintenance, it was not deemed necessary to apportion the impact on the SPAs for which razorbill is a qualifying feature. As the increase in baseline mortality during the ~~operational and maintenance~~ construction[11] phase is <1 %, the impact during the construction phase is not considered to have an adverse effect on the site's integrity for all SPAs assessed from the Project alone.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – great northern diver (all seasons)

The peak levels of activity were recorded during the spring migration (total records of 306 individuals during spring migration (March to May) and winter periods (181 total records), with smaller numbers recorded in the autumn migration (90 total records). Birds recorded in the autumn and spring migration seasons are likely to remain in a location for a shorter period of time as they are on the move and will be less sensitive to displacement as a result. However, the assessment takes a precautionary approach and considers displacement in the context of the peak number of birds recorded during the entire non-breeding bio-season defined as September to May, which includes the autumn and spring migration periods.

A mean-peak density of 1.59 birds/km^2 was estimated in the offshore wind farm area during the non-breeding bio-season (September – May) during the boat-based surveys. The mean-peak density of birds within the Offshore Ornithology Study Area during DAS was higher with 2.42 birds/km^2 (see Table 32 in annex 2 of appendix H: Offshore Ornithology Technical Report in the NIS).

Based on a mean-peak density of 2.42 birds/km^2 within the Offshore Ornithology Study Area during the DAS and a disturbance distance of 50.27 km^2 (using a radial displacement around a single point of displacement of 4km) there would be approximately 122 birds at risk of temporary displacement during one or two non-breeding seasons during which construction would occur. Great northern diver are sensitive to disturbance and can be displaced from 4 km away from the development (Bradbury *et al*., 2014; SNCB, 2022). There is no evidence that great northern diver are being displaced beyond 4 km from the offshore wind farm (SNCB, 2022).

A worst-case approach is taken to the assessment, which assumes 100 % displacement from the potential zone of influence (ZoI) within 4 km of the source of construction disturbance.

A value of 0.5 % mortality has been used in assessing the number of individuals that could be at risk of mortality due to disturbance and displacement during the construction phase, reflecting the absence of constraint to specific locations by non-breeding birds (SNCB, 2022). Topping and Petersen (2011) found no evidence for population effect in the related species, red-throated diver as a result of displacement from offshore wind farms. Furthermore, great northern diver may have a stronger tolerance to disturbance compared to other diver species (e.g. red-throated and black-throated) (Gittings *et al*., 2015), although the literature on this subject is sparse. Based on a 100% displacement rate and a 0.5% mortality rate, the offshore wind farm construction would result in additional annual mortality of 0.61 birds within a 4 km buffer.

Additionally, a 10% mortality rate has been presented to provide the maximum range of mortality rate in the estimates of predicted mortalities. Based on a 100% displacement rate and 10% mortality rate, the offshore wind farm construction would result in additional mortality of 12.2 birds annually. A 10% mortality rate has been included to provide the maximum range of mortality rate in the estimates of predicted mortalities, given the location of the site partially within the North-west Irish Sea SPA. However, this scenario is not considered

[11] Text amended to correct error in NIS.

ecologically realistic, as there is no evidence to support such high mortality rate. Therefore, the 10% mortality rate scenario should be treated as excessively precautionary rather than a plausible outcome.

The offshore cable corridor overlaps with the North-west Irish Sea SPA, however there is unlikely to be any construction activity during the non-breeding season, with construction occurring in spring or summer.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – red-throated diver (all seasons)

The peak levels of activity were recorded during the spring migration (total records of 27 individuals during spring migration (March to May) and winter periods (24 total records during one winter period), with smaller numbers recorded in the autumn migration (13 total records during one autumn period). Birds recorded in the autumn and spring migration seasons are likely to remain in a location for a shorter period of time as they are on the move and will be less sensitive to displacement as a result. However, the assessment takes a precautionary approach and considers displacement in the context of the peak number of birds recorded during the entire non-breeding bio-season defined as September-May, which includes the autumn and spring migration periods.

A mean-peak density of 0.06 birds/km^2 was estimated in the offshore wind farm area during the non-breeding bio-season (September – May) during the boat-based survey. The peak density of birds within the Offshore Ornithology Study Area during DAS was higher with 0.09 birds/km^2 (during the April 2020 survey) (see annex 2: Table 31 (APEM, 2020) in appendix H: Offshore Ornithology Supporting Information in the NIS).

Based on a peak density of 0.09 birds/km^2 within the offshore wind farm area and a disturbance distance of up to 50.27 km^2 (using a radial displacement of 4 km around a single point of displacement) there could be approximately five birds at risk of temporary displacement during one or two non-breeding seasons during which construction would occur.

Based on a disturbance distance of up to 314.16 km^2 (using a radial displacement of 10 km around a single point of displacement), there could be approximately 28 birds at risk of temporary displacement during one or two non-breeding seasons during which construction would occur.

Due to the temporary nature of construction a displacement rate of 100% and a mortality rate of 1% is considered realistic. Therefore, the additional mortality of up to 0.05 birds may occur (using a 4 km buffer) and 0.28 (using 10 km buffer).

Using the upper range of mortality effects for displaced individuals (up to 10% mortality) combined with a 100% displacement rate would result in an additional mortality of up to 0.50 birds within a 4 km buffer and 2.8 birds within a 10 km buffer. However, this scenario is not considered ecologically realistic, as there is no evidence to support a 10% mortality rate for displacement of birds.

The offshore cable corridor overlaps with the North-west Irish Sea SPA, however there is unlikely to be any construction activity during the non-breeding season, with construction occurring in spring or summer.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Indirect disturbance and displacement resulting from changes to prey and habitats

There are no changes to the Natura Impact Statement.

Number of pairs

There are no changes to the Natura Impact Statement.

Productivity rate; Breeding success; Fledgling success

There are no changes to the Natura Impact Statement.

Distribution; natural range; Spatial distribution; Forage spatial distribution, extent, abundance and availability

There are no changes to the Natura Impact Statement.

Disturbance

Seabirds listed in Table 5-32 have been included for assessment under the conservation attribute 'disturbance' (i.e. no significant disturbance of the species, and disturbance at marine areas); 'avoid significant disturbance'; and 'disturbance across the site' as part of five SPAs, namely the North-west Irish Sea SPA (IE004236), Ailsa Craig SPA (UK9003091), Saltee Islands SPA (IE004002), North Colonsay and Western Cliffs SPA (UK9003171) and the Irish Sea Front SPA (UK9020328).

The focus of this CO is to ensure no significant increase in the form of disturbance as a result of human activity at marine areas adjacent to breeding colonies, to ensure significant mortalities of seabirds do not occur, and to ensure disturbance does not occur at levels that will significantly impact the achievement of targets for population size and spatial distribution. As a result of construction activities within the offshore environment, there is potential for disturbance effects on the following seabirds (Table 5-32): gannet, kittiwake, Manx shearwater, common gull, common scoter, guillemot, herring gull and razorbill.

Only species that were recorded in abundances within the offshore wind farm area of moderate, or above (i.e. level of abundance is categorised as follows: very low < 49 individuals; low: 50 to 199; moderate: 200 to 999; high: 1000 to 4,999 and very high: > 5,000) and with a sensitivity of moderate or above will be assessed in relation disturbance and displacement. Gannet, kittiwake, Manx shearwater, great black-backed gull and herring gull have a very low sensitivity to disturbance and displacement during construction and therefore do not require further assessment. Common gull has a low sensitivity to disturbance and displacement during construction and therefore does not require further assessment. Common scoter has a high sensitivity to disturbance and displacement during construction, however it has a low abundance recorded during site-specific surveys and therefore does not require further assessment. Guillemot and razorbill both have a moderate sensitivity to disturbance and displacement during construction (and were recorded in very high numbers during site-specific surveys), and as detailed above under "disturbance and displacement" for these species, due to the *de minimis* estimate of potential mortality during construction, it was not deemed necessary to apportion the impact on the relevant SPAs. Red-throated diver was included in the assessment on a precautionary basis because, although site-specific surveys recorded low abundance, the species is highly sensitive to disturbance and displacement during construction. Great northern diver was also included because it exhibits high sensitivity to disturbance and was recorded at higher abundance during the surveys, warranting its assessment. The offshore cable corridor overlaps with the North-west Irish Sea SPA and potential diver species, however there is unlikely to be any construction activity during the non-breeding season, with construction occurring in spring or summer.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Prey biomass; Maintain the habitats and food resources; Sufficiently large habitat.

There are no changes to the Natura Impact Statement.

Factors affecting the population or its habitat should be under appropriate control

There are no changes to the Natura Impact Statement.

Barriers to connectivity; Ensure connectivity between the site, supporting habitat and breeding colonies; Barriers to connectivity and site use

There are no changes to the Natura Impact Statement.

5.7.6.1.3 Wetlands and Waterbirds

There are no changes to the Natura Impact Statement.

5.7.6.2 Operational and maintenance phase

5.7.6.2.1 Shorebirds

There are no changes to the Natura Impact Statement.

5.7.6.2.2 Seabirds

In relation to offshore maintenance activities, the operational and maintenance phase of the Project will involve the following: routine operational activities (i.e. up to 30 maintenance personnel and Crew Transfer Vessels (CTVs) for routine transfer of personnel, tools and equipment to and from the port to the wind farm site), routine inspections and seabed surveys (i.e. foundations, Wind Turbine Generator (WTGs), OSS and export cable), repairs and replacement of navigational equipment, painting, major component replacement, cable repair and reburial activities and vessel movements (i.e. movement of CTVs).

Seabirds have the potential to be impacted by these activities in the form of the operational turbines (i.e. turning rotor blades) resulting in disturbance and displacement, changes to prey/habitats, collision risk, barrier effects and therefore mortality. Further detail is provided below. The assessment of effects as a result of collision risk is provided under section '*distribution; natural range; Spatial distribution; Forage spatial distribution, extent, abundance and availability*'.

Population; Measurable Change

Seabirds listed in Table 5-32 have been included for assessment under the conservation attribute 'population' (i.e. species as a viable component of the site, population dynamics, breeding population/population size, breeding population abundance, population trend and measurable change, and non-breeding population size) as part of 22 SPA's, namely:

North-west Irish Sea SPA (IE004236), Ailsa Craig SPA (UK9003091), Deenish Island and Scariff Island SPA (IE 004175), Dundalk Bay SPA (IE004026), Glannau Aberdaron ac Ynys Enlli SPA (UK9013121), Grassholm SPA (UK9014041), Helvick Head to Ballyquin SPA (IE004192), Horn Head to Fanad Head SPA (IE004194), Howth Head Coast SPA (IE 004113), Ireland's Eye SPA (IE 004117), Lambay Island SPA (IE004069), Rathlin Island SPA (UK9020011), River Nanny Estuary and Shore SPA (IE004158), Rum SPA (UK9001341), Saltee Islands SPA (IE004002), Skelligs SPA (IE004007), Skerries Islands SPA (IE004122), Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051), St Kilda SPA (UK9001031), Horn Head to Fanad Head SPA (IE004194), North Colonsay and Western Cliffs SPA (UK9003171) and Wicklow Head SPA (IE004127).

In terms of 'population' the overall focus of this CO is that the long-term population trends and population abundances of seabirds and breeding seabirds should be stable or increasing with no significant declines seen. In terms of measurable change, this is the measured decline in a population, whereby a population should not and will not drop by more than 25% of the previous year's figures in any one year (CCW, 2008). Disturbance and displacement (i.e. installing foundations, wind turbines, inter-array cabling and associated vessel movements) and changes to prey/habitat (i.e. temporary habitat loss, underwater noise and suspended sediment) as a result of operational and maintenance activities within the offshore environment have the potential to effect the population of the following seabirds (Table 5-32): gannet, guillemot, razorbill, herring gull, Manx shearwater, kittiwake, common gull, common scoter, red-throated diver, great-northern diver and great black-backed gull.

A screening assessment for disturbance and displacement (see appendix H: Offshore Ornithology – Supporting Information) associated with the operational and maintenance phase has been carried out for each of the above species with consideration of the species' sensitivity rating and abundance in the Offshore Ornithology Study Area (see section 3.2.1). Only species that were recorded in abundances within the offshore wind farm area of moderate or above (i.e. level of abundance is categorised as follows: very low < 49 individuals; low: 50 to 199; moderate: 200 to 999; high: 1000 to 4,999 and very high: > 5,000) AND with a sensitivity of moderate or above will be assessed in this section (see appendix H: Offshore Ornithology –

Supporting Information). Therefore, gannet, guillemot, razorbill, Manx shearwater, red-throated diver and great northern diver are discussed further below.

Disturbance and displacement – Gannet

There are no changes to the Natura Impact Statement.

Disturbance and displacement - Guillemot

The worst-case scenario is that displacement will occur at a constant level within 2 km of the offshore wind farm area, of which between 30 and 70% of birds will be displaced, leading to a mortality rate of between 1 and 5% (JNCC, 2022). More recent evidence (MacArthur Green, 2023) has indicated that a 70% displacement rate is not realistic and 50% is a more realistic scenario from empirical data. For completeness, the increase in baseline mortality under an 70% displacement with 10% mortality scenario is also presented in appendix H: Offshore Ornithology – Supporting Information; however, this scenario is considered overly precautionary and is not supported by empirical evidence. The following assessment presents the 50% scenario, which is the most recent empirically based scenario.

Breeding season

Using the NatureScot apportioning tool, 71.6 % of the birds recorded in the Project in the breeding season would be predicted to originate from the Lambay Island SPA. The Rathlin Island SPA which is the largest colony within the species foraging range of the Project is predicted to contribute to 16.2 % of the birds within the offshore wind farm area. The proportional weight column will not equal one as multiple non-SPA colonies make up the regional breeding population.

By apportioning impacts (NatureScot apportioning tool) for guillemot to the relevant SPAs listed in Table 5-32, the estimated mortality range is from <0.1 to 2.7 adult birds with a 50% displacement and a 1% mortality, depending on the SPA (see appendix H: Offshore Ornithology – Supporting Information). This increased baseline mortality between < 0.01 and 0.406 % in adult birds with a 50 % displacement and a 1 % mortality. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Non-breeding season

By apportioning impacts (NatureScot apportioning tool) for guillemot to the relevant SPAs listed in Table 5-32, the estimated number of mortalities from displacement range from <0.1 to 22.1 birds with a 50% displacement and a 1% mortality, depending on the colony (see appendix H: Offshore Ornithology – Supporting Information). This increased baseline mortality between 0.01 and 0.03 % with a 50% displacement and a 1% mortality. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

On this basis, offshore wind turbines associated with the Project during the operational and maintenance phase of the Project shall not jeopardise the COs and attribute targets of any European sites. This is in the absence of mitigation measures.

All seasons

There are no changes to the Natura Impact Statement.

Disturbance and displacement – Razorbill

The worst-case scenario is that displacement will occur at a constant level within 2km of the offshore wind farm area, of which between 30 and 70 % of birds will be displaced, leading to a mortality rate of between 1 and 5 % (JNCC, 2022). More recent evidence (MacArthur Green, 2023) has indicated that a 70 % displacement rate is not realistic and 50 % is a more realistic scenario from empirical data. For completeness, the increase in baseline mortality under an 70% displacement with 10% mortality scenario is

also presented in appendix H: Offshore Ornithology – Supporting Information; however, this scenario is considered overly precautionary and is not supported by empirical evidence. The following assessment presents the 50% scenario, which is the most recent empirically based scenario.

Breeding season

Using the NatureScot apportioning tool, 60.5 % of the birds recorded in the Project in the breeding season would be predicted to originate from the Lambay Island SPA. Rathlin Island SPA which is the largest colony within the species' foraging range of the Project is predicted to contribute to 17.7 % of the birds within the offshore wind farm area. The proportional weight column will not equal one as multiple non-SPA colonies make up the regional breeding population.

By apportioning impacts (NatureScot apportioning tool) for razorbill to the relevant SPAs listed in Table 5-32, the estimated number of mortalities from displacement range from 0 to 0.6 adult birds with a 50% displacement and a 1 % mortality, depending on the SPA (see appendix H: Offshore Ornithology – Supporting Information). This increased baseline mortality between 0 and 0.06 % in adult birds.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Non-breeding season

There are no changes to the Natura Impact Statement.

All seasons

Combining the impacts from both the breeding and non-breeding seasons above provides the annual impact on each SPA that is designated for razorbill. Apportioned annual mortality for razorbill is presented in appendix H: Offshore Ornithology – Supporting Information. The estimated number of mortalities from displacement range from < 0.1 to 0.84 birds with a 50 % displacement and a 1 % mortality, depending on the SPA. This increased baseline mortality between 0.02 and 0.08 % is considered undetectable in each individual SPA population. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

SPAs which have > 0.05 % increase in baseline population and an estimated mortality of >0.1 bird from the Project alone are therefore presented within the in-combination assessment (see section 5.8).

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – Kittiwake

In response to Item 7.M, the Applicant has provided an assessment of the disturbance and displacement of kittiwake during the operational and maintenance phase in line with NatureScot advice (but contrary to Natural England and Natural Resources Wales advice). The most precautionary scenario for kittiwake is that displacement will occur at a constant level within 2 km of the offshore wind farm area, of which 30 % of birds will be displaced, leading to a mortality rate of between 1 and 3 % (NatureScot, 2023).

Breeding season

Using the NatureScot apportioning tool, 34.7 % of the birds recorded in the Project in the breeding season would be predicted to originate from the Lambay Island SPA.

By apportioning impacts (NatureScot apportioning tool) for kittiwake to the relevant SPAs listed in Table 5-32, the estimated number of mortalities from displacement range from 0 to 0.16 adult birds, depending on the SPA. This increased baseline mortality between < 0.01 and 0.02 % in adult birds assuming displacement and mortality rates of 30% and 3% respectively, as advocated by NatureScot (NatureScot, 2023). This increase in baseline mortality is <1 % of the population for all SPAs assessed.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Non-breeding season

By apportioning impacts (NatureScot apportioning tool) for kittiwake to the relevant SPAs listed in Table 5-32, the estimated number of mortalities from displacement range from <0.01 to 0.24, depending on the colony (see appendix H: Offshore Ornithology – Supporting Information). This increased baseline mortality between <0.01 and 0.01 %. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

All seasons

Combining the impacts from both the breeding and non-breeding seasons above provides the annual impact on each SPA that is designated for kittiwake. Apportioned annual mortality for kittiwake is presented in appendix H: Offshore Ornithology – Supporting Information. Estimated number of mortalities from displacement range from 0.16 to 0.38 birds, depending on the SPA. This increased baseline mortality between 0.02 and 0.03 %, which is considered undetectable in each individual SPA population. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – Manx shearwater

In response to Item 7.F, the Applicant has provided an assessment of the disturbance and displacement of Manx shearwater during the operational and maintenance phase using a 30% displacement and 1% mortality and a maximum displacement and mortality rates for Manx shearwater (70% displacement, 10% mortality). However, it is noted that this species is not considered sensitive to displacement, and there is currently no evidence to support any specific range of displacement and mortality rates.

Breeding season

Using the NatureScot apportioning tool, 69.5 % of the birds recorded in the Project in the breeding season would be predicted to originate from the Skomer, Skokholm and the Seas off Pembrokeshire SPA. By apportioning impacts (NatureScot apportioning tool) for Manx shearwater to the relevant SPAs listed in Table 5-32, the estimated number of mortalities from displacement range from < 0.01 to 0.75 adult birds, depending on the SPA using a 30% displacement and 1% mortality rate. This increased baseline mortality between < 0.01 and 0.01 % in adult birds assuming displacement and mortality rates of 30% and 1% respectively. This increase in baseline mortality is <1 % of the population for all SPAs assessed. On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Non-breeding season

Apportioning impacts (NatureScot apportioning tool) for Manx shearwater to the relevant SPAs listed in Table 5-32 and is below 0.01 % increase in baseline mortality assuming displacement and mortality rates of 30% and 1% respectively. On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

All seasons

Combining the impacts from both the breeding and non-breeding seasons above provides the annual impact on each SPA that is designated for Manx shearwater. Apportioned annual mortality for Manx shearwater is presented in appendix H: Offshore Ornithology – Supporting Information. Estimated number of mortalities from displacement range from < 0.01 to 0.93 birds, depending on the SPA using a 30% displacement and 1% mortality rate. This increased baseline mortality between < 0.01 and 0.01 %, which is considered undetectable in each individual SPA population. On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – red-throated diver

The worst-case scenario for red-throated diver is that displacement will occur at a constant level within 10 km of the offshore wind farm area, of which between 90 and 100 % of birds will be displaced, leading to a mortality rate of up to 1 % (JNCC, 2022).

Non-breeding season

There is no agreed way to apportion a marine SPA, whereby the foraging, roosting or aggregation of waterbirds is protected. Due to the offshore cable corridor going through the North-west Irish Sea SPA 100 % of the impacts could be apportioned to this SPA. However, interchange between areas during the non-breeding period is high for a migratory species and therefore the interannual variation will be high. For precaution, all impacts are presented for the North-west Irish Sea SPA.

During the site-specific surveys, the peak estimate of red-throated divers present within the Offshore Study Area plus the 10 km buffer zone was 48 birds. This estimate was based on the peak density of 0.09 birds/km² recorded within the Offshore Ornithology Study Area during the April 2020 survey (Table 31 (APEM, 2020) appendix H: Offshore Ornithology Supporting Information in the NIS). Therefore, using a displacement rate between 90% and 100% and a mortality rate of 1%, the additional mortalities are estimated to range from 0.43 to 0.48 birds. Using the upper range of mortality effects for displaced individuals (up to 10% mortality) combined with a 100% displacement rate would result in an additional mortality of up to 4.80 birds. However, this scenario is not considered ecologically realistic, as there is no evidence to support a 10% mortality rate.

The documentation for the North-west Irish Sea SPA indicates a population of 827 individual birds (NPWS, 2023). Approximate background mortality at a rate of 0.313 gives a background annual mortality of 259 birds. Additional mortality of between 0.43 (90% displacement and 1% mortality) and 0.48 birds (100% displacement and 1% mortality) during the non-breeding season would increase annual mortality by 0.17 to 0.19 %.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance and displacement – great-northern diver

The worst-case scenario for great northern diver is that displacement will occur at a constant level within 4 km of the offshore wind farm area, of which between 90 and 100 % of birds will be displaced, leading to a mortality rate of up to 1 % (JNCC, 2022).

Non-breeding season

There is no agreed way to apportion a marine SPA, whereby the foraging, roosting or aggregation of waterbirds is protected. Due to the offshore cable corridor going through the North-west Irish Sea SPA 100 % of the impacts could be apportioned to this SPA. However, interchange between areas during the non-breeding period is high for a migratory species and therefore the interannual variation will be high.

Burke *et al.* (2018) estimated a non-breeding population of 2,128 for Ireland and given that the peak-mean population estimate for the area within 4 km of the offshore wind farm area was 251 to 382 individuals, it is reasonable to assess the impact against the Irish population estimate of 2,128 individuals in the non-

breeding season. Approximate background mortality at a rate of 0.161 gives a background annual mortality of 343 birds. Using a 1% mortality rate and 100% displacement, additional mortality of between 3 and 4 birds during the non-breeding season would increase annual mortality by 0.87 to 1.17 % when considering the boat-based density or DAS density estimate. However, this approach is very highly precautionary, considering that all birds within the area 4 km from the offshore wind farm area are displaced. It is more realistic to consider that there may be high displacement rate in areas closer to the offshore wind farm area with less displacement as distance increases.

Based on a 10% mortality rate a 100% displacement rate, the additional mortality of 38 birds (using the highest estimate) during the non-breeding season within the offshore wind farm area plus a 4 km buffer would increase the annual mortality by 11%, based on the DAS density estimate. A 10 % mortality rate has been included to provide the maximum range of mortality rate in the estimates of predicted mortalities. However, this scenario is not considered ecologically realistic, as there is no evidence to support such high mortality rate.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Indirect disturbance and displacement resulting from changes to prey and habitats

There are no changes to the Natura Impact Statement.

Number of pairs

There are no changes to the Natura Impact Statement.

Distribution; natural range; Spatial distribution; Forage spatial distribution, extent, abundance and availability

Seabirds listed in Table 5-32 have been included for assessment under the conservation attribute ‘distribution’ (i.e. distribution of the species within site, distribution-breeding colonies); ‘natural range’; ‘spatial distribution’; and ‘forage spatial distribution, extent, abundance and availability’. as part of 17 SPA’s, namely: the North-west Irish Sea SPA (IE004236), Ailsa Craig SPA (UK9003091), Deenish Island and Scariff Island SPA (IE 004175), Dundalk Bay SPA (IE004026), Helvick Head to Ballyquin SPA (IE004192), Horn Head to Fanad Head SPA (IE004194), Howth Head Coast SPA (IE 004113), Ireland's Eye SPA (IE004117), Lambay Island SPA (IE004069*),* River Nanny Estuary and Shore SPA (IE004158), Rum SPA (UK9001341), Saltee Islands SPA (IE004002), Skelligs SPA (IE004007), Skerries Islands SPA (IE004122), Skomer, Skokholm and the Seas off Pembrokeshire SPA (UK9014051), St Kilda SPA (UK9001031), North Colonsay and Western Cliffs SPA (UK9003171).

In terms of distribution the focus of this CO is to ensure no significant decrease in the numbers or range of areas used by seabirds (including the distribution of breeding colonies). In terms of ‘spatial distribution’ the focus of this CO is to ensure sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population, and in terms of ‘forage spatial distribution, extent, abundance and availability’ the focus of this CO is to ensure sufficient number of locations, area of suitable habitat and available forage biomass to support the population target.

Mortality during the operational and maintenance phase due to the presence of offshore wind turbines and maintenance activities may cause a decline in the distribution, natural range and forage spatial distribution, extent, abundance and availability of gannet, guillemot, razorbill, herring gull, Manx shearwater, kittiwake, common gull, common scoter and great black-backed gull. There is potential for disturbance and displacement, changes to prey/habitat, collision risk and barrier effect to effect these species.

As described above under ‘Population; Measurable Change’, only species that were recorded in abundances within the offshore wind farm area of moderate or above (i.e. level of abundance is categorised as follows: very low < 49 individuals; low: 50 to 199; moderate: 200 to 999; high: 1000 to 4,999 and very high: > 5,000) AND with a sensitivity of moderate or above will be assessed in this section.

In relation to disturbance and displacement, impacts are discussed under 'Population; Measurable Change' and which concluded (for gannet, guillemot and razorbill, Manx shearwater, kittiwake, red-throated diver and great northern diver), in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

In relation to changes to prey/habitat and as detailed above under 'Indirect disturbance and displacement resulting from changes to prey and habitats,' effects on fish assemblages would have an undetectable indirect impact on seabird species. Therefore, any decline in the distribution, natural range and forage spatial distribution, extent, abundance and availability of these species will not have an adverse effect.

In relation to collision risk, Manx shearwater, guillemot and razorbill all have a very low sensitivity to ~~disturbance and displacement~~ collision risk during the operational and maintenance phase and therefore do not require further assessment. Common scoter has a low sensitivity (and very low abundance) to ~~disturbance and displacement~~ collision risk during the operational and maintenance phase and therefore does not require further assessment. Common gull, gannet, herring gull, great black-backed gull and kittiwake have a high sensitivity to ~~disturbance and displacement~~ collision risk during the operational and maintenance phase and therefore has been included for further assessment. In relation to collision risk, gannet, common gull, herring gull, great black-backed gull and kittiwake have been assessed.

For collision risk and gannet, impacts are discussed above under 'disturbance and displacement', whereby the assessment concluded that the Project is unlikely to provide a significant barrier to foraging gannets given the species has an extensive foraging range and efficient flying capability.

For collision risk and common gull during the non-breeding season – the estimated number of mortalities from collisions range from 0.79 to 2.72 birds, depending on the SPA. This increased baseline mortality between 0.20 and 0.67 %. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

For collision risk and herring gull during the breeding season – the estimated number of mortalities from collision range from 0.04 to 1.90 adult birds, depending on the colony and AR used. This increased baseline mortality between 0.31 and 1.07 % in adult birds. This increase in baseline mortality is <1 % of the population for all SPAs assessed, excluding Skerries Islands SPA. However, as there is a minute population and 0.06 birds does not represent a true risk to the population (i.e. one bird killed every ~ 16.6 years) it is not deemed proportionate, to result in adverse effect on site integrity. During the non-breeding season, the estimated number of mortalities from collision range from 0.01 to 2.01 adult birds, depending on the colony. This increased baseline mortality between 0.11 and 0.18 % in adult birds. This increase in baseline mortality is <1 % of the population for all SPAs assessed. Across all seasons (i.e. combining the breeding and non-breeding seasons), the annual impact on SPAs range from 0.01 to 2.37 birds, depending on the SPA. This increased baseline mortality between 0.12 and 1.23 %, which is considered undetectable in each individual SPA population.

For collision risk and great black-backed gull during the non-breeding season – the estimated number of mortalities from collision range from from 0.74 to 0.92 birds when using the Natural England AR and 0.11 to 0.14 birds when using the JNCC AR. This increased baseline mortality between 0.80 and 1.00 %, or 0.12 to 0.15 %, which have more than a >0.05 % increase in baseline population and an estimated mortality of >0.1 bird. This increase in baseline mortality is <1 % of the population for all SPAs assessed.

For collision risk and kittiwake during the breeding season – the estimated number of mortalities from collision range from <0.01 to 0.96 adult birds, depending on the colony. This increased baseline mortality between 0.01 and 0.10 % in adult birds. This increase in baseline mortality is <1 % of the population for all SPAs assessed. During the non-breeding season, the apportioned mortality for kittiwake ranges from <0.01 to 0.02 % increase in baseline mortality. This increase in baseline mortality is <1 % of the population for all SPAs assessed. Across all seasons (i.e. combining the breeding and non-breeding seasons), the estimated number of mortalities from collisions range from <0.01 to 1.904 birds, depending on the SPA. This increased baseline mortality between 0.01 and 0.14 %, which is considered undetectable in each individual SPA population.

On this basis, in light of site COs and with the implementation of measures included in the Project, there will be no adverse effect on the integrity of any European site(s) due to the Project alone, and no reasonable scientific doubt remains as to the absence of such effects.

Disturbance

There are no changes to the Natura Impact Statement.

Prey biomass; Maintain the habitats and food resources; Sufficiently large habitat.

There are no changes to the Natura Impact Statement.

Factors affecting the population or its habitat should be under appropriate control

There are no changes to the Natura Impact Statement.

Barriers to connectivity; Ensure connectivity between the site, supporting habitat and breeding colonies; Barriers to connectivity and site use

There are no changes to the Natura Impact Statement.

5.7.6.2.3 Wetlands and Waterbirds

There are no changes to the Natura Impact Statement.

5.8 In-Combination Effects

5.8.1 Assessment of In-combination plans and projects

A review of the in-combination effects (i.e. cumulatively with any other plans or projects) has been completed in order to account for any changes since May 2024 (i.e. new / updated plans or projects). The sections below provide information to supplement the assessment of in-combination effects presented in the NIS (2024).

5.8.2 Plans

A number of plans relevant to the Project have been updated since the submission of the planning application in May 2024. The plans considered for ICA (which are discussed in appendix J Addendum: Screening In-Combination Effects) are listed as follows, along with a reference to the previous title of each plan referenced in the NIS (2024). Plans released since the planning application in May 2024 that have been assessed as part of this Addendum are also included below:

- Water Action Plan 2024: A River Basin Management Plan for Ireland (formerly Third Cycle Draft River Basin Management Plan 2022-2027);
- National Development Plan - Review 2025 (formerly National Development Plan 2018-2027);
- Climate Action Plan 2025 (formerly Climate Action Plan 2023 and Draft Climate Action Plan 2024);
- National Energy and Climate Plan 2021-2030 (updated July 2024);
- Offshore Renewable Energy Development Plan I (and draft OREDP II);
- National Designated Maritime Area Plan for Offshore Renewable Energy Proposal (2025) (formerly Designated Maritime Area Plan (DMAP) Proposal for Offshore Renewable Energy and Draft DMAP));
- Project Ireland 2040 -National Planning Framework First Revision (formerly Project Ireland 2040 – National Planning Framework);

- Future Framework for Offshore Renewable Energy (2024).

5.8.2.1 Climate Action Plan 2025

Climate Action Plan 2025 (CAP25) is the third statutory annual update to Ireland's Climate Action Plan under the Climate Action and Low Carbon Development (Amendment) Act 2021 and builds upon CAP24 and previous CAPs while also setting out new targets over a longer period.

CAP25 commits Ireland to achieving a minimum 51% reduction in greenhouse gas (GHG) emissions by 2030 compared to 2018 levels, with net-zero carbon emissions by 2050. As such, the plan deals with various sectors including transport, electricity, industry, the built environment, agriculture, marine, forestry and energy, all of which may give rise to development in order to meet climate action commitments e.g. infrastructure developments.

However, in relation to these potential developments, given that CAP25 does not clearly determine (in most instances) the precise location of any development at lower planning tiers, the usual planning development controls will apply. All developments must take into account the application of AA processes and any proposals as part of this plan will be subject to their own AA requirements.

Thus, the in-combination impacts from CAP25 with the Project are not predicted.

5.8.3 Annex I Habitats

There are no changes to the Natura Impact Statement.

5.8.4 Annex II Marine Mammals

An updated screening for the in-combination effects is provided in appendix J Addendum: Screening In-combination Effects, which consists of offshore wind projects, site investigations and a single communications infrastructure project. A review of the Project ICA has been undertaken as part of the response to further information. A number of new projects were considered alongside updated project information for all in-combination impacts (injury and/or disturbance to marine megafauna from underwater noise during pile-driving, injury and/or disturbance to marine megafauna from elevated underwater noise during routine geophysical surveys, injury and/or disturbance to marine megafauna from vessel activities and injury and/or disturbance to marine megafauna from operational underwater noise).

In addition, for injury and/or disturbance to marine megafauna from underwater noise during pile-driving the assessment was updated with revised noise modelling at the Project (see detail in appendix F Addendum: Marine Mammal and Megafauna – Supporting Information) and cumulative population modelling has been carried out (see appendix L: Cumulative iPCoD Modelling Report). Collaboration with the other Phase 1 projects has informed the ICA and the Applicant has committed to implementing phased piling alongside other adjacent offshore wind farms in the western Irish Sea (i.e. Phase One projects) as part of a Piling Strategy should construction programmes overlap (see section 5.5.4).

The Project-alone assessment of Injury and/or disturbance to marine megafauna from operational underwater noise (see section 5.3.5.2) demonstrated the PTS threshold was not exceeded for harbour porpoise, bottlenose dolphin or seal species and therefore no PTS injury will occur from operational underwater noise. For TTS, modelling suggested that seals would need to remain within 10 m of an operational wind turbine for a period of 24 hours for the TTS threshold to be exceeded. It was concluded that there will be no adverse effect on the integrity of any European site(s) due to the Project alone for either injury or disturbance. Due to the highly localised extent of any effects associated with operational underwater noise (i.e. limited to within <170 m of operational turbines) there is no potential for an in-combination effect when considered alongside other project impacts and therefore this is not considered further in the ICA.

As such, there are no changes to the conclusions of the ICA in the NIS.

5.8.4.1 Construction phase

There are no changes to the Natura Impact Statement.

5.8.4.2 Operational and maintenance phase

There are no changes to the Natura Impact Statement.

5.8.5 Annex II Terrestrial and Freshwater Mammals

There are no changes to the Natura Impact Statement.

5.8.6 Annex II Fish

An updated screening for in-combination effects is provided in appendix J Addendum: Screening In-combination Effects. A number of new projects were considered, however, there is no change to the conclusions of the cumulative assessment provided in appendix E: Fish and Shellfish Ecology Supporting Information.

5.8.7 Annex II Invertebrates

There are no changes to the Natura Impact Statement.

5.8.8 Birds Directive SCI Species

An updated screening for the in-combination effects is provided in appendix J Addendum: Screening In-combination Effects, which consists of offshore wind projects. A review of the Project ICA has been undertaken as part of the response to further information. A number of new projects were considered alongside updated project information. Also the assessment was updated with migratory CRM (see appendix H Addendum: Offshore Ornithology Supporting Information, Annex 9: Migratory Collision Risk Modelling: Phase One Projects Cumulative Assessment). Collaboration with the other Phase 1 projects has informed the ICA.

On review of the updated information and list of projects, it is considered that the significance of effect for both disturbance and displacement, and collision is unchanged from that presented in the NIS.

5.8.9 In-combination conclusion

There are no changes to the Natura Impact Statement (i.e. no significant in-combination effects are predicted).

6 MITIGATION AND MONITORING MEASURES

6.1 Measures included in the Project

In response to RFI 9.C, appendix K Addendum: Management Plans (appendix 5-4 Addendum: Marine Megafauna Mitigation Plan) has been updated to address ADD deterrence and clarify the relevant mitigation measures to be utilised, including the Applicant's commitment to using specified devices.

6.2 Additional mitigation measures

6.2.1 Annex II Marine Mammals

6.2.1.1 Mitigation for injury as a result of piling

See appendix C-4 Addendum: Comprehensive Review of Relevant Mitigation (Noise Abatement) in response to RFI Task 9.A.i and 9.A.ii, which details a comprehensive review of relevant noise abatement measures which could be applied to the Project and has made further commitments in light of this review.

In response to RFI 9.D, and in an abundance of caution, for the short duration of hammer impact piling of the sacrificial casing (and limited number of days piling) the Project is committed to the use of noise abatement measures for the purpose of reducing sound levels from construction piling and proposes MODIGA with internal air bubble ring as its noise abatement solution.

The system manufacturer states that the MODIGA fitted with an internal air bubble ring can provide underwater noise reduction during piling. The MODIGA with internal air bubble ring will be placed on the seabed into which the sacrificial casing will be lowered. A hammer pile will then be inserted into the MODIGA and the sacrificial casing hammer piled through the unconsolidated sediments. The air bubble ring within the MODIGA will actively attenuate noise. It has been demonstrated that air-filled casings can offer a highly effective noise mitigation strategy for marine mammal and fish receptors, reducing received SEL and peak SPL sound levels by several decibels (precise reduction being dependent upon specific configurations (see section 1.4.2 in appendix C-4 Addendum). The proposed MODIGA with internal air bubble ring will lower sound transmission due to the acoustic impedance of air by reducing the proportion of vibrational energy from the pile transmitted through the air layer into the surrounding water. It was not possible to model the precise level of reduction of noise levels at this stage as this system will be bespoke to the Project, however, a noise modelling study was undertaken for a range of NAS options to demonstrate the efficacy of applying commercially available NAS technology during piling at the Project (appendix C-2 Addendum: NAS Modelling Report). The level of noise abatement resulting from the air bubble ring inside the MODIGA casing will be modelled during the detailed design of the MODIGA system. It is expected that this will result in a noise abatement compared to an unmitigated piling scenario similar to the in-line hammer noise reduction unit (PULSE) technology.

The MODIGA was used at two offshore wind farms in the Bay of Biscay in France, however, at present there is no data available to allow the Project to undertake noise modelling to specifically demonstrate the potential noise reductions. For the existing commercially available systems that were modelled for the Project, the results demonstrated a reduction in SEL and peak SPL in effect ranges for marine mammal and fish receptors (appendix C-2 Addendum: NAS Modelling Report). NAS modelled included: big bubble curtains (BBC), double big bubble curtains (DBBC) and the in-line hammer PULSE technology. Therefore, taking the theoretical considerations into account and the manufacturer's technical statement, the Project is confident that the MODIGA with internal air bubble ring will also provide suitable mitigation for piling.

In addition, the Project has committed to implementing phased piling alongside other adjacent offshore wind farms in the western Irish Sea (i.e. Phase One projects) as part of a Piling Strategy should construction programmes overlap (see section 5.5.4), noting that further measures relating to temporal mitigation are not considered necessary to rule out all adverse effects on integrity due the commitments set out above and in section 5.3.4).

6.2.2 Annex II Fish Species

The updated assessments presented above have found no changes to the magnitudes of any impacts or the sensitivities of any Annex II diadromous fish receptors, and therefore no further mitigation is required for any

of the impacts above beyond those identified in section 4.2 of NIS appendix E: Fish and Shellfish Ecology – Supporting Information.

Despite the assessment of injury and/or disturbance to fish from underwater noise during pile driving concluding no adverse effect on integrity, the Project is committed to the consideration of noise abatement measures for the purpose of reducing sound levels from construction piling as outlined above for marine mammals.

Although herring is not a QI species associated with any European site, indirect effects on herring as a source of prey for SCI bird species have been considered in the NIS. With this in mind, to further reduce disturbance to spawning herring during the construction phase, piling activities will be scheduled to avoid piling in the northwest corner of the offshore wind farm area during the key spawning period for herring (i.e. September and October (ICES, 2013; Coull *et al*., 1998). This would reduce impacts on areas of coarse sediment (preferred habitat for herring spawning) known to occur in this part of the offshore wind farm area. Surveys of herring spawning activity will also be undertaken pre, during and post construction which will help to further refine the spawning period and distributions which will inform scheduling of construction operations during the peak herring spawning period.

6.3 Monitoring

There are no changes to the NIS.

7 CONCLUSION OF NATURA IMPACT STATEMENT

The further information provided as part of the response to the RFI along with the changes to the assessments provided in the NIS have been reviewed. It is the opinion of RPS that in view of best scientific knowledge and applying the precautionary principle, and in light of the COs of the relevant European sites, the Project, either individually or in combination with other plans or projects, will not have adverse effect on the integrity of any European site(s), given the implementation of the measures included in the Project.

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