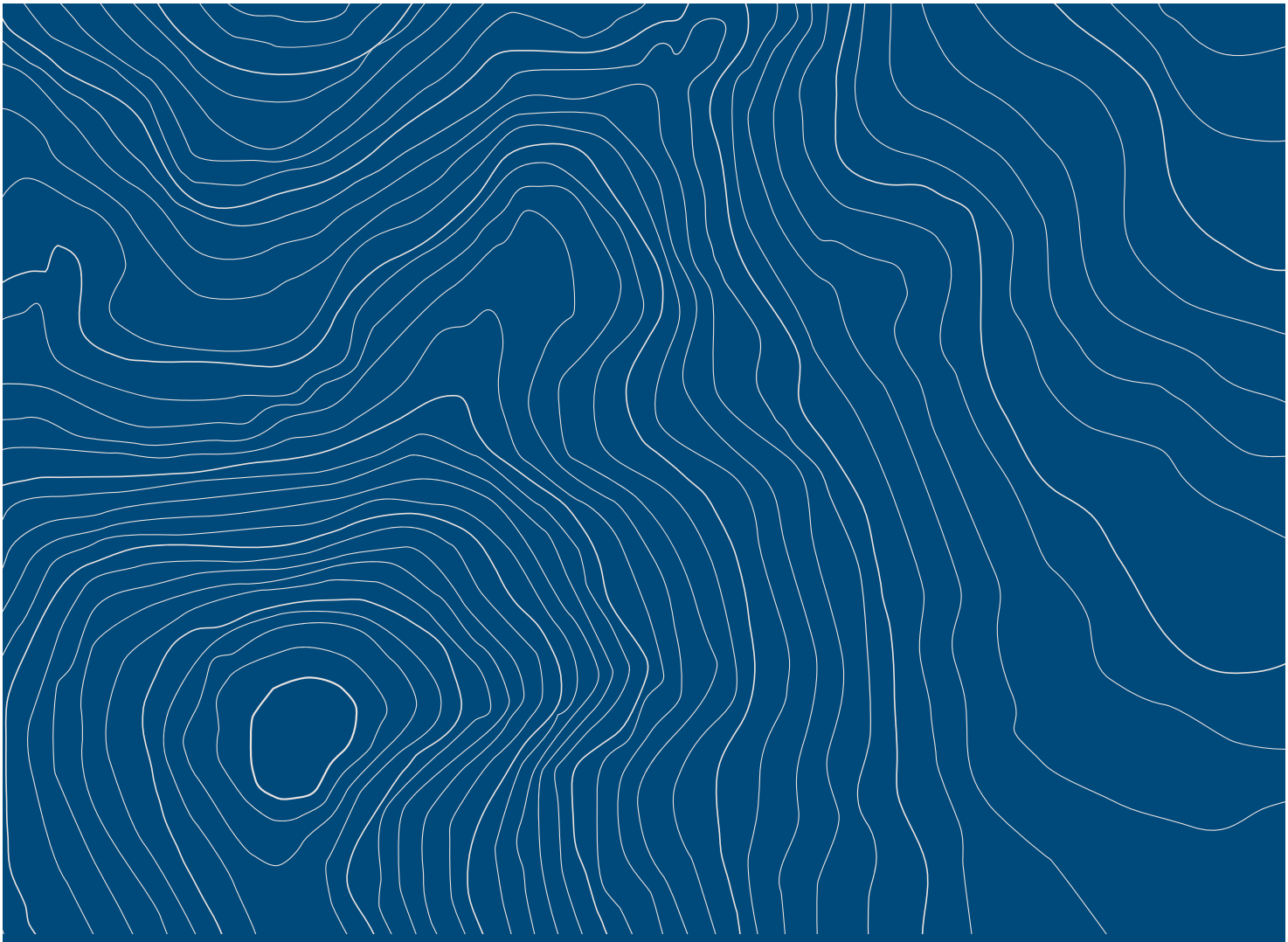

DublinArray
Generation for generations

Part 4: Habitats Directive Assessment Volume 3: Supporting Information for Screening for Appropriate Assessment

Kish Offshore Wind Ltd

RWE SLR GoBe
APEM Group

www.dublinarray-marineplanning.ie

Dublin Array Offshore Wind Farm

Habitats Directive Assessment

Volume 3: Supporting Information for Screening for Appropriate Assessment

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Glossary

Term	Definition
Alternative Design Option	The alternative design options which would result in the least impact (for instance, the smallest footprint, shortest exposure or smallest dimensions inter alia)
An Bord Pleanála (ABP)	An Bord Pleanála is the authority that decides major strategic infrastructural projects under the provisions of the Planning and Development (Strategic Infrastructure) Act 2006 and the Planning and Development Act 2000.
Annex I Birds	The 194 wild bird species and sub-species listed on Annex I of the Birds Directive (2009/147/EC) that are particularly threatened and for which, European Union (EU) Member States (MS) must designate Special Protection Areas (SPAs) for their protection.
Annex I Habitat	One of the 169 Natural Habitat types listed on Annex I of the Habitats Directive as a habitat of community interest for which EU MS must consider the designation of Special Areas of Conservation (SACs) to protect the habitat (or Qualifying Interest) where it occurs within their territory (European Commission, 2019).
Annex II Species	One of the c.900 animal and plant species listed on Annex II of the Habitats Directive as species of community interest for which EU MS must consider the designation of core areas of their habitat as SACs where it occurs within a MS.
Annex IV species	The Habitats Directive also contains obligations in relation to the strict protection of Annex IV species wherever they occur, as set out in Article 12 and Article 13 of the Directive.
Appropriate Assessment	The procedure as prescribed by section 177V of the Planning Act, carried out by the competent authority under Part XAB, that shall include a determination under Article 6(3) of the Habitats Directive as to whether the proposed development would adversely affect the integrity of a European site and an AA appropriate assessment shall be carried out by the competent authority before consent is given for the proposed development.
Birds Directive	Directive 2009/147/EC of the European Parliament and of the Council of 30th November 2009 on the Conservation of Wild Birds.
Conservation Objectives	The specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status. The National Parks and Wildlife Service (NPWS) produce the Conservation Objectives for all European sites in the Republic of Ireland.
Dublin Array	Dublin Array Offshore Wind Farm. Refers to all geographical areas of the development, i.e. both offshore, onshore and operation and maintenance (O&M) base as defined in Part 1: Project Description of this Habitats Directive Assessment.

Term	Definition
EIA Directive	European Union Directive 85/337/EEC, as amended by Directives 97/11/EC, 2003/35/EC and 2009/31/EC and then codified by Directive 2011/92/EU of 13 December 2011 (as amended in 2014 by Directive 2014/52/EU).
Environmental Impact Assessment Report (EIAR)	The report that outlines the likely significant effects, if any, which the proposed project would have on the environment. Prepared by the developer to inform the Environmental Impact Assessment (EIA) process required by the EIA Directive.
European site	A candidate site of Community importance (cSCI); a site of Community importance (SCI); a candidate special area of conservation (cSAC); a special area of conservation (SAC); a candidate special protection area (cSPA); and a special protection area (SPA).
Favourable Conservation Status	Favourable Conservation Status of a natural habitat is defined as the conservation status of a natural habitat when; ▪ Its natural range and areas it covers within that range are stable or increasing, and ▪ The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and ▪ The conservation status of its typical species is favourable; Favourable Conservation Status of a species is defined as the conservation status of a species when; ▪ Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and ▪ The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and ▪ There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.
GCP	Grid Connection Point at existing Carrickmines 220 kV substation
Habitats Directive	Means Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.
Habitats Directive Assessment (HDA)	Means: the Project Description (Part 4: Habitats Directive Assessments, Volume 1: Project Description); the Flexibility and Maximum Design Option (MDO)(Part 4: Habitats Directive Assessments, Volume 2: Flexibility and Maximum Design Option); the Supporting Information for Screening for Appropriate Assessment (SISAA)(Part 4: Habitats Directive Assessment, Volume 3 Supporting Information Screening for Appropriate Assessment); the Natura Impact Statement (NIS) (Part 4: Habitats Directive Assessments, Volume 4: NIS); and Appendices (Part 4: Habitats Directive Assessments, Volume 5: Appendices)
Habitats Regulations	The European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) as amended.

Term	Definition
Invasive alien species (IAS)	This is a species which has been introduced outside its natural range and has the ability to negatively alter its new habitat and out-compete native flora and fauna. The (EU) Invasive Alien Species Regulation 1143/2014 provides for the publication and updating of a list of Invasive Alien Species of Union concern - (EU) Regulation 2016/1141 as revised and up-dated from time to time. S.I. No. 374/2024 - European Union (Invasive Alien Species) Regulations 2024 gives effect to the (EU) Invasive Alien Species Regulation and includes a further list of Invasive Alien Species of National concern, which may be revised and up-dated from time to time.
Landfall	The location at the land-sea interface where the transmission cable from an offshore development meets the land boundary.
Likely Significant Effects (LSEs)	This term is adapted from Article 6 (3) of the Habitats Directive ("*likely to have a significant effect*"). It describes the type of effects which the project, either individually or in-combination with other plans or projects, will or may have on a European site(s) and as a result trigger the requirement to conduct an Appropriate Assessment.
Maritime Area Consent (MAC)	The MAC is a statutory consent which may be granted by MARA under section 81(1)(a) of the Marine Area Planning Act 2021, as amended.
Maximum Design Option (MDO)	The design option that is assessed which would result in the greatest impact (for example largest footprint, longest exposure, or largest dimensions inter alia). The design information is based on the best available information and the parameters outlined in the project description chapters are realistic and considered estimations of future design parameters.
MHWS	MHWS is the highest level that spring tides reach on average over a period of time (often 19 years). The height of MHWS is the average throughout the year (when the average maximum declination of the moon is 23.5°) of two successive high waters during those periods of 24 hours when the range of the tide is at its greatest.
Mitigation	This is defined in the Habitats Regulations as "a measure or a combination of measures that, in relation to Article 6(3) of the Habitats Directive, has the effect of ensuring that a plan or project, individually or in combination with other plans or projects, will not have a significant effect on, or adversely affect the integrity of, a European Site".
National Parks and Wildlife Service (NPWS)	The National Parks and Wildlife Service has responsibility for the protection and conservation of Ireland's natural heritage and biodiversity.

Term	Definition
Natura 2000 network	The European network of special areas of conservation under the Habitats Directive and special protection areas under the Birds Directive, provided for by Article 3(1) of the Habitats Directive and, includes European Sites as defined in S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011.
Natura Impact Statement (NIS)	This means a report comprising the scientific examination of a plan or project and the relevant European Site or European Sites, to identify whether the project will adversely affect the integrity of a European site(s) either individually or in combination with other plans and projects in view of the site's conservation objectives, and to characterise any such adverse effects.
Offshore ECC	The Offshore Export Cable Corridor connecting the Offshore Substation Platform (OSP) and array to the Landfall/TJB at Shanganagh WWTW
Onshore ECC	The route corridors within which the proposed cables will be installed underground from the Landfall to OCC and beyond the OCC to the GCP.
Onshore Electrical System (OES)	Collective term for all onshore infrastructure from the Mean Low Water Spring to the GCP which are likely to be necessary to connect the project to the national grid
Onshore Compensation Compound (OCC)	Part of the OES, the substation required to facilitate the grid connection.
Operation and Maintenance Base (O&M Base)	This is the location from where the daily operations and normal repairs, replacement of parts and structural components, and other activities needed to preserve the offshore assets will be conducted.
The Planning Act	The Planning Act means the Planning and Development Act, 2000, as amended.
Precautionary principle	Adopted by the UN Conference on the Environment and Development (1992) to protect the environment and is detailed in Article 191 of the Treaty on the Functioning of the European Union. The former provides that where threats to the environment are shown to be serious or provide irreversible damage, then lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.
Qualifying Interest (QI)	The habitats and species for which each European site is selected are the QI for SACs and special conservation interests (SCI) for SPAs of each site. These are collectively referred to as qualifying interests (QI) in this report.
Screening for Appropriate Assessment	The procedure as prescribed by section 177U of the Planning Acts, that is carried out by the competent authority to assess, in view of best scientific knowledge, if the proposed development, individually or in combination with another plan or project, is likely to have a significant effect on a European site.

Term	Definition
Sites of Community Importance	Under section 177R of the Planning Act, a "site of community importance" means a site that has been included in the list of sites of Community importance as adopted by the European Commission in accordance with the procedure laid down in Article 21 of the Habitats Directive, while a "candidate site of community importance" means a site included in a list transmitted to the European Commission prior to formal adoption of that site
Special Conservation Interest(s)	The species for which an SPA is selected. See definition of Qualifying Interests (QI).
Source-pathway-receptor (S-P-R)	The 'source-pathway receptor' approach was applied to identify European sites to be considered in Screening. The method seeks to characterise the means (pathways) via which effect-sources arising from the project could be experienced by receptors (sensitive QI of a European site).
TJB	Transmission Joint Bay. The proposed infrastructure at the Landfall location where the offshore and onshore cables connect.
Zone of Influence (ZOI)	The area over which the proposed development could affect the receiving environment such that it could potentially have significant effects on the qualifying interests or SCI of a European site, or on the achievement of their conservation objectives.

Acronyms

Term	Definition
ABP	An Bord Pleanála
ADO	Alternative Design Scenario
BDMPS	Biologically Defined Minimum Population Scales
BNG	Biodiversity Net Gain
BTO	British Trust for Ornithology
BWI	Birdwatch Ireland
CEA	Cumulative Effects Assessment
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CGNS	Celtic and Greater North Sea
CJEU	Court of Justice of the European Union
CO	Conservation Objectives
COWRIE	Collaborative Offshore Wind Research into the Environment
CSTP	Celtic Sea Trout Project
DCCAE	Department of Communications, Climate Action and Environment
DECC	Department of Energy and Climate Change
DEHLG	Department of Housing, Local Government and Heritage
DLR	Dún Laoghaire-Rathdown
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EU	European Union
GCP	Grid Connection Point
GIS	Geographical Information System
GPS	Global Positioning System
HRA	Habitat Regulations Assessment
IAMMWG	Inter Agency Marine Mammal Working Group
IAS	Invasive Alien Species
ICES	Internation Council for the Exploration of the Sea
IRE	Ireland

Term	Definition
IWDG	Irish Whale and Dolhpin Group
JNCC	Joint Nature Conservation Committee
LAT	Lowest Astronomical Tide
LSE	Likely Significant Effect
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MARLIN	Marine Life Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships
MDO	Maximum Design Option
MHWM	Mean High Water Mark
MWHS	Mean High Water Spring
MMFR	Mean Maximum Foraging Range
MMMU	Marine Mammal Management Unit
MMO	Marine Maritime Organisation
MU	Management Unit
NIS	Natura Impact Statement
NOAA	National Oceanic and Atmospheric Administration
NPWS	National Parks and Wildlife Service
OCC	Onshore Compensation Compund
OECR	Onshore Export Cable Route
OES	Onshore Electrical System
OESEA	Offshore Energy Strategic Environmental Assessment
OSP	Offshore Substation Platform
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OWF	Offshore Wind Farm
PEA	Preliminary Ecological Appraisals
PTS	Permenant Threshold Shift
PVA	Population Viability Analysis
ROI	Republic of Ireland
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SCANS	Small Cetaceans in European Atlantic waters and the North Sea
SCI	Species of Conservation Interest

Term	Definition
SISAA	Supporting Information for Screening for Appropriate Assessment
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Body
SPA	Special Protected Area
SSC	Suspended Sediment Concentration
TJB	Transition Joint Bay
TTS	Temporary Threshold Shift
UK	United Kingdom
UXO	Unexploded Ordnance
WTG	Wind Turbine Generator
WWTW	Waste Water Treatment Works
ZoI	Zone of Influence

1 Introduction

1.1 Background

1.1.1 Dublin Array Offshore Wind Farm (Dublin Array) is a proposed offshore wind farm on the Kish and Bray Banks. The Kish and Bray Banks are located, approximately 10 km off the east coast of Ireland, immediately south of Dublin city off the coast of counties Dublin and Wicklow. The location of the proposed wind farm site is shown in Figure 1. The wind farm will be located within an area of approximately 59 km^2, in water depths ranging from 2 m to 50 m lowest astronomical tide (LAT).

1.1.2 The Applicant for development permission is "Kish Offshore Wind Limited" on behalf of Kish Offshore Wind Limited and Bray Offshore Wind Limited respectively (hereafter referred to as the Applicant). The project involves development partly in the maritime area and partly on land. The Applicant holds three maritime area consents ('MACs') for three parts of the maritime area. The Applicant holds each MAC jointly with the other specified MAC holder:

- MAC Reference No. 2022-MAC-003 and 004
- MAC Reference No. 20230012
- MAC Reference No. 240020

1.1.3 The proposed development is comprised of the offshore wind farm array and associated infrastructure (including landfall/transition joint bay (TJB) and operations and maintenance (O&M) base) and the onshore electrical system (OES):

- Offshore Wind Farm Infrastructure: will comprise between 39-50 wind turbine generators (WTGs) with a maximum blade tip height (when a rotor blade is in a vertical orientation) of between 265.5 m to 307.5 m; minimum blade tip height of 31.6 m above mean high water springs (MHWS); associated offshore infrastructure including turbine foundations; subsea inter array electricity cables; an offshore substation platform (OSP) and offshore electricity export cables.
- Landfall and Transition Joint Bay (TJB): will comprise the landfall location where the offshore export cables will come ashore and the TJB will be located. The proposed landfall/TJB is located at Shanganagh to the south of the Uisce Eireann Shanganagh Wastewater Treatment Plant.
- The O&M base: will be located at Dún Laoghaire Harbour and will comprise the O&M base for the proposed wind farm. Once the O&M Base is operational, it will also be used to support the construction of the offshore wind farm.

1.1.4 Onshore Electrical System (OES): comprises the related onshore works that are necessary to facilitate the operation of the wind farm. This includes underground electricity transmission cables; an onshore substation (referred to in the Environmental Impact Assessment Report (EIAR) as an onshore compensation compound [OCC]); and underground electricity cable circuits connecting the OCC to an existing Eirgrid substation. The grid connection option being assessed in the Environmental Impact Assessment (EIA) is located on the former Ballyogan Landfill site and is referenced in the EIAR as the Jamestown OCC.

1.1.5 In January 2021, a foreshore site investigations licence (FS007029) was granted to RWE Renewables Ireland Limited and site investigations and surveys were undertaken between 2021-2022 under that licence. Following a decision of the High Court delivered on 2 September 2024 in Coastal Concern Alliance v Minister for Housing, Local Government and Heritage & Others and RWE Renewables Ireland Limited [2024] IEHC 524, the Court has set aside the decision made on 12 November 2020 to grant the licence by Order made on 6 December 2024, and has directed that the application be remitted to the Minister for the Environment, Climate and Communications to be reconsidered in accordance with the Court's findings and directions. On remittal the Minister is to seek information from RWE as to the nature, extent and timing of the surveys that were actually carried out, and to undertake an Appropriate Assessment screening based on this scope and the facts and circumstances that were applicable as of 12 November 2020, which was when an error was made by the Minister in the original AA procedure. Only if determined to be necessary, the Minister is to then undertake an Appropriate Assessment (Stage II). Ultimately, the Minister is to reach a determination as to whether a revised licence covering the nature and extent and timing of the actual surveys carried out would have been issued, based on the facts and circumstances as of November 2020. Relevant documentation and determinations are to be published on the Minister's website.

1.1.6 While the invalidated licence no longer exists as a matter of law, the data gathered under it is not invalidated nor is the use of such data in this Application precluded. In the Coastal Concern case, the Court refused an application for leave to amend the proceedings to pursue a claim for declaratory relief that this survey data could not be used in any future development consent application. On a 'de bene esse' or provisional basis, the Court rejected the merits of a claim that the remedial obligation under the Habitats Directive should require the use of such data to be precluded in any future development consent application. The Court's reasoning is set out in paragraphs 55-59 of the judgment, and similar reasoning was given by the High Court in a separate subsequent decision in which the same claim arose and was rejected in Toole & Ors v Minister for Housing, Local Government and Heritage & Others and Codling Wind Park Limited [2024] IEHC 610 (paragraphs 190-191).

1.1.7 Accordingly, all relevant survey and site investigation data gathered by and on behalf of the Applicant under the invalidated licence and included in this Application may be used and relied on.

1.1.8 The location of Dublin Array is presented in Figure 1 with the full project description provided in Part 4: Habitats Directive Assessments, Volume 1: Project Description.

1.1.9 This SISAA should be read in conjunction with the other documents submitted as part of the Habitats Directive Assessment:

- Project Description, Part 4: Habitats Directive Assessments, Volume 1: Project Description (hereafter referred to as the Project Description);
- Flexibility and Maximum Design Option (MDO) (Part 4: Habitats Directive Assessments, Volume 2: Flexibility and Maximum Design Option)
- Natura Impact Statement, Part 4: Habitats Directive Assessments, Volume 4: NIS (hereafter referred to as the NIS); and
- Appendices (Part 4: Habitats Directive Assessments, Volume 5: Appendices).

1.1.10 This SISAA and particularly Section 4 draws upon and refers to relevant sources of information in the following appendices of Part 3: Environmental Impact Assessment Report (EIAR):

- Volume 4, Appendix 4.3.3-1: Technical Baseline Report – Benthic Subtidal and Intertidal Ecology (hereafter referred to as the Benthic Ecology Baseline);
- Volume 4, Appendix 4.3.4-1: Technical Baseline Report - Fish and Shellfish Ecology (hereafter referred to as Fish and Shellfish Baseline);
- Volume 4, Appendix 4.3.5-1: Technical Baseline Report – Marine Mammals (hereafter referred to as Marine Mammals Baseline);
- Volume 4, Appendix 4.3.6-1: Technical Baseline Report – Ornithology (hereafter referred to as Ornithology Baseline);
- Volume 3, Chapter 20: Offshore Assessment - Operations and Maintenance Base;
- Volume 4, Appendix 4.3.7-1: Offshore Bats Technical Baseline Report (hereafter referred to as the Bats Baseline); and
- Volume 6, Appendix 6.5.2-1: Biodiversity Technical Baseline Report (hereafter referred to as the Biodiversity Baseline).

Author competencies

1.1.11 The HDA team is led by SLR Consulting Ireland Ltd (SLR) and GoBe Consultants Ltd (GoBe) with assistance from specialist consultants.

SLR Consulting Ltd

1.1.12 SLR is a multidisciplinary technical consultancy providing services to public and private sector clients in several sectors including energy, infrastructure and waste. SLR is a registered Environmental Impact Assessor Member of the Institute of Environmental Management and Assessment (IEMA) and holds the IEMA Environmental Impact Assessment Quality Mark. Further information on SLR can be found on its corporate website at www.slrconsulting.com.

GoBe

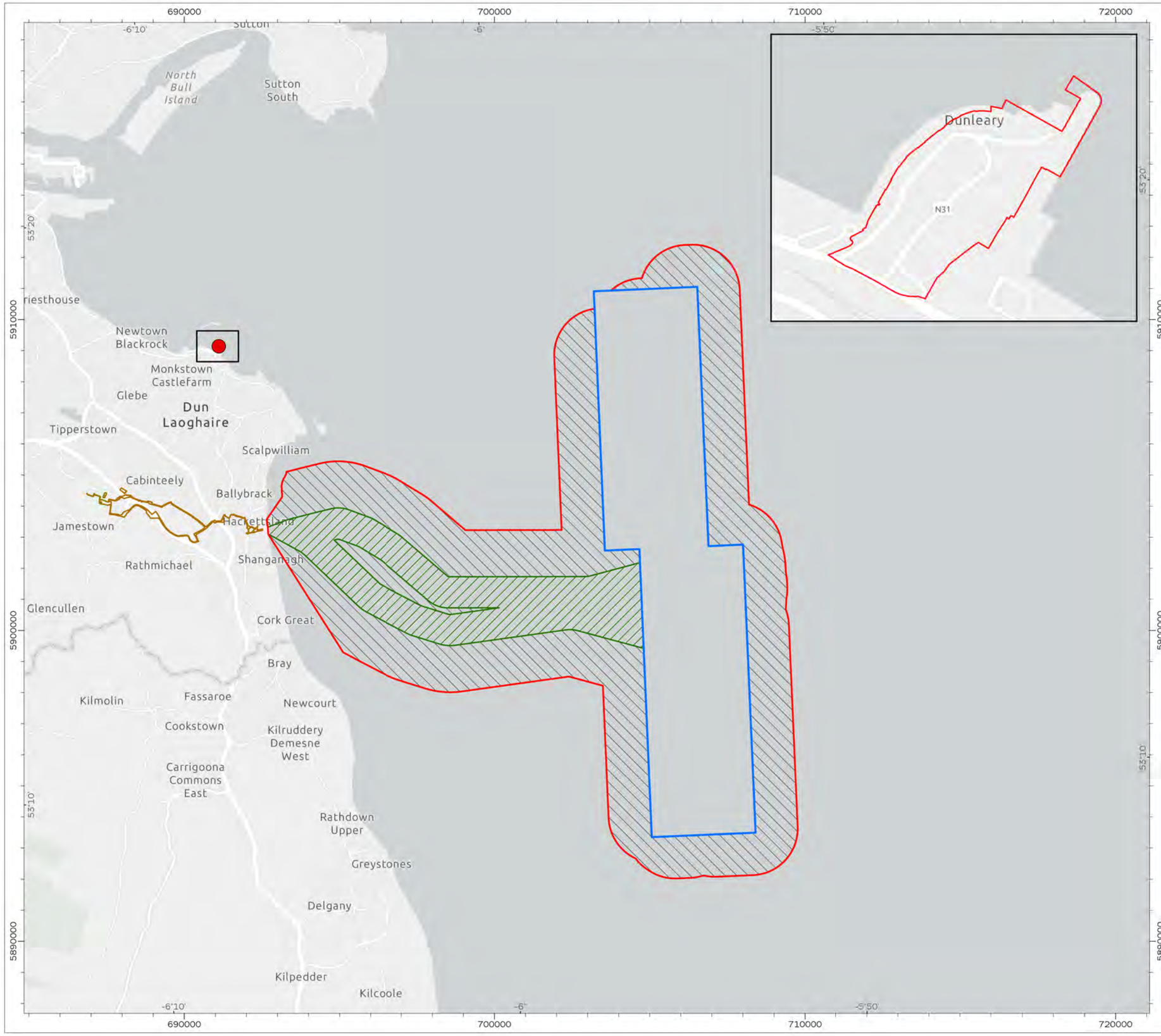
1.1.13 GoBe is an independent environment and planning consultancy offering a broad range of expertise and experience with a focus on the offshore wind farm development market. GoBe provides a full range of environmental planning and consultancy services to the offshore wind sector, covering both onshore and offshore infrastructure and throughout the full development lifecycle. GoBe is part of the APEM Group. Further information on GoBe can be found on its corporate website www.gobeconsultants.com.

1.1.14 The Applicant confirms that the specialist personnel and organisations that have undertaken surveys, prepared baseline technical information, and produced the Supporting Information for Screening for Appropriate Assessment (SISAA) and Natura Impact Statement (NIS), have the requisite relevant competency, expertise, and qualifications.

Table 1 AA Screening and NIS team competencies

Discipline	Specialist Assessor	Qualifications	Experience
Project Management	Justine Davies GoBe	MSc, BSc	Justine is a Principle Marine Consultant with 15 years of experience as an EIA practitioner and an additional 9 years in the marine environmental field. Justine has significant experience across a range of sectors, having managed projects for the offshore wind industry, ports, marine aggregates and technical involvement in cables and pipelines. Justine has extensive project management experience through her previous role as Consultancy Manager and her work on various NSIP projects. Justine has worked on Dublin Array Offshore Wind Farm in Ireland since 2019, taking on a project management role and providing technical support across the scoping and EIA phases.
Benthic and Intertidal assessment	Chris Nikitik GoBe	MSc, BSc	Chris Nikitik is a Senior Marine Ecology Specialist at GoBe with specific expertise in benthic environments. Chris has over 25 years' experience of delivering projects related to a number of drivers such as power generation, port construction and maintenance, industrial developments and transport infrastructure and has routinely acted as technical lead on all benthic aspects of a project from initial programme design through to reporting. Chris is also experienced with the requirements of environmental reporting in relation to appropriate assessments/EIAs/HRAs etc. and has authored numerous reports and contributed to EIA chapters
Fish assessment	Simone Pfeifer GoBe	PhD MSc Diploma biology	Simone Pfeifer is a Senior Marine Ecology Specialist at GoBe with a strong background providing scientific advice to UK consenting authorities and developers on the impacts of offshore activities on marine habitats and faunal assemblages. Simone has experience in conducting HRA/Appropriate Assessment screening assessments and advising developers on the risk of causing injury or disturbance to marine European Protected Species. She has also been involved in the development of sampling protocols for Annex I habitats and guidelines to assess impacts on features protected in Natura 2000 sites and UK Marine Conservation Zones. Simone is familiar with current EIA and HRA assessment approaches and relevant environmental legislations and policies. Simone has been involved in the Dublin Array project since August 2023, contributing to the delivery of the Fish and Shellfish assessments within the NIS and EIAR.
Marine mammals assessment	Ross Culloch APEM	Ph.D.	Ross is the Associate Director & Head of the Marine Mammal Team within APEM and brings a wealth of expertise in the field of marine mammal ecology, conservation and management, and a practical understanding of the legislation and policy relating to marine mammals and the

Discipline	Specialist Assessor	Qualifications	Experience
		M.Sc. Marine Mammal Science, B.Sc. (Hons) Aquatic Bioscience	consenting of major marine infrastructure projects leading on numerous scoping of EIA and screening during the HRA process. Ross has 20 years experience in the field, he has over 30 peer-reviewed publications on a diverse range of topics. Across his career Ross has led research and desk-based studies on topics such as identifying and implementing suitable monitoring and mitigation plans for better understanding anthropogenic impacts, and designing scientific studies aimed at reducing knowledge gaps that are barriers to the consenting of major marine infrastructure projects.
Dynamic Energy Budget modelling	Rachael Sinclair SMRU	BSc Hons in Marine Biology MRes in Marine Mammal Science	Rachael is a Principal Scientist at SMRU Consulting. She has been working in marine mammal science since graduating in 2011 and has been working in consultancy since 2013. Rachael has extensive experience as the lead author of marine mammal baseline characterisation reports and EIA chapters for numerous offshore wind farms in England, Scotland, Wales and Ireland
Onshore	Jake Matthews SLR	MSc Ecology BSc (Hons) Wildlife Conservation	Jake is a Senior Ecologist with expertise in ornithology, bats, and newts, and has extensive experience supporting major infrastructure, wind farm, quarry, and housing projects. Jake has over five years' experience as a consultant ecologist in the UK and Ireland and has worked on a variety of projects including EIAR chapters, Appropriate Assessment (AA) screenings and Natura Impact Statements (NIS) reports. He specializes in ecological surveys and assessments, including Preliminary Ecological Appraisals (PEA), Appropriate Assessments (AA), Biodiversity Net Gain (BNG) assessments, and Ecological Clerk of Works (ECoW).
Ornithology	Jessica George GoBe	MSc BSCc IEMA (grad)	Within her role as an ornithological consultant at GoBe, Jessica has developed a good understanding of offshore windfarm developments in regard to seabirds. Jessica has focused on derogation, developing compensation measures for a variety of species, post-consent monitoring as well as ornithological assessments. Jessica has worked on projects in England, Scotland, Wales, Ireland, Isle of Mann and Poland (Baltic Sea). Jessica has also engaged and led workshops with stakeholders, including Natural England, JNCC, and RSPB.



DRAWING STATUS

FINAL

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PROJECT TITLE

Dublin Array

DRAWING TITLE

Location of Dublin Array Offshore Windfarm

DRAWING NUMBER: **1**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 1 2 3 4 km

0 0.6 1.1 1.7 2.2 nm

N (GRID NORTH)

SCALE 1:125,000 PLOT SIZE A3

DATUM WGS 1984 VERTICAL REF LAT

PRJ WGS 1984 UTM Zone 29N

GoBe APEM group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

1.2 Legislative Context

1.2.1 The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna), adopted in 1992, provides the framework for the legal protection to ensure the conservation of a wide range of rare, threatened or endemic animal and plant species throughout the European Union. The Habitats Directive and the Birds Directive (2009/147/EC) are transposed into Irish legislation inter alia by the Habitats Regulations and the Planning Act. The Birds Directive aims to conserve and protect listed wild bird species naturally occurring in the European Union.

1.2.2 The Directives provide the obligation to establish a network of designated sites comprising Special Areas of Conservation (SACs) designated under the Habitats Directive; and Special Protection Areas (SPAs) classified under the Birds Directive. SACs and SPAs (including candidate and proposed sites) are collectively known as the Natura 2000 network of European sites.

1.2.3 The requirement for Appropriate Assessment (AA) is set out in Article 6(3) of the Habitats Directive. If a project is likely to have a significant effect on the conservation objectives of a European site, either alone or in combination with other plans or projects, it must undergo an AA process.

1.2.4 Article 6(3) of the Habitats Directive states: *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in-combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public*".

1.2.5 Should the conclusion of the AA in accordance with Article 6(3) as referred to in the previous paragraph be that adverse impacts on the integrity of the site concerned cannot be ruled out beyond reasonable scientific doubt, Article 6(4) provides: *"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for environment or, further to an opinion from the European Commission to other imperative reasons of overriding public interest."*

Irish legislation

1.2.6 The Applicant is applying for development permission for the proposed development under section 291 of the Planning Act. By virtue of section 318 of that Act, the Screening for Appropriate Assessment and Appropriate Assessment procedures are set out in Part XAB of the Act.

1.2.7 As the competent authority, ABP may only grant permission for the proposed development after all relevant procedures prescribed by Part XAB of the Act have been followed to the extent necessary. The Screening "Stage One" procedure is set out in section 177U, while the AA "Stage Two" is set out in Section 177V.

1.2.8 This report is intended to support the development consent application in documenting a preliminary evaluation of the potential effects of the proposed development upon European sites. This report has been prepared by the Applicant to provide information to ABP, as the competent authority, with respect to the potential for the construction, O&M and decommissioning of Dublin Array offshore wind farm and O&M base to have likely significant effects on one or more European sites. ABP as the competent authority are not bound to reach the same conclusion as this report.

1.3 The Appropriate Assessment ("AA") Process

1.3.1 According to the European Commission's Methodological Guidance on Article 6(3) and 6(4) of the Habitats Directive:

1.3.2 'Article 6(3) and (4) sets out a step-by-step procedure for assessing plans or projects that are likely to have impact on Natura 2000 sites. This involves three main stages:

- Stage one: screening. The first part of the procedure consists of a pre-assessment stage ('screening') to ascertain whether the plan or project is directly connected with, or necessary to, the management of a Natura 2000 site, and, if this is not the case, then whether it is likely to have a significant effect on the site (either alone or in combination with other plans or projects) in view of the site's conservation objectives. Stage one is governed by the first part of the first sentence of Article 6(3).

- Stage two: the appropriate assessment. If likely significant effects cannot be excluded, the next stage of the procedure involves assessing the impact of the plan or project (either alone or in combination with other plans or projects) against the site's conservation objectives and ascertaining whether it will affect the integrity of the Natura 2000 site, taking into account any mitigation measures. It will be for the competent authorities to decide whether or not to approve the plan or project in light of the findings of the AA. Stage two is governed by the second part of the first sentence and the second sentence of Article 6(3).

- Stage three: derogation from Article 6(3) under certain conditions. The third stage of the procedure governed by Article 6(4). It only comes into play if, despite a negative assessment, the developer considers that the plan or project should still be carried out for imperative reasons of overriding public interest. This is only possible if there are no alternative solutions, the imperative reasons of overriding public interest are duly justified[1], and if suitable compensatory measures are adopted to ensure that the overall coherence of Natura 2000 is protected. In practice, more than one site may need to be considered.

1.3.3 Each stage of the procedure is influenced by the previous one. The order in which the stages are followed is therefore essential for applying Article 6(3) and (4) correctly. Figure 2 gives a flow chart of this procedure.

1.3.4 The current report provides the information to support Stage 1 only. Should subsequent stages be required, these will be detailed within a NIS to provide the information required by the competent authority to undertake the AA.

[1] Directive (EU) 2023/2413 amending Directive (EU) 2018/2001 as regards the promotion of energy from renewable sources (RED III), provides in Article 16f that from 21 February 2024 until climate neutrality is achieved, Member States shall ensure that, in the permit-granting procedure, the planning, construction and operation of renewable energy plants, the connection of such plants to the grid, the related grid itself, and storage assets are presumed as being in the overriding public interest and serving public health and safety when balancing legal interests in individual cases for the purposes of Article 6(4) of the Habitats Directive.

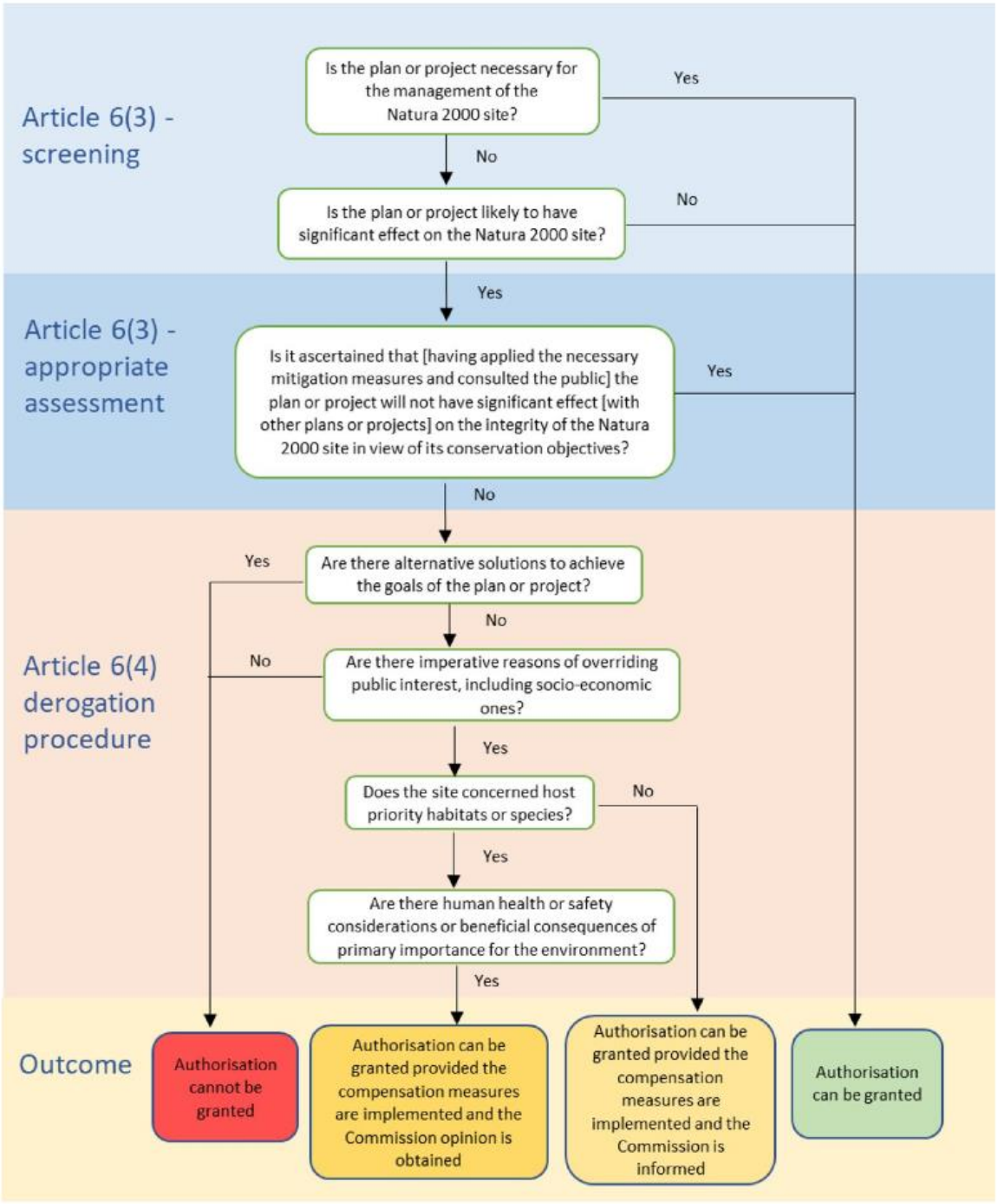


Figure 2 Procedure of Article 6 of the Habitats Directive (Source: European Commission, 2021)

1.3.5 ABP may only grant permission for the proposed development under section 293 of the Planning Act, following a Stage One AA Screening under section 177U of the Planning Act, and a Stage Two AA under section 177V of the Planning Act, where required.

1.3.6 Section 177U(1) of the Planning Act provides that an assessment shall be carried out by ABP of the proposed development to assess, in view of best scientific knowledge, if that proposed development, individually or in combination with another plan or project, is likely to have a significant effect on the European site.

1.3.7 Section 177U(2) provides that the assessment shall be carried out before consent for the proposed development is given. ABP is entitled, under section 177U(3), to require such further information from the Applicant as it may consider necessary to enable ABP to carry out that screening, and may consult with such persons as appropriate.

1.3.8 Section 177U(4) provides that ABP shall determine that an AA of the proposed development is required if it cannot be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

1.3.9 ABP shall determine that an AA of the proposed development is not required if it can be excluded, on the basis of objective information, that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a European site.

1.3.10 Where ABP determines under section 177U(4) that an AA is required, ABP shall give notice of its determination (including reasons) to the Applicant and to any person who made submissions or observations on the application. ABP may direct that a NIS is required, unless it has already been provided with the application.

1.3.11 The process required to be followed for the NIS and AA is set out within the NIS itself.

2 Methodology and Guidance

2.1 Guidance

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

- Appropriate Assessment Screening for Development Management-OPR Practice Note PN01 (Office of the Planning Regulator, 2021);
- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment Heritage and Local Government (DEHLG, 2009; revised 11 February 2010);
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Chartered Institute of Ecology and Environmental Management (CIEEM, 2018; updated April 2022);
- Offshore Renewable Energy Development Plan II: Strategic Environmental Assessment Report (Department of Environment, Climate and Communications & Sustainable Energy Authority Ireland, 2023);
- Offshore Renewable Energy Development Plan II: Principles Report (Department of Environment, Climate and Communications & Sustainable Energy Authority Ireland, 2022a);
- Offshore Renewable Energy Development Plan II: Appropriate Assessment – Screening Report (Department of Environment, Climate and Communications & Sustainable Energy Authority Ireland, 2022b)
- Guidance on EIS and NIS preparation for Offshore Renewable Energy Projects (Department of Communications, Climate Action and Environment, Department of Communications, Climate Action and Environment and the Sustainable Energy Authority of Ireland, 2017);
- Commission Notice Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission (2021);,
- Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011);
- European Commission: Directorate-General for Environment, Guidance document on assessment of plans and projects in relation to Natura 2000 sites – A summary (Publications Office of the European Union, 2022)
- Managing Natura 2000 Sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC (European Commission, 2019);

- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document. Prepared by National Parks and Wildlife Service (Department of Arts, Heritage and Gaeltacht, 2012);
- Guidance to Manage the Risk to Marine Mammals from Manmade Sound Sources in Irish Waters (Department of Arts, Heritage and Gaeltacht, 2014); and
- Wind energy developments and Natura 2000 (European Commission, 2011).

Case Law

Case law from national courts, particularly superior courts, and judgments issued by the Court of Justice of the European Union (CJEU) have in some instances, superseded the publication of the above guidance and provided clarity as to how Member States should interpret and apply the Habitats and Birds Directives. Relevant case law has been considered in the preparation of this information to support Screening for AA and shaped, for example, how assessment terms (such as 'likely' and 'significant') are interpreted and also when mitigation measures may be taken into account and the type of such measures which may be considered at different stages.

2.2 Methodology

Maximum Design Option Assessment

2.2.1 As set out in the Application for Opinion under Section 287B, flexibility is being sought for the offshore infrastructure where details or groups of details may not be confirmed at the time of the application. In summary, and as subsequently set out in the ABP Opinion on Flexibility (dated 3 December 2024), the flexibility being sought relates to those details or groups of details associated with the following components (see further detail in the Project Description of this Habitats Directive Assessment:

- WTG (model – dimensions and number);
- OSP (dimensions);
- Array layout (layout and limits of deviation);
- Foundation type (WTG and OSP; types and dimensions and scour protection techniques); and
- Offshore cables (inter-array and export; length, layout, limits of deviation).

2.2.2 To ensure a robust and transparent assessment, and one that is compliant with the Opinion under Section 287B, the Likely Significant Effects arising from those details or groups of details associated with those components where flexibility is being sought have been assessed in two ways, via the creation of a Maximum Design Option ("MDO") and Alternative Design Option(s) (ADO):

- A) The MDO reflects the option which will give rise to the greatest magnitude of Likely Significant Effect on a relevant European site. It is specific to each effect, not to each design option. For example, the greatest noise effect may occur in design option X, whereas the greatest collision risk may arise in design option Y. Hence, the MDO may be different depending on the Likely Significant Effect in question. Importantly, the MDO always represents the greatest magnitude of Likely Significant Effect.
- B) The ADO reflects the option which will give rise to the lowest magnitude of Likely Significant Effect on a relevant European site.

2.2.3 In this respect, every Likely Significant Effect that the proposed development could give rise to, in all its permutations, is assessed in this SISAA. Specifically, effects arising from underwater noise, collision risk, vessels, interference with prey, physical habitat loss, sediment plumes and sediment deposition, invasive alien species, accidental pollution and EMF. See Part 1: Project Description of this Habitats Directive Assessment for more information on this.

2.2.4 In addition to the details or groups of details associated with the components listed above (where flexibility is being sought) the Likely Significant Effects arising from the wider design details and construction methods, that are also presented in the Project Description of this Habitats Directive Assessment, have been assessed as appropriate. Whilst flexibility is not being sought under section 287B for these elements, those associated design details and construction methods are nonetheless incorporated into the MDO and ADO approach to ensure that all details are considered and assessed.

2.2.5 The precautionary approach taken to defining the MDO and ADO ensures that the AA screening stage identifies all aspects of the project for which there is a likelihood of significant effects on European sites and the species for which they are designated.

2.2.6 Insofar as Stage 2 AA is concerned, the NIS includes an assessment of those Likely Significant Effects that were screened in at Stage 1, also based on the MDO and ADO. The precautionary approach taken to defining the MDO and ADO for each effect ensures that the AA identifies all aspects of the project which could adversely affect the integrity of the site concerned in view of its conservation objectives. No adverse effect of greater significance than those which have been assessed will arise from the project. Therefore, there can be certainty that all the aspects of the project which can, either individually or in combination with other plans or projects, adversely affect the integrity of the European site concerned, in view of its conservation objectives, have been identified in the light of the best scientific knowledge in the field. The specific parameters assessed are presented in table format within the NIS for each impact and Qualifying Interest (QI) identified as having potential for Likely Significant Effect.

2.2.7 As the OES and O&M base in Dún Laoghaire Harbour are not subject to an opinion on flexibility under section 287B, this screening assessment is undertaken in respect of these aspects of the proposed development as they are described in the project description.

Approach to decommissioning

2.2.8 For the offshore infrastructure, the AA screening has been undertaken for all phases of the project development, including decommissioning, in line with the Project Description of this HDA.

2.2.9 The Decommissioning and Restoration Plan (Volume 7, Appendix 2), including the three rehabilitation schedules attached thereto, describes how the Applicant proposes to rehabilitate that part of the maritime area, and any other part of the maritime area, adversely affected by the permitted maritime usages the subject of the MACs (Reference Nos. 2022-MAC-003 and 004 / 20230012 and 240020). It is based on the best scientific and technical knowledge available at the time of submission of this planning application. However, the lengthy passage of time between submission of the application and the carrying out of decommissioning works (expected to be in the region of 30-35 years) gives rise to knowledge limitations and technical difficulties. Accordingly, the Decommissioning and Restoration Plan will be kept under review by the Applicant as the project progresses, and an alteration application will be submitted if necessary. In particular, the Plan will be reviewed having regard to the following:

- The baseline environment at the time rehabilitation works are proposed to be carried out;
- What, if any, adverse effects have occurred that require rehabilitation;
- Technological developments relating to the rehabilitation of marine environments;
- Changes in what is accepted as best practice relating to the rehabilitation of marine environments;
- Submissions or recommendations made to the Applicant by interested parties, organisations and other bodies concerned with the rehabilitation of marine environments; and/or
- Any new relevant regulatory requirements.

2.2.10 Given these limitations and for the purposes of this SISAA, the screening has taken a precautionary approach to decommissioning of the offshore infrastructure.

2.2.11 The Decommissioning and Restoration Plan provides a description of the decommissioning activities. As the final details of same are not yet certain, the impacts on all receptors during the decommissioning phase are considered to be similar to those outlined in the construction phase. For offshore infrastructure, turbines are to be removed in a reversal of construction methodology with pilings cut off at or below the seabed to a depth so as not to become uncovered in the future, cables and scour protection left *in situ* with all hazardous materials to be removed or contained prior to removal from site. Similarly, the Offshore Substation Platform (OSP) will be removed and returned to shore for decommissioning and disposal.

2.2.12 Given the scale and nature of decommissioning activity, for the purposes of Stage 1 screening only, where a potential for likely significant effects (LSE) arises for construction activity sites will be screened in for both decommissioning and construction. A standalone assessment has been undertaken within Stage 2 to address decommissioning activity in line with the Decommissioning and Restoration Plan.

2.2.13 Insofar as the onshore electrical infrastructure is concerned, this will be transferred into the ownership of Eirgrid after the proving period. Eirgrid will be the ultimate entity with responsibility for the onshore electrical system and will decide whether to decommission or continue to use the assets. Accordingly, this planning application does not seek permission for decommissioning of the onshore electrical system. However, for the purpose of enabling environmental assessment, the Applicant's recommended approach to decommissioning the onshore assets is set out in the onshore project description. The Applicant has environmentally assessed this proposal. This proposal is based on the Applicant's experience of decommissioning onshore electrical systems and knowledge of how Eirgrid typically do this. As above, where a potential for LSE arises for construction activity, sites will be screened in for both decommissioning and construction.

Mitigation

2.2.14 For the purposes of Stage One AA Screening it is permissible to take account of the constituent elements of the proposed project that are inherent in it and which have the effect of reducing the harmful effects of the project on the site concerned. This includes where such elements are incorporated into the design of the proposed project, not with the aim of reducing the negative effects of that project on the site concerned, but as standard features required for all projects of the same type.

2.2.15 Other measures (referred to as 'mitigation measures') that are intended to avoid or reduce a likely harmful effect of the proposed project on a European site should only be taken into account in the Stage Two AA, as such measures should be subject to a full and precise analysis of whether they are capable of avoiding or reducing the effects on the European site concerned, including the scrutiny afforded by the public participation process.

2.2.16 In April 2018, the CJEU issued a ruling in case C-323/17 People Over Wind and Peter Sweetman v Coillte Teoranta ("People Over Wind") that Article 6(3) of Directive 92/43/EEC must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an AA of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

2.2.17 Subsequently, in its June 2023 determination in Eco Advocacy (C-721/21) the CJEU considered again the issue of mitigation measures and held that "account may be taken of the features of that plan or project which involve the removal of contaminants and which therefore may have the effect of reducing the harmful effects of the plan or project on that site [i.e. EU site] where those features have been incorporated into that plan or project as standard features, inherent in such a plan or project, irrespective of any effect on the site."

2.2.18 Consistent with EU guidance and relevant case law during Stage One AA, when determining whether or not LSE may occur, measures intentionally introduced to avoid or reduce the harmful effects of the proposed development on European sites, (i.e. "mitigation measures") have not been taken into account in this SISAA.

Conservation Objectives

2.2.19 In order to determine whether significant effects are likely to occur to an SAC or SPA, the predicted effects must be measured against each site's conservation objectives ("CO").

2.2.20 Where site-specific CO documents have been published, these specific CO and QI target attributes that define Favourable Conservation Status for a particular habitat or species at a given site have been considered. The full list of CO have been included in Appendix A: Conservation Objectives.

2.2.21 For all sites where site-specific CO are not available, NPWS[2] has defined first order CO to maintain or restore the favourable conservation status of the Annex I habitat or Annex II species for which the SAC/SPA has been selected.

2.2.22 In a generic sense 'Favourable Conservation Status' of a habitat is achieved when:

- Its natural range, and area it covers within that range, are stable or increasing,;
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future; and
- The conservation status of its typical species is favourable.

2.2.23 While the 'Favourable Conservation Status' of a species is achieved when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

2.2.24 For some sites designated for marine mammal receptors (e.g. sites where marine mammal QIs have recently been designated), site-specific CO have not yet been published. In these cases, to ensure a robust and precautionary assessment, the approach taken in the HDA has been to assess against proxy site-specific CO from nearby sites of a similar nature(where appropriate) with the same QIs as these provide more focussed advice than the generic CO identified. This has been identified within Appendix A: Conservation Objectives and throughout the HDA.

[2] https://www.npws.ie/protected-sites/conservation-management-planning

Assessment of in combination effects

2.2.25 Article 6(3) of the Habitats Directive requires the Competent Authority to make the AA determination based on the effects of the project on its own and/or in-combination with other plans or projects, where these are not directly connected with or necessary to the management of the site. As set out in the Commission's 2019 Notice (European Commission, 2019), significance of the likely effect will vary depending on factors such as magnitude of impact, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

2.2.26 In line with guidance outlined in Section 1.3, plans or projects which are (i) completed, (ii) approved but remain uncompleted, (iii) are proposed for development consent by way of an application but are not yet approved, or (iv) are reasonably foreseeable projects in the pre-planning phase, whereby a Planning Application has not yet been made but there is sufficient information in the public domain about the project and its likely significant effects in order to include it in this assessment, have been considered. European Commission (2019) specifically advises that "as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced".

2.2.27 Consistent with all referenced guidance, it is proposed that projects that are built and operational, in respect of which no further works or licenced activities are permitted or anticipated, at the time that the project is assessed will be classified as part of the baseline conditions. Therefore, those projects and plans will be intrinsically part of the assessment of effects.

2.2.28 For screening purposes, there is a presumption that where potential for LSE has been identified for the project alone, then potential LSE in-combination applies. Consideration has also been given to the potential for an LSE in-combination even where the project alone was insufficient to trigger the threshold for potential LSE; however, given the precautionary nature of the screening conducted on the project on its own, no such instances have been identified either by the project or through consultation.

2.2.29 The process for assessing plans and projects in combination with the project alone is to define a long list that captures the maximum suite of projects to be considered. This is undertaken on a receptor basis to allow for the mobile nature of some QIs. Once the long list has been established, projects are screened to determine those on the list that are taken forward for assessment within the NIS.

2.2.30 The establishment of the list to take forward to Stage 2 will involve consideration of multiple lines of evidence that establish whether projects create a pathway for an effect to arise through a temporal and/or spatial overlap with the effects identified for the Dublin Array. The full approach for individual receptors is outlined in Section 7. This includes projects that result in effects that have an immediate temporal overlap or those that run sequentially over a period of time that may extend beyond the construction, O&M and decommissioning phases for Dublin Array as defined within the Project Description of this Habitats Directive Assessment.

Ex situ habitats

2.2.31 Consideration of spatial effects has been considered at a scale appropriate to the receptor to ensure the assessment considers fragmentation of relevant habitats across an appropriate scale but also the consideration of ex situ habitats that support QIs outside of the boundaries of SAC and SPAs. DEHLG (2009) guidance states – *"All likely sources of effects arising from the plan or project under consideration should be considered together with other sources of effects in the existing environment and any other effects likely to arise from proposed or permitted plans or projects. These include ex situ as well as in situ plans or projects".*

2.2.32 In that regard, consideration has been given within this SISAA to potential effects on habitats and species located outside of relevant European Sites where pathways exist and effects upon them have potential to affect the COs of any sites being assessed.

Source-pathway-receptor approach

2.2.33 The source-pathway-receptor (S-P-R) framework is the standard method of approach used across a number of European Directives to assess the potential for QIs to be affected by a project. It aims to characterise the means (pathways) via which the effect from a source (such as the works being proposed) could be experienced by receptors (sensitive QIs of a European site). Only where there is an identifiable source, a pathway and a sensitive receptor, is there likely to be a significant effect. The S-P-R framework refers to its three comprising elements that must all be present to identify a potential effect-pathway.

2.2.34 The pathway of an effect is defined through a Zone of Influence (ZoI), that outlines the geographical scale of the effect over which it could affect the receiving environment in a way that could have significant effects on the QI of a European site. A ZoI is often referred to as a 'footprint' of an effect; for example, reference to the footprint of a sediment plume defines the maximum extent the plume might travel from the source.

2.2.35 S-P-R relationships are not always linear, and effects might be transmitted beyond the 'footprint' via hydrological pathways or enabled by impacts on another receptor (indirect effects). Notwithstanding this, how an effect might progress from its source along pathways to a particular European site can easily be discerned with reference to the receiving environment. Consideration of supporting habitat (defined as areas that can be used by a species, in particular those which may be listed as a feature of a European site, to support that species survival and/or reproduction) is also important here, for example ex situ sites utilised for foraging by bird species.

2.2.36 DEHLG (2009) and OPR (2021) guidance suggests the ZoI should be established on a case-by-case basis using the S-P-R framework and not by arbitrary distances. The ZoI has been used to inform the search area within which European sites are screened for Stage One assessment of the relevant QI. For many types of development or effects, it is relatively simple to define the ZoI because the projects or effects are geographically discrete, and the number of receptors and types of impact are low. Generally, a single search (typically distance) parameter can be applied to determine the extent of a project's effects.

2.2.37 For offshore wind developments, however, numerous effect-pathways can arise due to species mobility. These pathways are complex and potentially distributed across a vast spatial scale and extend to sites further afield due to the mobility of potential receptors (i.e. birds, marine mammals and fish). Since mobile species from European sites further afield may travel into the ZoI, the ZoI cannot be used alone to screen in relevant conservation sites. Therefore, search areas for each receptor group have been applied taking into consideration other information such as pathways, known foraging distances and management units to use for the initial screening of sites. Justification for the spatial extent of the search area is provided in Table 3 and presented in Figure 3.

2.3 Consultation

2.3.1 Consultation undertaken to support this screening for AA is provided in Table 2. Comments are captured from consultation specific to the AA process but also where relevant consultation was undertaken in support of the EIAR.

Table 2 Consultation undertaken in support of the AA screening

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
National Parks and Wildlife Services (NPWS)	May 9th2019' Dublin	Article 12, Habitats Directive reporting would be publicly available in July 2019 and that colony counts would be published online and that data from the ObSERVE Programme and the report "Seasonal Distribution and Abundance of Seabirds in the Western Irish Sea 2016" would be a useful reference. This report would be used to designate additional or extended SPAs in Q2/3 2019.	Sections 4.4 and 4.5 provide an overview of the receiving environment for marine mammals and ornithology drawing on a wide range of data sources. Consideration has also been given to the new SPA designations.
		The most recent seal colony count data, including Lambay SAC should be available late 2019. Thermal imagery report showing seal haul outs is awaiting publication and will be available shortly. The project should take account of the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (2014).	Consideration has been given to the Guidance and/or any more recent updates for appropriate mitigation options at Stage 2 of the AA where relevant.
		Irish Wildlife Manual included surveys of the Kish and Bray banks. In the Republic of Ireland (ROI) everything above the 20 m contour is regarded as Annex I sandbank. There is however no intention to designate any further SACs for sandbank feature.	This is noted by the Applicant. Given the lack of designated sites, impacts on Annex I sandbank features have been addressed within the EIAR.
	November 10th 2020, Online	Screening to include Woodward *et al.*, 2019 foraging ranges for breeding seabirds.	Table 3 defines the ranges applied with specific reference to Woodward *et al*, 2019.
		Approach to non-breeding seabirds, British Trust for Ornithology (BTO) Strategic Ornithological Support Services (SOSS) publication which identifies key migratory pathways would be used. A semi-quantitative approach for migratory waterfowl and wader is proposed drawing on the BTO SOSS-05 report, 2012, which identifies migration routes between Ireland and the UK and other strategic studies such as Marine Scotland, 2014. A qualitative approach for passerines is proposed with reference migration tracking websites (for example, www.trektekken.nl), Wright *et al.,* 2012 and Wernham *et al.,* 2002.	Table 3 presents the approach to screening. Connectivity will be identified based on the migratory corridors defined for relevant species. The approach discussed in 2020 has since been superseded with updated information on migratory corridors (Woodward *et al.* 2023) and the further development of the sCRM tool (mCRM)"

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
			https://hidefdevo.shinyapps.io/mCRM/
		Confirmation that data should be sourced from SPA sheets on NPWS website.	Noted throughout
		New marine SPAs in the eastern Irish sea are may come forward. Observe and tracking study data are currently being modelled however there are currently no lines on a map.	The North-west Irish Sea SPA published in 2023 and the Seas off Wexford published in 2024 have been incorporated into the receiving environment in Section 4.5, with assessment in Table 15 and Table 16
		Divers/seaducks may not be present in significant numbers on any particular day but may pass through the area frequently and if so, numbers could be significant taken over a period of time.	Noted throughout
		Query whether available seabird colony count data had been identified and advised that the most recent data had been passed to JNCC advised further checks to confirm that all data had been identified through the JNCC portal.	The majority of seabird counts have been derived from the JNCC SMP portal, noting some more recent counts are available in published literature, for example Cummins *et al.,* (2019). Most recent available counts have been used throughout.
		Survey of the SAC was conducted in 2016 and harbour porpoise data from that was now available, also the recently published Irish Wildlife Manual would provide data for both harbour and grey seal.	Section 4.4 provides an overview of the receiving environment for marine mammals drawing on a wide range of data sources.
		Advised the assessment was very explicit about extent of plumes associated with different sediment fractions as planning applications had been challenged in this previously where there was ambiguity within the application documents.	The assessment of plume dispersal and deposition has been informed by project specific modelling as detailed in Section 5.3
	03 October 2023, Online	NPWS noted the potential use of tracking studies to identify birds from SPA colonies that may have a greater reliance on the Dublin Array site	Where available, tracking studies have been used to understand potential

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
		than may be apparent from the proposed apportioning method. However, noted the lack of tracking data currently available. Identified availability of unpublished tern data. Moss *et al.,* and sister SEAI report contain tracking data on kittiwake and herring gull in addition to shag.	connectivity of ornithological features with Dublin Array (Section 6).
		With regard to the North-west Irish Sea (NWIS) SPA, confirmed that a greater focus should be given to those SPAs which are associated with the NWIS SPA rather than the SPA itself as some species will forage beyond the boundary of the latter (as undertaken within apportioning). Confirmed that the distribution of common scoter, great northern diver and red-throated diver are influenced by water depth, as there are not many sandbanks away from the coastline, there would likely be a coastal bias in distribution. NPWS to share unpublished data supporting the proposed designation of the NWIS SPA.	The approach to assessment of the NWIS SPA follows the approach discussed with NPWS.
		With regard to the Wicklow Head SPA, NPWS noted that the population of kittiwake was considered to be in decline and not self-sustaining. This is likely to be attributed to availability of prey resource but not much was known about additional on-site pressures. As another Phase 1 project had undertaken to continue counts at Wicklow Head this year, NPWS had reallocated their monitoring effort to the Saltee Islands instead. NPWS had not currently commenced work to determine what measures were required to address decline in kittiwake numbers at Wicklow Head but these are likely to be prey related. NPWS want to improve knowledge on food webs in the region.	The comments from NPWS were noted by the Applicant and taken into consideration within the PVA and NIS assessment conclusions for kittiwake at Wicklow Head and other east coast SPAs.
		The number of breeding terns Dalkey Island SPA were queried, noting the last available count was two pairs and BWI indicated they no longer bred there. NPWS advised there was an East Coast Tern meeting in November 2023 at which BWI would provide an update on the current status of breeding tern at Dalkey Island SPA. The purpose of the meeting was to review success of avian flu mitigation measures and implement the successful actions at other colonies in the 2024 breeding season. The	No further updates regarding terns were received from NPWS. It is assumed that there are no roseate terns currently breeding at Dalkey Island SPA, based on correspondence between BirdWatch Ireland and CWP on behalf of the East Coast Phase 1

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
		Applicant asked if an update could be provided after the East Coast Tern meeting.	projects. Roseate terns at Dalkey Island SPA have therefore been screened out in the breeding season (Section 6).
		With regard to shag at Lambay Island SPA, NPWS noted shag were between 'low' to 'no displacement' risk but would be useful to include in the assessment of displacement effects.	Shag within foraging range from Lambay Island SPA, have been screening in for potential impacts on displacement (Section 6).
		With regard to the herring gull population at Skerries Island SPA, NPWS advised that there was not sufficient tagging of birds to determine whether herring gull from Skerries Island were moving into the neighbouring urban areas. Noted populations are shifting, but that could be due to a variety of factors e.g. higher productivity rates in urban colonies. Monitoring of this site is a priority for NPWS in 2024.	Skerries Island SPA and the urban colony have been treated as separate colonies within the assessments.
		Query whether any acoustic monitoring was undertaken to provide insight into habitat usage at night and in unfavourable weather conditions. Acoustic data was available from the Irish Whale and Dolphin Group (IWDG) static acoustic monitoring surveys. NPWS advised they are expecting the first draft of the revised Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters soon and it is anticipated that this will be provided for public consultation and extensive engagement with ORE industry.	No updates published for noise Guidance prior to submission of this SISAA.
		The key sensitive benthic habitats included reef features and sandbanks which meet the criteria of Annex I habitat *'Sandbanks which are slightly covered by sea water all the time'.* Suggested the use of the 10 m contour to delimit the extent of the sandbank may be appropriate but confirmed that the use of the 20 m contour as proposed was sensible and precautionary. Advised that the potential extent of the nearshore reef	The potential for reef to be present ex situ of the designated sites is assessed in Section 4.3 with consideration of ex situ reef within the LSE assessment.

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
		which had been mapped was more extensive that the actual feature presence.	
NPWS	December 8th 2023, Review of the Phase 1 Methodology Statement	The Irish 'East Coast Phase 1 projects' (Dublin Array, Codling Wind Park, Arklow Bank Wind Park, North Irish Sea Array (NISA) and Oriel Wind Farm) submitted a joint methodology statement to NPWS outlining the approach to the ornithology assessments. This included the approach to collision risk modelling (CRM), displacement, barrier effects, apportioning, population viability analysis (PVA) and migratory bird assessments. NPWS consulted ABPmer, UK Centre for Ecology & Hydrology (UKCEH) and BioSOSS to provide a written response to the proposed methodology. It is noted that this review is the viewpoint of the relevant contracted consultees, and not specifically that of NPWS.	The response has been considered through the ornithology assessment methodology.
	Email dated March 2024	Confirmation of notice in relation to new qualifying interest being added to a number of existing SACs	All existing sites identified for harbour porpoise and bottlenose dolphins as new QIs have been considered within this SISAA.
Irish Whale Dolphin Group (IWDG)	December 1st 2020, Online	The Zone of Influence is proposed to be determined by Management Unit (MU) or foraging range, i.e. Harbour porpoise: Celtic and Irish Seas MU; Bottlenose Dolphin: Irish Sea MU; Pinnipeds – defined by known foraging ranges for harbour (120 km – SMRU, 2011) and grey seal (145 km – Thompson *et al*., 1996). SB advised that there was little evidence of bottlenose dolphins from Wales being present on the Irish Coast, rather there is evidence of a nearshore population which move around the coast of Ireland with some connectivity with Scotland. A UCC study estimated	Table 3 provides an overview of the approach to defining ZoI and pathways that include reference to Management Units for marine mammals and use of latest tracking and foraging ranges published in Carter *et al*, 2022.

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
		this coastal population to be approximately 200 individuals. IWDG estimate a population between 300 – 400.	
		The density estimate for harbour porpoise derived from these surveys, 0.214 hp/km^2 is very similar to the SCANS III density estimate of 0.239 hp/km^2 but lower than the ObSERVE survey data. It was noted that the survey areas across all three data sets were very different. The Confidence Value (CV) of the site-specific surveys is good, 24.1. A list of additional data sets was presented that the assessment has drawn upon. It was considered the density estimates were quite low and advised that the density estimates derived from the 2016 survey of the Rockabill Dalkey SAC for Article 17 were 1.3-1.7 hp/km^2. It was agreed that the density estimate was an important parameter in the assessment process as it was used to predict the number of animals which would be exposed to an effect in the context of the management or biological unit. It was confirmed that the assessment would not rely on site specific surveys alone but would consider a range of data sets.	Section 4.4 provides an overview of the receiving environment for marine mammals outlining the wide range of data sources.
		The proposed approach to assessment of noise impacts, using the permanent threshold shift (PTS) and Temporary threshold shift (TTS) onset thresholds from Southall and appropriate dose response curves for displacement effects was discussed. The proposed dose response for harbour porpoise is derived from observations of this species in the Moray Firth during the construction of Beatrice Offshore Wind Farm. The dose response curve for seals is from tracking studies of harbour seal but will also be used for grey seal, this is considered precautionary as harbour seal are more susceptible to disturbance than grey seal. PL asked whether habituation of animals to ambient noise was taken into account in the assessment. CB advised it was not but agreed habituation to noise was an interesting research question.	Noted throughout
		IWDGs view that the population was highly mobile but there was evidence of residency for some period of their life cycle.	Noted throughout

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
		Importance of prey availability to harbour porpoise productivity and asked whether this was an input into the model. Little is known about harbour porpoise prey on east coast, although there is an apparent hot spot to the north of the wind farm site where aggregations of both birds and marine mammals are commonly sighted.	Noted throughout
IWDG	Letter dated November 3rd 2020, Scoping Response	In their correspondence dated 3rd November 2020, IWDG state that the development site is close to Lambay Island, which has grey seals listed as a QQI and it is likely that seals from Lambay will enter the Dublin Array Site. So even though they are >15 km from the site, guidelines suggest an ecological approach to impact zones and are not a strict distance limit.	Table 3 provides an overview of the approach to defining ZoI and pathways that include reference to Management Units and foraging ranges used for marine mammals.
		In their correspondence dated 3rd November 2020, IWDG suggest that while harbour porpoises and grey seals are the two species dominating the community in this area, connectivity should be considered. This includes species such as bottlenose dolphins which are occasionally seen as part of a highly mobile coastal population. Due to the size of this population any individual impacts could result in population effects so should be considered.	Section 4.4 provides an overview of the receiving environment for all designated species of marine mammals. Consideration has been given to all sites designated within the ZoI for harbour porpoise, bottlenose dolphins, grey and harbour seal, including sites which bottlenose dolphin and harbour porpoise have been added as QIs in March 2024.
Inland Fisheries Ireland (IFI) Scoping Response	23 November 2020 Letter response to scoping report	In their correspondence dated 23rd November 2020, IFI suggest that the Trenchless technique is the preferred option for cable installation at all locations, landfall, watercourses and the intertidal area Timing constraints do not apply to trenchless techniques which may take place at any time of year subject to agreement with IFI on a method statement and location of the crossing points. The Construction Environmental Management Plan should include a frack- out contingency plan to eliminate any adverse effects from the trenchless procedure.	The Project Description of this Habitats Directive Assessment provides details of the trenchless technique options at the landfall and inland watercourses.

Consultee	Consultation type and date	Consultation and key issues raised	Section where provision is addressed
Marine Institute	November 30th 2020, Letter response to scoping	Section 5.6 Offshore ornithology – Listing of species and relevant SPA colonies may not be sufficiently inclusive. It is difficult to see how any species of seabird or migratory wading bird could be excluded from the NIS screening or NIS assessment. Recent data shows the north Irish Sea as a very important area for seabirds. Densities are higher in this area than in any Irish coast area. Common Scoter is designated in SPAs in Dundalk but occur south along the Meath coast at least. They obviously migrate through the area. They are not listed in Table 12. Impact on Terns needs to be given recognition. The MI is also a source of seabird data in the Irish Sea.	The approach to defining the ZoI and pathways for bird species is provided in Table 3. The approach for birds is precautionary and incorporates all sites designated including the NWIS SPA.

3 Relevant European sites and Qualifying Interests

3.1 Overview

3.1.1 To establish the relevant European sites and QIs to be taken forward for screening, consideration is given to the S-P-R approach defined in Section 2.2, with the source being defined within the activities and methodologies presented within the Project Description of this Habitats Directive Assessment. The pathway of an effect is defined through a ZoI, that outlines the geographical scale of the effect over which it could affect the receiving environment in a way that could have significant effects on the QI of a European site.

3.1.2 For offshore wind developments, however, numerous effect-pathways can arise due to species mobility. These pathways are complex and potentially distributed across a vast spatial scale and extend to sites further afield due to the mobility of potential receptors (i.e. birds, marine mammals and fish). Since mobile species from European sites further afield may travel into the ZoI, the ZoI cannot be used alone to screen in relevant conservation sites. Therefore, search areas for each receptor group have been applied taking into consideration other information such as pathways, known foraging distances and management units to use for the initial screening of sites.

3.1.3 Justification for the spatial extent of the search area is presented in Table 3 with spatial areas shown in Figure 3.

3.1.4 The search areas defined were then plotted using GIS to map all European sites within Ireland and across other jurisdictions that overlap to establish the sites to be taken forward for screening.

3.1.5 This process identified a total of 142 European sites (53 SACs [47 with an offshore element; six onshore] and 89 SPAs) that require further consideration and screening for LSE.

Table 3 Receptor ranges applied

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Type of Receptor - Habitats – subtidal and intertidal				
Construction & Decommissioning Operation & maintenance	Habitat disturbance	Cable laying operations, jack-up leg impacts and seabed preparation works for foundations and associated cable protection, presence of jack-up vessels during construction and maintenance operations	Within the direct footprint of the array area, Offshore ECC, OES and O&M base.	Habitat QIs occur wholly within the spatial extent of the development site. The pathways for direct impact to arise is limited to the immediate footprint of the disturbance. The search area is defined as the array area and offshore export cable route
Operation & maintenance	Habitat loss	The presence of the WTG and OSP foundations and the associated scour protection (if installed), along with the cable protection measures used at cable crossings and areas where cable burial is not possible, will lead to a change from a sedimentary habitat to one characterised by hard substrate.	Within the direct footprint of the array area, Offshore ECC, OES and O&M. The pathway for impact to arise is limited to the immediate footprint of any direct construction activity and any hard substrate.	

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Construction & Decommissioning Operation & maintenance	Release of suspended sediment and deposition	Sediment disturbance during the installation of cables, WTG and foundations is expected to increase the concentration of sediments in the water column and possibly the extent and thickness of sediments subsequently deposited on marine habitats within the dispersal range of the sediment plume.	ZoI informed by modelling undertaken to support the project[3] to determine the maximum footprint for sediment dispersion and deposition. The modelling identified that the maximum extent of the plume is defined by the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km.	
Construction & Decommissioning Operation & maintenance	Accidental pollution	Construction activities may result in accidental pollution from leaks and/or accidental spillage which can affect the sediment and water quality.	Screening undertaken based on the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km for vessels on site and consideration given to vessels transiting to site.	
Construction & Decommissioning Operation & maintenance	Introduction or spread of invasive alien species (IAS)	The passage and movement of construction and O&M vessels/vehicles onshore and offshore and consideration given to vessels transiting to site.	Screening undertaken based on the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km.	
Operation & maintenance	Changes in physical processes	Man-made structures such as scour protection and foundations may result in localised changes in hydrodynamics and wave regimes, with a potential effect on sediment transport pathways and associated effects on benthic and intertidal ecology.	Screening undertaken based on the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km. This ZoI and buffer around the proposed development is both precautionary. These boundaries and the modelled tidal ellipse buffer area effectively characterise the predicted zone of potential primary (direct) and secondary (indirect) impacts of the development on physical processes receptors respectively.	

[3] To quantify the potential impacts of the construction and operation, maintenance and decommissioning of the array area and Offshore ECC on the physical marine environment a suite of project specific calibrated numerical models, which collectively form The Dublin Array Physical Process Modelling System (DAPPMS). This includes a Hydrodynamic (HD) model and a Spectral Wave (SW) model, which have been used to quantify changes to the physical environment from the proposed wind farm development during its operational life span, please refer to Appendix 4.3.1-2 of Volume 4 of the EIAR

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Operation & maintenance	Electromagnetic Fields (EMF)	EMFs are generated by subsea cables and detectable above background levels in close proximity to the cables. Within close proximity (10s of metres) of the cables . Normandeau, Exponent, Tricas, T. and Gill, A. (2011)	Following the precautionary approach EMF has been screened in for subsequent consideration based on the best available evidence. The screening has been undertaken on the footprint of the offshore Export Cable Corridor ("ECC ") and inter array cables-.	
Marine mammals				
Construction & Decommissioning	Underwater noise	Construction activities, in particular pile-driving activities for foundations and cable installation, will result in increased levels of underwater noise. Additionally, activities such as vessel traffic during construction will also lead to underwater noise.	Underwater noise modelling has been conducted to provide quantitative information to inform the assessment of potential impacts on marine mammal receptors.	<u>Cetaceans</u> The range for marine mammal varies depending on the species, considering individual species ecology and behaviour. For all species, the study area covers the array area and Offshore Export Cable Corridor (ECC) and is extended over an appropriate area considering the scale of movement and population structure for each species. For each species, the area considered in the assessment is largely defined by Management Units (MUs) which were defined by the Inter-Agency Marine Mammal Working Group in 2015[4] and based on the best understanding of the structure of biological populations and any ecological differentiation within such populations. The principle for range is based on the fact that almost all species of cetaceans found in UK waters are part of larger biological populations whose range extends into the waters of other European states. The search area will be defined as
Construction & Decommissioning Operation and maintenance	Vessel disturbance	Presence of vessels on site and transit from ports	Within the offshore project boundary and transit route to port	
Construction & Decommissioning Operation and maintenance	Collision risk	Increased vessel traffic may result in an increased collision risk to marine mammals	Within the offshore project boundary and transit route to port	
Construction & Decommissioning Operation & maintenance	Introduction or spread of invasive alien species (IAS)	The passage and movement of construction and O&M vessels/vehicles onshore and offshore and consideration given to vessels transiting to site.	Screening undertaken based on the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km.	

[4] IAMMWG. 2015. Management Units for cetaceans in UK waters (January 2015). JNCC Report 547, JNCC, Peterborough, ISSN 0963-8091

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Construction & Decommissioning Operation & maintenance	Changes in prey availability and behaviour	Prey species could be affected by changes to water quality, suspended sediment, underwater noise, direct habitat loss or damage, changes to physical processes and IAS	Screening distance is aligned with the precautionary distance applied to Screen for effects related to suspended sediment and deposition 17km form the project boundary	the Irish Sea MU for bottlenose dolphins and the Celtic and Irish Sea MU for harbour porpoise. <u>Pinnipeds</u> In line with advice from IWDG, screening for seals has been undertaken on the basis of foraging ranges. Consideration of the latest guidance published in Carter *et al*, 2022 that defines typical foraging range for species as 100 km for grey seals and 50 km for harbour seals (Carter *et al*, 2022).
Construction & Decommissioning Operation & maintenance	Accidental pollution	Construction activities may result in accidental pollution from leaks and/or accidental spillage which can affect the sediment and water quality	Screening undertaken based on the maximum extent of the plume	
Operation & maintenance	Physical habitat loss	The presence of the WTG and OSP foundations and the associated scour protection (if installed), along with the cable protection measures used at cable crossings and areas where cable burial is not possible, will lead to a change from a sedimentary habitat to one of hard substrate.	Within the direct footprint of the array area, Offshore ECC and O&M base	
Construction & Decommissioning	Temporary increases in suspended sediments/ smothering	A temporary increase in suspended sediment concentrations and associated sediment deposition may arise from construction activities (e.g. cable and foundation installation).	17 km (extent of the spring tidal excursion as modelled to determine the maximum extent of plumes.	

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Ornithology – Breeding and non-breeding birds				
Operation & Maintenance	Habitat loss	Presence of WTGs Temporary land-take and /or physical ground disturbance associated with construction activities could result in the loss, damage or fragmentation of habitats supporting birds.	Within the project footprint of the array area, Offshore ECC, OES and O&M base.	
Operation & Maintenance	Collison Risk (turbines)	Presence of WTGs.	Only occurs in rotor swept area. Requires bird to fly across the rotor swept area.	Mean maximum foraging ranges are based on seabird tracking data, these foraging ranges are used to highlight potential connectivity between breeding colonies and offshore wind farms and, therefore, the potential for any negative population-level effects. The use of Woodward *et al* (2019) has the potential to enable more robust and representative assessments of species' foraging ranges, thereby reducing uncertainty in assessments and consenting risks. The approach to the use of Woodward *et al*, as discussed with NPWS[5] is consistent with the approach taken for UK offshore wind projects breeding colonies and captures sites within mean maximum foraging range +1SD6. Site specific maximum foraging ranges were obtained from Woodward *et al*., (2019). Tracking data referred to for gannet and Manx shearwater referenced for certain sites below was obtained from
Construction & Decommissioning Operation & maintenance	Disturbance and displacement/barrier effects	Presence of vessels and construction activity Presence of WTGs	The ZoI extends across all areas of activity for construction, decommissioning and for O&M activity. Construction activity at the landfall and O&M base has the greatest potential to impact intertidal birds, Displacement buffers for waterbirds are based on a 0.5 km displacement buffer (Cutts *et al*., 2013) as per previous UK precedent.	
Construction & Decommissioning Operation & maintenance	Underwater noise			
Construction & Decommissioning Operation & maintenance	Disturbance (non-physical) Light/airborne noise/visual			
Construction & Decommissioning Operation & maintenance	Habitat disturbance	Cable laying operations, jack-up leg impacts and seabed preparation works for foundations and associated cable protection presence of jack-up vessels during construction and maintenance operations	To be assessed on a case-by-case basis with reference to the distribution of supporting habitat. Professional judgement will be used to consider the likelihood of habitat disturbance that could	

[5] Online meeting held with Applicants and NPWS on 19 November 2020

[6] The Standard deviation calculated uses the mean max and mean foraging ranges as defined by Woodward et al, (2019), the data presented in Woodward including the sample size for each species, the breeding stage at which foraging data were collected, if known (e.g. incubation, chick-rearing), and the maximum and mean foraging ranges recorded.

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
			lead to habitat fragmentation for qualifying features. Consideration has been given to ex situ habitats in the case of foraging behaviour.	Wakefield *et al.*, (2013) and Dean *et al.* (2015), respectively. In the non-breeding season, birds will range beyond these foraging ranges and therefore consideration is given to the wider regional sea area derived from Furness (2015). For designated non-breeding seabirds and waterbirds, the ZoI for disturbance/displacement is species dependent consistent with the UK precedent: - Red-throated diver = 10 km (SNCB, 2022); - Divers and seaducks = 4 km (SNCB, 2022); - All other seabirds = 2 km (SNCB, 2022); and - Waterbirds = 0.5 km (Cutts *et al.*, 2013). Visual and noise stimuli associated with construction activities (e.g. the movement of plant and personnel and / or artificial lighting) could be observed by Annex I birds present within the search area (e.g. wintering wader species feeding on inland fields at high tide, or those transiting other areas). Disturbance of birds could result in changes to foraging behaviour and loss of condition.
Construction & Decommissioning Operation & maintenance	Increase in Suspended sediment.	Effects on fish prey due to suspended sediment and underwater noise. Screening distance is aligned with the precautionary distance applied to	Up to 17 km based on the maximum extent of sediment plume and deposition footprint.	Effects on fish prey due to suspended sediment and underwater noise. Screening distance is aligned with the precautionary

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
	Changes in prey availability and behaviour	screen for effects related to sediment dispersal.		distance applied to screen for effects related to sediment dispersal.
Construction & Decommissioning Operation & maintenance	Pollution	Construction vehicle, vessels and staff movement (airborne and water based). Emissions could be generated by spillages of fuels or leaking construction plant.	For onshore – The potential for emissions to ground or surface water bodies is captured within a 15km buffer that has been defined to take consideration of potential hydrological connections between the project and designated sites via surface water and groundwater. The OES is located within the Dargle sub-catchment, and the O&M base is situated within the Dodder sub-catchment. The OES and O&M base are both situated within the Wicklow groundwater body (IE_EA_G_076), and poor bedrock aquifer, which is generally unproductive except for local zones. Whilst these do encompass several European designated sites, no onshore European designated sites are located downgradient of the OES or O&M base with regards to onshore ecology. Based on this, the 15 km buffer for onshore works was considered appropriate. Offshore extent informed by the maximum tidal extent plus buffer (17km)	
Ornithology – Migratory birds				
Operation & maintenance	Risk of collision	Presence of WTGs.	Only occurs in rotor swept area. Requires bird to fly across the rotor swept area.	Connectivity will be identified based on the migratory corridors defined for relevant species in Woodward *et al*. (2023), which were defined from an extensive literature review. This has been compiled within the sCRM tool (mCRM): https://hidefdevo.shinyapps.io/mCRM/. In line with the UK approach and OREDP II AA screening, only risk of collision is considered for these species. Given the offshore location of the array area, it is extremely unlikely that any of the migratory waterbird species would make frequent movements across the array area (e.g. when commuting between foraging

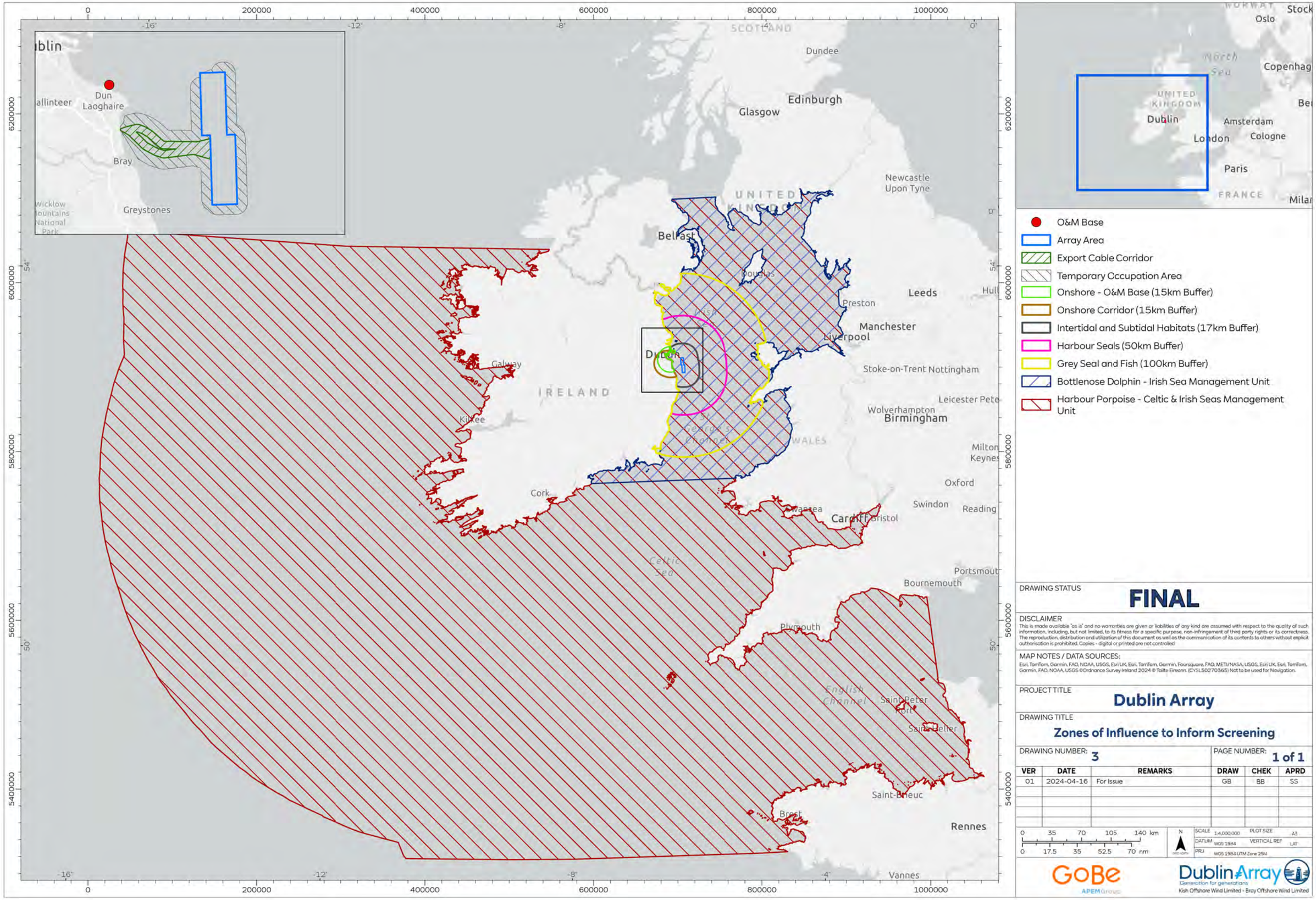
Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
				and roosting sites), and it is considered that collision risk for these species is limited to their migratory movements.
Migratory Fish				
Construction & Decommissioning Operation & maintenance	Release of suspended sediment and associated sediment deposition	Sediment disturbance during seabed preparation works and the installation of cables and WTG and OSP foundations is expected to increase the concentration of sediments in the water column and possibly the extent and thickness of sediments subsequently deposited on marine habitats within the dispersal range of the sediment plume.	17 km (extent of the spring tidal excursion)	ZoI informed by modelling undertaken to support the project to determine the maximum footprint for sediment dispersion and deposition. The modelling identified that the maximum extent of the plume is defined by the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km.
Construction & Decommissioning	Underwater noise	Construction activities, in particular piling of foundations, will result in increased levels of underwater noise. Additionally, activities such as dredging, rock placement and vessel traffic will also lead to underwater noise.	100 km Underwater noise modelling has been conducted to provide quantitative information to inform the assessment of potential impacts arising from underwater noise on migratory fish.	For all species, the extent of the search area has been selected to fully encapsulate modelled maximum impact ranges for the onset of Temporary Threshold Shifts (TTS) and is extended over an appropriate area considering the location of designated sites, associated estuaries and the potential pathways of migratory species within the Irish Sea. . The 100 km screening range is applied to the mouth of designated rivers.
Construction & Decommissioning Operation & maintenance	Habitat disturbance	Cable laying operations, seabed preparation works for foundations and associated anchoring and jack-up operations during construction operations will result in temporary disturbances to the seabed. Temporary disturbance of the seabed will also arise during maintenance and decommissioning activities.	Within the footprint of the array area, Offshore ECC and O&M base.	The pathways for direct impacts to the seabed to arise is limited to the immediate footprint of the disturbance. The search area where this type of pressure may occurs is therefore defined as the array area and offshore export cable route.

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Construction & Decommissioning Operation & maintenance	Release of contaminated sediments and accidental pollution	Construction, O&M and decommissioning activities may result in accidental pollution from leaks and/or accidental spillage, which can affect the sediment and water quality. Additionally, sediment-bound contaminants may be released into the water column.	17 km (extent of the spring tidal excursion)	ZoI informed by modelling undertaken to support the project to determine the maximum footprint for sediment dispersion and deposition. The modelling identified that the maximum extent of the plume is defined by the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km.
Construction & Decommissioning Operation & maintenance	Introduction or spread of invasive alien species (IAS)	The passage and movement of construction and O&M vessels/vehicles onshore and offshore and consideration given to vessels transiting to site.	17 km (extent of the spring tidal excursion)	
Operation & maintenance	Habitat loss and increase in hard substrate and structural complexity	The presence of the WTG and OSP foundations and the associated scour protection (if installed), along with the cable protection measures used at cable crossings and areas where cable burial is not possible, will lead to a change from a sedimentary habitat to one characterised by hard substrate. The presence of hard substrate could be used a refuge for fish species.	Within the direct footprint of the array area, Offshore ECC and O&M base.	The pathways for direct impact to arise is limited to the immediate footprint of any infrastructure on the seabed, including scour protection, cable protection and protection at cable crossings. The search area where this type of pressure may occurs is therefore defined as the array area and offshore export cable route.
Construction & Decommissioning Operation & maintenance	Changes to physical processes	Man-made structures placed on the seabed such as foundations and scour/cable protection may result in localised changes in hydrodynamics and wave regimes, with a potential effect on sediment transport pathways. This may have subsequent impacts on migratory fish receptors via their prey species.	17 km (extent of the spring tidal excursion)	ZoI informed by modelling undertaken to support the project to determine the maximum tidal extent, calculated as 16 km. For the purposes of screening the extent of this pathway has been defined as a precautionary 17 km. The modelled tidal ellipse buffer effectively characterises the predicted zone of potential primary (direct) and secondary (indirect) impacts of the development on physical processes receptors, respectively.

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Operation & maintenance	EMF	EMFs will be generated by subsea cables and detectable above background levels in close proximity to the cables.	Within close proximity (10s of metres) of the cables (Normandeau, Exponent, Tricas, T. and Gill, A. (2011))	The pathways for direct impact to arise is limited to the immediate proximity of the cables, i.e. within 10s of metres.
Onshore				
Construction & Decommissioning	Temporary habitat loss	Construction activities can lead to temporary habitat loss, damage, disturbance, fragmentation and / or severance.	Within the direct footprint of the OES and O&M base	Bats- Bat Conservation Ireland – Bats and Appropriate Assessment Guidelines states that all cSACs within 15 km of the proposal that contain lesser horseshoe bats as a QI should be considered as potential impact receptors at this stage. The OREDP II SEA used a buffer of 30 km from the coast of where bats were an interest feature, this precautionary approach has been followed within this screening. Otters – With reference to species presence within ZoI and connectivity to SACs noting foraging range is typically 10 – 20 km of river or stream (McCafferty undated) but can be up to 40 km (Roche, 1995) for male otters. Consideration has also been given to the presence of active holts. Noting NRA (2008) guidance that at states derogations are also required for any works likely to cause disturbance (e.g. piling and blasting) to active breeding holts (when present within c.150m of a scheme).
Construction & Decommissioning	Temporary disturbance / damage to habitats		Within the direct footprint of the OES and O&M base and 15 km buffer	
Construction & Decommissioning Operation & maintenance	Habitat fragmentation or severance		Within the direct footprint of the OES and O&M base and 15 km buffer	
Construction & Decommissioning Operation & maintenance	Hydrological changes	Potential disruption of the hydrological functioning of coastal and or benthic habitats in close proximity to the onshore works (e.g. altered saline balance, run-off scour) during excavations and/or trenching) and/or through the permanent presence of the buried cable(s).	Within the direct footprint of the OES and O&M base and 15 km buffer	
Construction & Decommissioning Operation & maintenance	Disturbance (non-physical) Light/airborne noise/visual	Construction vehicle, vessels and staff movement	500 m for bird species (precautionary based upon Cutts *et al*, 2013)	

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
Construction & Decommissioning Operation & maintenance	Invasive non-native species		Within the direct footprint of the OES and O&M base and 15 km buffer	Intertidal birds– please see ornithology. Onshore Habitats – within 15 km buffer from the footprint of the OES and O&M base for non-mobile receptors, approach is in line with DEHLG Guidance (2009) and OPR (2021) which recommends a distance of 15 km in the case of plans and derives from UK guidance. As outlined above consideration has been given to potential hydrological connections between the project and designated sites via surface water and groundwater. The OES is located within the Dargle sub-catchment, and the O&M base is situated within the Dodder sub-catchment. The OES and O&M base are both situated within the Wicklow groundwater body (IE_EA_G_076), and poor bedrock aquifer, which is generally unproductive except for local zones. Whilst these do encompass several European designated sites, no onshore European designated sites are located downgradient of the OES or O&M base with regards to onshore ecology. Based on this, the 15 km buffer for onshore works was considered appropriate. Other pathways including disturbance from airborne noise from the onshore works which could arise from construction and installation of the cables, in particular though trenchless techniques used for
Construction & Decommissioning Operation & maintenance	Accidental release of contaminants		Within the direct footprint of the OES and O&M base and 15 km buffer	

Phase of development	Potential pressure type	Source	ZoI of Pressure Type	Search Area / Pathway
				cross terrestrial watercourses for installation along the OES. Intertidal birds – please see ornithology and reference to SNCB, 2022



DRAWING STATUS

FINAL

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PROJECT TITLE

Dublin Array

DRAWING TITLE

Zones of Influence to Inform Screening

DRAWING NUMBER: **3** PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 35 70 105 140 km
0 17.5 35 52.5 70 nm

N (GRID NORTH)

SCALE 1:4,000,000 PLOT SIZE A3
DATUM WGS 1984 VERTICAL REF LAT
PRJ WGS 1984 UTM Zone 29N

GoBe APEM Group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

3.2 SACs with offshore component

3.2.1 All Sites identified that fall within the relevant search areas as defined in Table 3 which have boundaries that extend below MHWS are identified within Table 4 and shown in Figure 4 for marine mammals and Figure 5 for benthic subtidal and intertidal habitats and migratory fish.

3.2.2 The location of the European sites in relation to the offshore wind farm infrastructure[7], landfall, O&M base in Dún Laoghaire Harbour are presented. The distances provided represent the closest distance between the European site and the project infrastructure. Distances provided are straight line (Euclidean) as calculated using GIS and as such are precautionary in nature.

[7] Offshore infrastructure encompasses all offshore activity to be undertaken within the array area, offshore ECC and temporary occupation area.

Table 4 Summary of all offshore SACs identified for purpose of AA Stage One screening

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
Rockabill to Dalkey Island SAC [IE003000]	Reefs [1170] Harbour Porpoise (*Phocoena phocoena*) [1351]	1.77	0.00	2.80	1.50
The Murrough Wetlands SAC [IE002249]	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] Alkaline fens [7230] Perennial vegetation of stony banks [1220]	8.19	10.41	21.01	14.99
Howth Head [IE000202]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	8.80	12.38	7.82	13.21
Bray Head SAC [IE000714]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	9.06	2.76	11.43	5.40
North Dublin Bay SAC [IE000206]	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Petalophyllum ralfsii (Petalwort) [1395]	11.86	11.48	5.43	11.63
Ireland Eye SAC [IE002193]	Perennial vegetation of stony banks [1220], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	12.48	16.74	12.27	17.67

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
South Dublin Bay SAC [IE000210]	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Annual vegetation of drift lines Embryonic shifting dunes	13.60	6.38	1.16	6.48
Baldoyle Bay SAC [IE000199]	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	14.00	16.08	10.58	16.46
Codling Fault Zone SAC [IE003015]	Submarine structures made by leaking gases [1180] Harbour Porpoise (*Phocoena phocoena*) [1351]	14.47	20.08	29.96	30.07
Lambay Island SAC [IE000204]	Grey Seal (*Halichoerus grypus*) [1364] Harbour Seal (*Phoca vitulina*) [1365] Harbour Porpoise (*Phocoena phocoena*) [1351] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	19.59	26.12	21.71	27.15
North Anglesey Marine SAC [UK0030398]	Harbour Porpoise (*Phocoena phocoena*) [1351]	38.245	42.69	53.74	53.61
River Boyne and River Blackwater SAC [IE002299]	River lamprey (*Lampetra fluviatilias*) [1099] Salmon (*Salmo salar*) [1106] Otter (*Lutra lutra*) [1355] Alkaline fens [7230] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae)* [91E0]	51.53	53.69	48.31	53.78
Blackwater Bank SAC [IE002953]	Sandbanks which are slightly covered by sea water all the time [1110] Harbour Porpoise (*Phocoena phocoena*) [1351]	70.45	75.71	84.94	79.17
West Wales Marine / Gorllewin Cymru	Harbour Porpoise (*Phocoena phocoena*) [1351]	75.75	81.97	98.76	94.22

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
Forol SAC [UK0030397]					
Pen Llyn a'r Sarnau SAC [UK0013117]	Grey Seal (*Halichoerus grypus*) [1364] Bottlenose dolphin (*Tursiops truncatus*) [1349] Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160 Reefs [1170] Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Submerged or partially submerged sea caves [8330] Otter (*Lutra lutra*) [1355]	77.88	83.57	100.16	96.15
Slaney River Valley SAC [IE000781]	Sea lamprey (*Petromyzon marinus*) [1095] Freshwater pearl mussel (*Margaritifera margaritifera*) [1029] River lamprey *(Lampetra fluviatilias*) [1099] Twaite shad (*Alosa fallax fallax*) [1103] Harbour Seal (*Phoca vitulin*) [1365] Salmon (*Salmo salar*) [1106] Otter (*Lutra lutra*) [1355] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Brook lamprey (*Lampetra planeri*) [1096] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260],	94.20[8]	94.20	114.00	94.20

[8] Distance provided for migratory fish species for Slaney River Valley SAC and River Boyne and River Blackwater SAC is to the mouth of the river at the offshore/marine boundary of the SAC

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinos*a and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]Ad				
North Channel SAC [UK0030399]	Harbour Porpoise (*Phocoena phocoena*) [1351]	100.96	110.00	107.89	112.81
Carnsore Point SAC [IE0002269]	Harbour Porpoise (*Phocoena phocoena*) [1351] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170]	102.52	107.82	116.87	111.16
Cardigan Bay SAC [UK0012712]	Bottlenose dolphin (*Tursiops truncatus*) [1349] Grey Seal (*Halichoerus grypus*) [1364] Sandbanks which are slightly covered by sea water all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330] Sandbanks which are slightly covered by sea water all the time [1110] Sea lamprey (*Petromyzon marinus*) [1095] River lamprey (*Lampetra fluviatilias)* [1099]	119.49	126.42	142.10	136.39
Hook Head SAC [IE0000764]	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Bottlenose Dolphin (*Tursiops truncatus*) [1349] Harbour Porpoise (*Phocoena phocoena*) [1351]	119.80	122.49	128.85	123.98
The Bristol Channel Approaches SAC [UK0030396]	Harbour Porpoise (*Phocoena phocoena*) [1351]	178.65	185.46	200.86	195.06
Bunduff, Lough and Machair/ Trawalua/ Mullaghmore SAC [IE0000625]	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	204.57	201.26	196.12	201.33

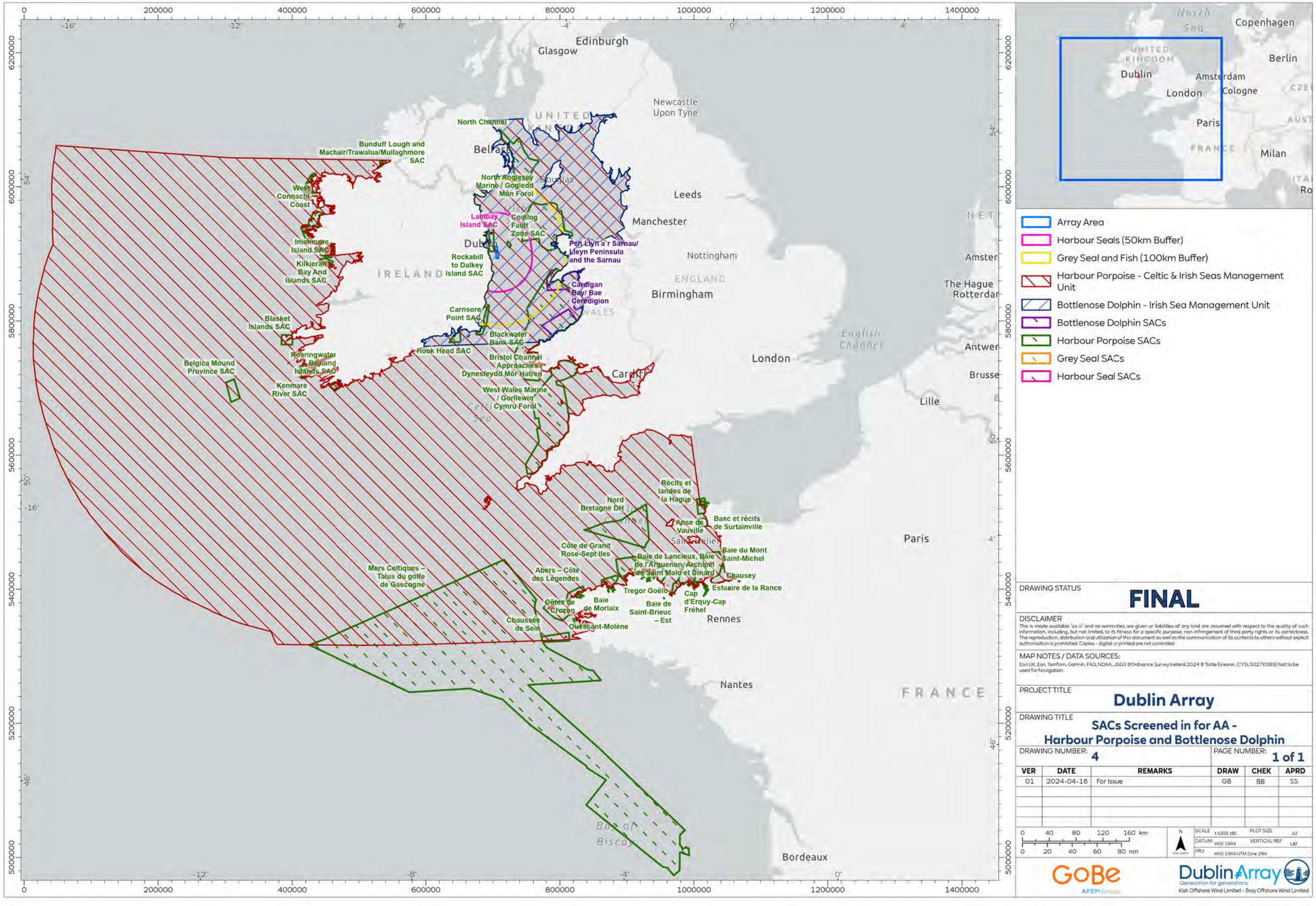
SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Harbour Porpoise (*Phocoena phocoena*) [1351] Petalwort (*Petalophyllum ralfsii*) [1395] Machairs [21A0] Humid dune slacks [2190] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) [6210] Alkaline fens [7230] Euphydryas aurinia (Marsh Fritillary) [1065]				
Kilkieran Bay and Islands SAC [IE0002111]	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Machairs (* in Ireland) [21A0] Harbour Porpoise (*Phocoena phocoena*) [1351] Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365] Slender Naiad (*Najas flexilis*) [1833] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510]	239.60	229.37	227.27	229.29
Inishmore Island SAC [IE0000213]	Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Harbour Porpoise (*Phocoena phocoena*) [1351]	243.06	232.26	230.84	232.26

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
	Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]				
West Connacht Coast SAC [IE0002998]	Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	258.96	250.25	247.20	250.28
Kenmare River SAC [IE0002158]	Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Harbour Porpoise (*Phocoena phocoena*) [1351] Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365] European dry heaths [4030]	285.35	280.07	281.86	280.14

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
	Juniperus communis formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014] Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]				
Roaringwater Bay and Islands SAC [IE000101]	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Harbour Porpoise (*Phocoena phocoena*) [1351] Otter (*Lutra lutra*) [1355] Grey Seal (*Halichoerus grypus*) [1364] European dry heaths [4030] Submerged or partially submerged sea caves [8330]	295.17	291.85	294.38	291.92
Blasket Island SAC [IE002172]	Grey Seal (*Halichoerus grypus*) [1364] Harbour Porpoise (*Phocoena phocoena*) [1351] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330]	326.48	318.65	319.30	318.69
Belgica Mound Province SAC [IE0002327]	Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349] Reefs [1170]	431.26	424.33	425.35	424.39
Nord Bretagne DH SAC [FR2502022]	Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	424.44	431.19	444.64	438.61
Mers Celtiques-Talus du golfe de Gascogne SAC [FR5302015]	Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	449.46	455.53	465.66	459.81
Récifs de la Hague SAC [FR2500084]	Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	464.57	471.44	487.65	482.10

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
Anse de Vauville SAC [FR2502019].	Grey Seal (*Halichoerus grypus*) [1364] Harbour Seal (*Phoca vitulina)* [1365] Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	472.28	479.16	495.32	489.75
Côte de Granit Rose-Sept-Iles SAC [FR5310011]	Harbour Porpoise (*Phocoena phocoena*) [1351]	481.60	488.74	502.51	496.51
Tregor Goëlo SAC [FR5300010].	Harbour Porpoise (*Phocoena phocoena*) [1351]	489.39	496.28	510.86	504.91
Banc et récifs de Surtainville SAC [FR2502018]	Grey Seal (*Halichoerus grypus*) [1364] Harbour Seal (*Phoca vitulina)* [1365] Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	489.44	496.93	512.39	506.77
Baie de Morlaix SAC [FR5300015]	Grey Seal (*Halichoerus grypus*) [1364] Otter (*Lutra lutra*) *[1355]* Harbour Porpoise (*Phocoena phocoena*) [1351]	503.53	510.27	523.76	517.74
Abers – Côtes des Légendes [FR5300017]	Grey Seal (*Halichoerus grypus*) [1364] Harbour Seal (*Phoca vitulina)* [1365] Otter (*Lutra lutra*) [1355] Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	505.33	511.98	524.87	518.85
Ouessant-Molène [FR5300018]	Grey Seal (*Halichoerus grypus*) [1364] Otter (*Lutra lutra*) [1355] Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	517.72	524.10	535.74	529.77
Cap d'Erquy-Cap Frehel [FR3102002]	Harbour Porpoise (*Phocoena phocoena*) [1351]	532.09	539.02	554.43	548.61
Chausey SAC [FR3102003]	Harbour Porpoise (*Phocoena phocoena*) [1351]	537.49	544.40	560.25	554.55

SAC and site code	Qualifying Interest	Distance (km)			
		Array area	Offshore ECC	O&M base	Landfall
Côtes de Crozon SAC [FR5302006]	Grey Seal (*Halichoerus grypus*) [1364] Otter (*Lutra lutra*) [1355] Harbour Porpoise (*Phocoena phocoena*) [1351] Bottlenose dolphin (*Tursiops truncatus*) [1349]	548.99	555.55	568.00	561.98
Baie de Saint-Brieuc – Est SAC [FR5310050]	Harbour Porpoise (*Phocoena phocoena*) [1351]	548.94	556.87	571.05	565.19
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard [FR5300012]	Grey Seal (*Halichoerus grypus*) [1364] Otter (*Lutra lutra*) [1355] Harbour Porpoise (*Phocoena phocoena*) [1351]	561.83	568.76	584.13	578.30
Baie du Mont Saint-Michel SAC [FR2500077]	Harbour Porpoise (*Phocoena phocoena*) [1351]	566.33	573.24	589.15	583.47
Chaussée de Sein SAC [FR5302007]	Harbour Porpoise (*Phocoena phocoena*) [1351]	567.39	573.82	585.46	579.49
Estuaire de la Rance SAC [FR5300061]	Harbour Porpoise (*Phocoena phocoena*) [1351]	572.56	579.49	595.01	589.22



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PROJECT TITLE

Dublin Array

DRAWING TITLE

SACs Screened in for AA - Harbour Porpoise and Bottlenose Dolphin

DRAWING NUMBER: **4**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 40 80 120 160 km

0 20 40 60 80 nm

SCALE 1:5,033,165 PLOT SIZE A3

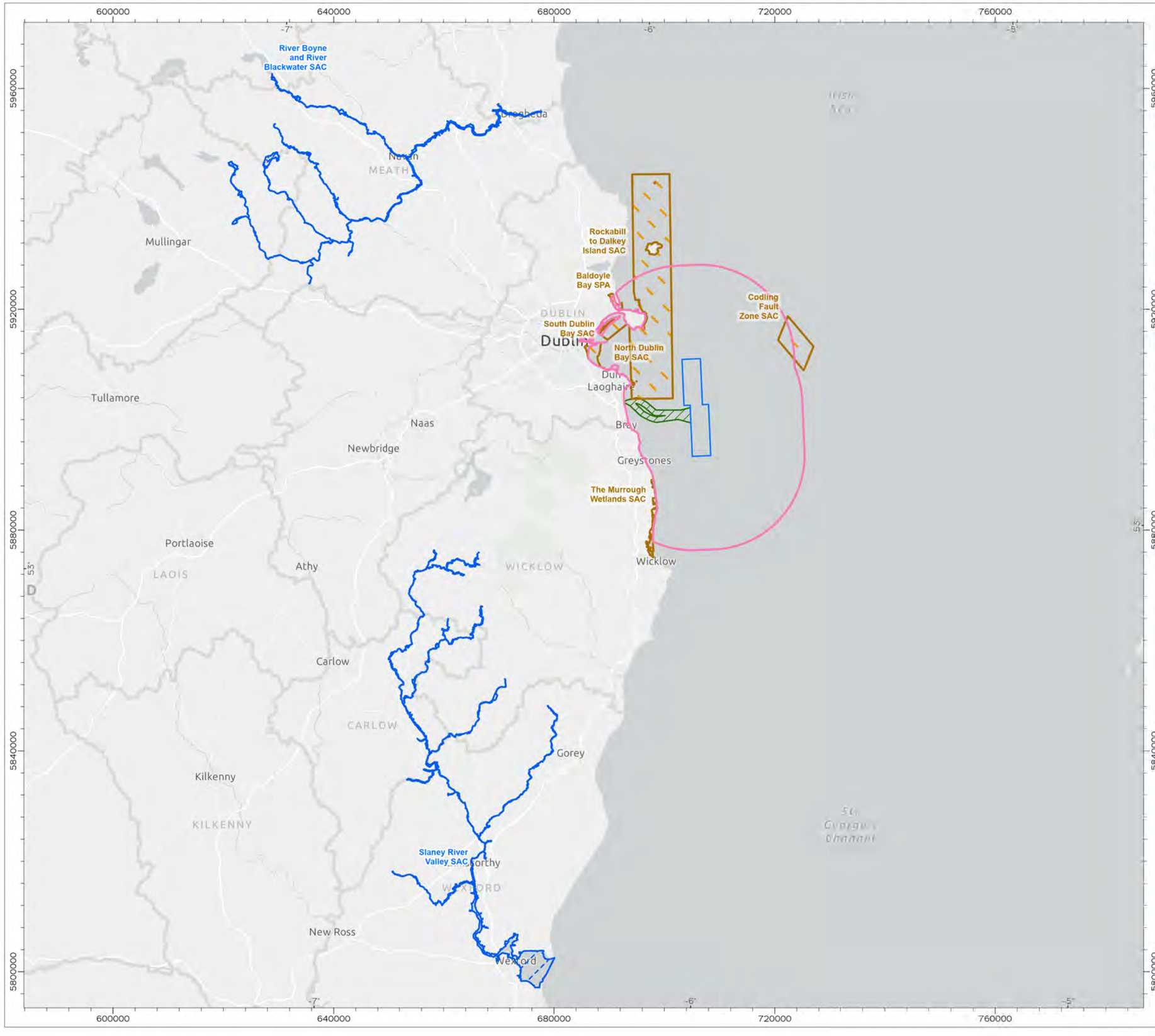
DATUM WGS 1984 VERTICAL REF LAT

PRJ WGS 1984 UTM Zone 29N

GoBe

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited



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PROJECT TITLE

Dublin Array

DRAWING TITLE

SACs Screened in for AA - Fish and Intertidal/Subtidal

DRAWING NUMBER: **5**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 6 12 18 24 km
0 3 6 9 12 nm

SCALE 1:700,000 PLOT SIZE A3
DATUM WGS 1984 VERTICAL REF LAT
PRJ WGS 1984 UTM Zone 29N

GoBe APEM group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

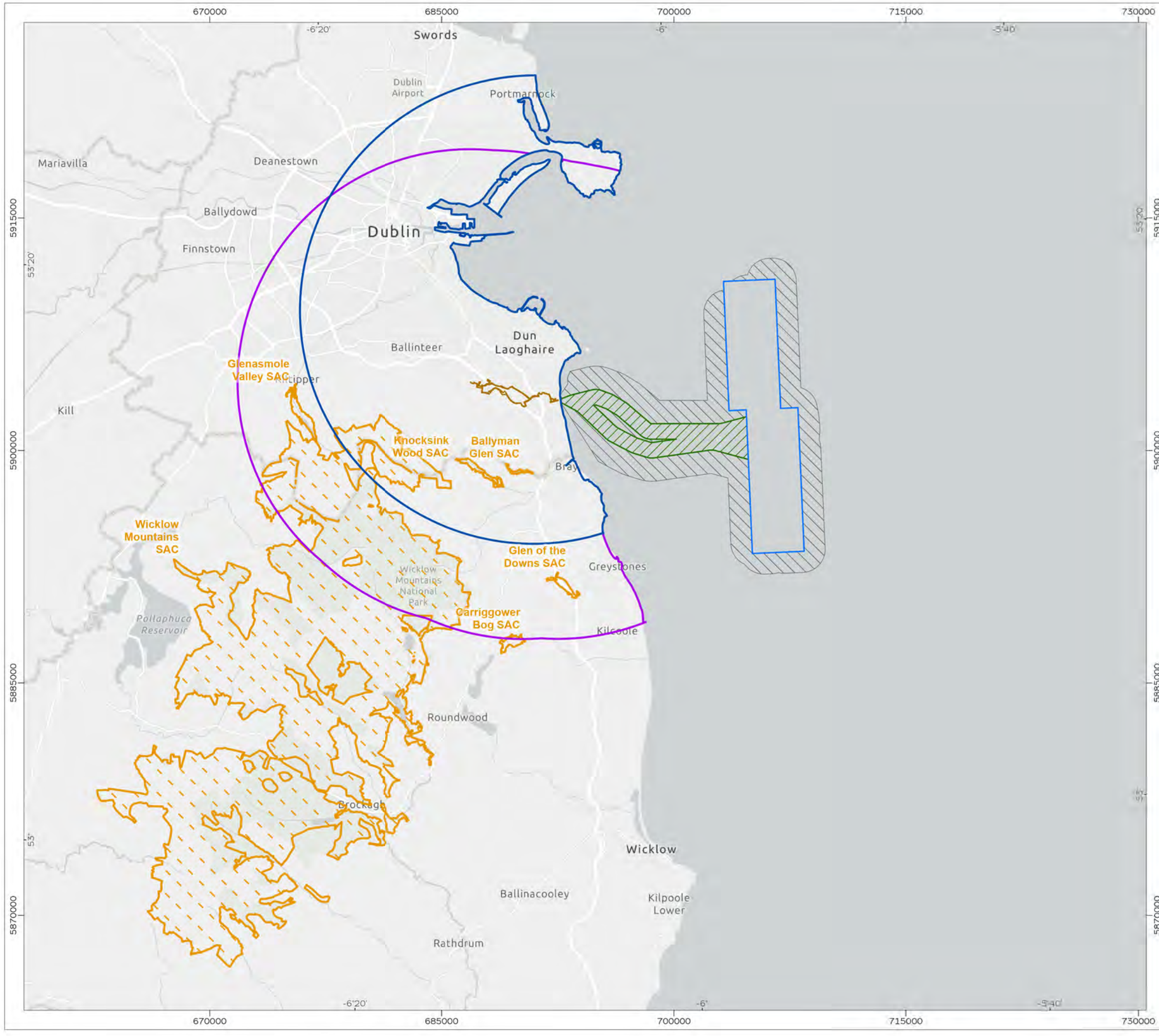
3.3 Onshore SACs

3.3.1 Table 5 presents distances from the onshore European SAC sites (those fully above MHWS) to the closest point of the TJB and/or OES and the O&M base. Distances to SACs are provided are straight line distance to the closest point of the TJB, OES or O&M base derived from GIS and therefore are inherently precautionary.

3.3.2 No distances have been provided to the landfall (located in the subtidal) or offshore infrastructure for onshore SACs as no pathway exists for any effects to extend beyond the MHWS.

Table 5 Onshore SACs screened in, considered at Stage 1 screening

SAC name and code	Qualifying Interest	Distance (km)	
		TJB / OES	O&M base
Ballyman Glen SAC [IE000713]	Petrifying springs with tufa formation (*Cratoneurion*) [7220] Alkaline fens [7230]	3.83	10.13
Glen of the Downs SAC [IE000719]	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	10.90	17.00
Wicklow Mountains SAC [IE002122]	Otter *(Lutra lutra*) [1355] Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Calaminarian grasslands of the *Violetalia calaminariae* [6130] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230], Blanket bogs (* if active bog) [7130], Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110], Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	5.80	11.77
Carriggower Bog SAC [IE000716]	Transition mires and quaking bogs [7140]	10.90	20.96
Glenasmole Valley SAC [IE001209]	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210], Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], Petrifying springs with tufa formation (*Cratoneurion*) [7220]	11.05	16.12
Knocksink Wood SAC [IE0000725]	Petrifying springs with tufa formation (*Cratoneurion*) [7220], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	4.35	10.55



- Array Area
- Temporary Occupation Area
- Export Cable Corridor
- Onshore Development Boundary
- Onshore Corridor (15km Buffer)
- Onshore - O&M Base (15km Buffer)
- Special Areas of Conservation (SACs)

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PROJECT TITLE

Dublin Array

DRAWING TITLE

SACs Screened in for AA - Onshore Sites

DRAWING NUMBER: **6**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 2 4 6 8 km
0 1 2 3 4 nm

N GRID NORTH

SCALE 1:250,000 PLOT SIZE A3
DATUM WGS 1984 VERTICAL REF LAT
PRJ WGS 1984 UTM Zone 29N

GoBe APEM group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

3.4 SPAs

3.4.1 Birds are highly mobile and can travel some distance from their breeding sites to forage or migrate to and from their non-breeding areas. There is, therefore, the potential for an impact to occur on QIs of SPAs beyond the site boundary. Furthermore, the extent and nature of their interaction with offshore wind farms can vary throughout their lifecycle. To account for this the approach for bird species is split to reflect the varying sensitivities and life stages of species likely to be present, throughout all project phases, and considers all breeding and non-breeding species separate to migratory birds (seabirds and water birds). The approach to screening for birds is precautionary and is in line with all advice received during the consultations and the pre-application consultation with ABPmer.

3.4.2 SPAs are screened in for designated breeding seabirds based on connectivity through defined foraging ranges in the breeding season, and based on the contribution of sites to the regional population in the non-breeding season. For migratory species, sites are screened in based on predicted passage through Dublin Array. Further details on the identification of sites to screen in for the assessment are provided in specific sections below.

3.4.3 Of note is the inclusion of the North-west Irish Sea (NWIS), designated in 2023[9]. SPA The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs.

3.4.4 The designated breeding species within the NWIS SPA are also designated at surrounding sites (see paragraph 3.4.5). These designated sites have been assessed on their own accord, separately from the NWIS SPA. Moreover, it is important to note that the array area is 3.4 km from the NWIS SPA, as assessments for collision risk are undertaken on the array boundary only, there is no pathway for collision risk impacts on the NWIS SPA (as the impact pathway for collision is specific to the array area only). For displacement, potential pathway for impacts is dependent on the buffer required. The only species that have a disturbance buffer (outlined in Table 3) which overlap with the NWIS SPA (i.e. >3 km) are common scoter (4 km buffer), great-northern diver (4 km buffer) and red-throated diver (10 km buffer). Therefore common scoter, great-northern diver and red-throated diver have been screened in.

3.4.5 As stated in the site synopsis, the breeding seabird species listed for those SPAs, which abut the NWIS SPA are as follows. All these SPAs are considered in their own right:

- Fulmar (Lambay Island SPA);
- Cormorant (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA);
- Shag (Skerries Island SPA; Lambay Island SPA);
- Lesser black-backed gull (Lambay Island SPA);
- Herring gull (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA);

[9] Site synopsis and Conservation Objectives published 17/07/2023 https://www.npws.ie/protected-sites/spa/004236

- Kittiwake (Lambay Island SPA; Ireland's Eye SPA; Howth Head SPA);
- Roseate tern (Rockabill SPA);
- Common tern (Rockabill SPA; South Dublin Bay and River Tolka Estuary SPA);
- Arctic tern (Rockabill SPA);
- Little tern (Boyne Estuary SPA);
- Guillemot (Lambay Island SPA, Ireland's Eye SPA);
- Razorbill (Lambay Island SPA, Ireland's Eye SPA); and
- Puffin (Lambay Island SPA).

3.4.6 The Seas off Wexford SPA has also been included in the screening. The seabirds designated at this site are listed in Table 7. The site has been designated for foraging seabirds and waterbirds due to the area's valuable feeding habitat which support twenty seabird species. Similarly to the NWIS SPA, the Seas off Wexford SPA focuses on conserving the habitat within it to support birds. Therefore, unlike breeding colony SPAs that measure connectivity using foraging ranges, only activities directly impacting birds within the SPA have connectivity to this site. The species designated at breeding SPAs that abut the Seas off Wexford SPA have been assessed on their own accord. It is important to note that the array area is 68.4 km from the Seas off Wexford SPA, as assessments for collision risk are undertaken on the array boundary only, there is no pathway for collision risk impacts on the Seas off Wexford SPA. For displacement, potential pathway for impacts is dependent on the buffer required. As the Seas off Wexford SPA is 68.4 km for the array area and 74.5 km from the Offshore ECC, there is also no connectivity for disturbance. This SPA has therefore been screened out for both displacement and collision.

3.4.7 The screening process also considers the presence of species in site-specific data, with species present in very low numbers screened out of further assessment (with the exception of migratory birds for which the screening process was not drawn from site-specific data). This was undertaken on a case-by-case basis using expert judgement. Puffin were screened out based on a peak count of 12 birds within the array area during the breeding season. Once impacted birds have been determined and apportioned to SPAs, the impact to all individual SPAs would be far lower than 0.1 breeding adults.

Breeding seabirds in the breeding season

3.4.8 In the breeding season, SPAs are screened in based on whether they are within foraging range of the proposed development, based on mean maximum foraging ranges (MMFR) (plus 1 standard deviation) presented in Woodward *et al*. (2019). This represents a highly precautionary approach because it determines connectivity based on the species average maximum foraging distance for each colony included within the study.

3.4.9 While some seabird species on the east coast of the UK may have foraging ranges that extend within the MMFR +1SD when measured in straight line distances, this does not accurately reflect the birds' actual movement patterns. Seabirds generally travel around land masses rather than crossing them. When accounting for the increased distances required to travel around land, almost all UK east coast sites fall outside the MMFR +1SD range for the Irish Sea. While some species with larger foraging ranges may theoretically be able to reach the Irish Sea, it is highly unlikely that birds from east coast colonies would do so during the breeding season. The key reason is that seabirds prioritize minimizing energy expenditure and will forage within closer distances where prey is readily available. Given that there is typically ample foraging opportunity within their current range, birds from the east coast of the UK are unlikely to make the long journey to the Irish Sea, even if some sites are technically within their potential foraging range. Additionally, there is no published evidence of birds routinely moving between the North Sea and Irish Sea during the breeding season.

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

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PROJECT TITLE

Dublin Array

DRAWING TITLE

SPAs Screened in for AA

DRAWING NUMBER: **7**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-04-16	For Issue	GB	BB	SS

0 50 100 150 200 km
0 25 50 75 100 nm

N (GRID NORTH)

SCALE 1:5,500,000 PLOT SIZE A3
DATUM WGS 1984 VERTICAL REF LAT
PRJ WGS 1984 UTM Zone 29N

GoBe APEM Group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

Breeding and/or non-breeding seabirds in the non-breeding season

3.4.11 In the non-breeding season, birds will generally disperse further afield than during the breeding season. Therefore in the non-breeding season, SPAs MMFR + 1SD within the wider regional sea area are therefore considered. For each species, the regional populations considered are defined in Furness (2015) (e.g., UK Western Waters) which is the standard approach for UK developments. The regional areas were adapted from Furness (2015) and extended to include the western Irish Sea (i.e. the regional non-breeding population sizes as outlined in the Ornithology Baseline of the EIAR.

3.4.12 This process was only undertaken for species identified in sufficient numbers to warrant an impact pathway in site-specific surveys, notably guillemot, razorbill, kittiwake, gannet, herring gull and lesser black-backed gull.

3.4.13 SPAs that have potential connectivity in the breeding season based on MMFR + 1 were considered in both the breeding and non-breeding season. In addition, SPAs within the wider region (as per paragraph 3.4.11) were identified for each species, with sites screened in for assessment if the SPA population contributed >1% to the regional population. Sites below this threshold are not considered further as the impact apportioned to these sites would be so low that there is no potential for LSE. For species with multiple non-breeding season population sizes (e.g., razorbill), the smallest population was used as a precautionary approach. SPA population sizes were taken from Furness (2015) for UK sites, and from the SMP database for Irish sites. This process is summarised for each relevant SPA in Table 6 below.

3.4.14 For sites that are subsequently screened in for the non-breeding season only, consideration is given to this impact in the O&M phase only. Though there is potential for displacement impacts in the construction (and decommissioning phase), based on UK standard practice the apportioned impact in the non-breeding season is lower than that in the breeding season, and the displacement rates used represent half those in the O&M phase. Taking these two factors into account, the resulting apportioned impact will be negligible. Since consideration is also given to all screened in sites in the O&M phase, the worst-case scenario for each SPA is considered within the assessment.

Table 6 Screening of SPAs and species in the non-breeding season based on percentage contribution to the regional population

Species	SPA	Regional population	SPA population size	Percentage contribution	Screening status
Black-Legged Kittiwake	Ailsa Craig SPA [UK9003091]	713,137	978	0.10	Out
	Canna and Sanday SPA [UK9001431]		1,640	0.20	Out
	Cape Wrath SPA [UK9001231]		20,688	2.90	In
	Flannan Isle SPA [UK9001021]		2,784	0.40	Out
	Handa SPA [UK9001241]		3,744	0.50	Out
	Helvick Head to Ballyquin SPA [IE00665]		130	0.00	Out
	Howth Head Coast SPA [IE004113]		3,546	0.50	Out
	Ireland's Eye SPA [IE004117]		802	0.10	Out
	Isles of Scilly SPA [UK9020288]		60	0.00	Out
	Lambay Island SPA [IE004069]		6,640	0.90	Out
	Mingulay and Berneray SPA [UK9001121]		4,456	0.60	Out
	North Colonsay and Western Cliffs SPA [UK9003171]		11,126	1.60	In
	North Rona and Sula Sgeir SPA [UK9001011]		2,506	0.40	Out
	Old Head of Kinsale SPA [IE004021]		1,422	0.20	Out
	Rathlin Island SPA [UK9020011]		15,844	2.20	In
	Rum SPA [UK9001341]		1,576	0.20	Out
	Saltee Islands SPA [IE004002]		2,076	0.30	Out
	Shiant Isles SPA [UK9001041]		1,098	0.20	Out
	Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]		2,090	0.30	Out
	St Kilda SPA [UK9001031]		1,914	0.30	Out
	Wicklow Head SPA [IE004127]		1,348	0.20	Out
Common Guillemot	Ailsa Craig SPA [UK9003091]	1,332,623	10,494	0.80	Out
	Canna and Sanday SPA [UK9001431]		7,826	0.60	Out
	Cape Wrath SPA [UK9001231]		54,718	4.10	In
	Flannan Isle SPA [UK9001021]		19,614	1.50	In
	Handa SPA [UK9001241]		75,986	5.70	In

Species	SPA	Regional population	SPA population size	Percentage contribution	Screening status
	Ireland's Eye SPA [IE004117]		4,410	0.30	Out
	Isles of Scilly SPA [UK9020288]		291	0.00	Out
	Lambay Island SPA [IE004069]		59,983	4.50	In
	Mingulay and Berneray SPA [UK9001121]		27,054	2.00	In
	North Colonsay and Western Cliffs SPA [UK9003171]		27,000	2.00	In
	North Rona and Sula Sgeir SPA [UK9001011]		10,000	0.80	Out
	Old Head of Kinsale SPA [IE004021]		4,157	0.30	Out
	Rathlin Island SPA [UK9020011]		174,796	13.10	In
	Rum SPA [UK9001341]		3,288	0.20	Out
	Saltee Islands SPA [IE004002]		25,851	1.90	In
	Shiant Isles SPA [UK9001041]		10,296	0.80	Out
	Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]		32,600	2.40	In
	St Kilda SPA [UK9001031]		31,400	2.40	In
	Sule Skerry and Sule Stack SPA [UK9002181]		15,266	1.10	In
Herring Gull	Ailsa Craig SPA [UK9003091]	187,094	258	0.10	Out
	Canna and Sanday SPA [UK9001431]		126	0.10	Out
	Helvick Head to Ballyquin SPA [IE00665]		40	0.00	Out
	Ireland's Eye SPA [IE004117]		796	0.40	Out
	Isles of Scilly SPA [UK9020288]		928	0.50	Out
	Lambay Island SPA [IE004069]		1,812	1.00	Out
	Morecambe Bay and Duddon Estuary SPA [UK9020326]		3,468	1.90	In
	Rathlin Island SPA [UK9020011]		56	0.00	Out
	Saltee Islands SPA [IE004002]		230	0.10	Out
Lesser Black-Backed Gull	Ailsa Craig SPA [UK9003091]	52,385	366	0.70	Out
	Isles of Scilly SPA [UK9020288]		6,800	13.00	In
	Lambay Island SPA [IE004069]		690	1.30	In
	Morecambe Bay and Duddon Estuary SPA [UK9020326]		9,974	19.00	In
	Rathlin Island SPA [UK9020011]		214	0.40	Out

Species	SPA	Regional population	SPA population size	Percentage contribution	Screening status
	Ribble and Alt Estuaries SPA [UK9005103]		16,534	31.60	In
	Saltee Islands SPA [IE004002]		262	0.50	Out
	Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]		19,280	36.80	In
	Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]		19,280	36.80	In
Great black-backed gull	Isles of Scilly SPA [UK9020288]	53,406	1,802	3.40	In
	North Rona and Sula Sgeir SPA [UK9001011]		382	0.70	Out
Northern Gannet	Ailsa Craig SPA [UK9003091]	535,183	54,260	10.10	In
	Grassholm SPA [UK9014041]		78584	14.70	In
	North Rona and Sula Sgeir SPA [UK9001011]		18,450	3.40	In
	Saltee Islands SPA [IE004002]		9,444	1.80	In
	St Kilda SPA [UK9001031]		119,244	22.30	In
	Sule Skerry and Sule Stack SPA [UK9002181]		9,350	1.70	In
Razorbill	Cape Wrath SPA [UK9001231]	366,961	4,180	1.10	In
	Flannan Isle SPA [UK9001021]		2,102	0.60	Out
	Handa SPA [UK9001241]		10,330	2.80	In
	Ireland's Eye SPA [IE004117]		1,600	0.40	Out
	Isles of Scilly SPA [UK9020288]		493	0.10	Out
	Lambay Island SPA [IE004069]		7,353	2.00	In
	Mingulay and Berneray SPA [UK9001121]		20,222	5.50	In
	North Rona and Sula Sgeir SPA [UK9001011]		2,178	0.60	Out
	Rathlin Island SPA [UK9020011]		30,786	8.40	In
	Saltee Islands SPA [IE004002]		6,519	1.80	In
	Shiant Isles SPA [UK9001041]		8,496	2.3	In
	Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]		12,002	3.3	In
	St Kilda SPA [UK9001031]		3,400	0.9	Out

Migratory birds

3.4.15 Migratory waterbird species have been screened in for the assessment of O&M phase to assess the potential impact from collision during migration. The decision on which SPAs, and associated species, were screened into the mCRM assessment was carried out by utilising a quantitative screening methodology.

3.4.16 In order to screen-in relevant SPAs to the project array, a quantifiable approach was used that captured the percentage of bird migration pathways that could intersect with the project array boundary. All geometry and data manipulation functions utilised within this method were carried out within the software QGIS 3.34. The code used to determine connectivity from SPAs with Dublin Array was based on Migropath, a tool developed by APEM Ltd. and supported within the Natural England guidance for migratory collision risk assessments (Parker *et al.* 2022).

3.4.17 Republic of Ireland and UK SPA boundary data was obtained from relevant sources (National Parks Wildlife Service (NPWS) and Joint Nature Conservation Committee (JNCC)). A centroid value was then calculated for each SPA, by using the geometry tool "Centroids". This algorithm creates a new point layer that represents the centroid of the geometrics of an input layer. The coastlines of Continental Europe and Iceland were split into 1 km points, with each point being labelled with a unique identification, to capture representative southern and northern bird migratory endpoints.

3.4.18 Using the "MMQGIS Hub Lines tool", each point along these coastlines were joined to the centre of each SPA. For each SPA this created a unique vector layer of lines from the SPA to each individual endpoint that represented all possible migratory pathways. Using the geoprocessing tool "Intersection" the number of lines, from each SPA to the north and south endpoints, that directly passed through the project array area could be counted. The "Intersection" algorithm extracts the overlapping proportions of features in an input layer (SPA lines shapefile) that overlap with an overlay layer (project array boundary). This process was repeated for each SPA.

3.4.19 Each individual SPA intersection was then combined into a single output by utilising the processing toolbox function "Merge vector layers". The "Statistics by categories" function was then used to create an exportable attributes table containing a list of all SPAs that intersected with the array area, and the number of lines to do so. SPAs that had no lines intersecting with the project array area were screened out at this point.

3.4.20 Utilising the number of northern (7,311) and southern (7,110) migratory endpoints, a percentage of lines intersecting with the project array area, for each relevant SPA, could then be calculated from the exported attributes table. Only those with migratory features with at least 10% of lines intersecting with the project array were screened in. SPAs with a lower percentage of intersections passing through the project array area were screened out because birds migrations from these SPAs are likely to result in negligible numbers passing through the site. Furthermore, when assessed within the collision risk model the predicted mortalities would be close to zero, and even lower when apportioned to these SPAs.

3.4.21 The screening in process is summarised in the flowchart below Figure 8Table 8. Additional reasons for including species in the migratory assessment may be stakeholder feedback or from factors identified in site-specific data, however none were identified in this case.

3.4.22 The initial screening was carried out to consider the migratory species designated to sites with >10% of migratory flight lines intersecting with Dublin Array. Screened in sites and species are presented in Table 7.

3.4.23 Seabirds designated at these SPAs were not considered, and any species whose flight path did not overlap with the Dublin Array were also not considered (for example, the Poulaphouca Reservoir SPA is designated for Greylag Goose, the migratory qualifying interests of this site do not have migratory corridors that overlap with Dublin Array, and therefore they are not considered further).

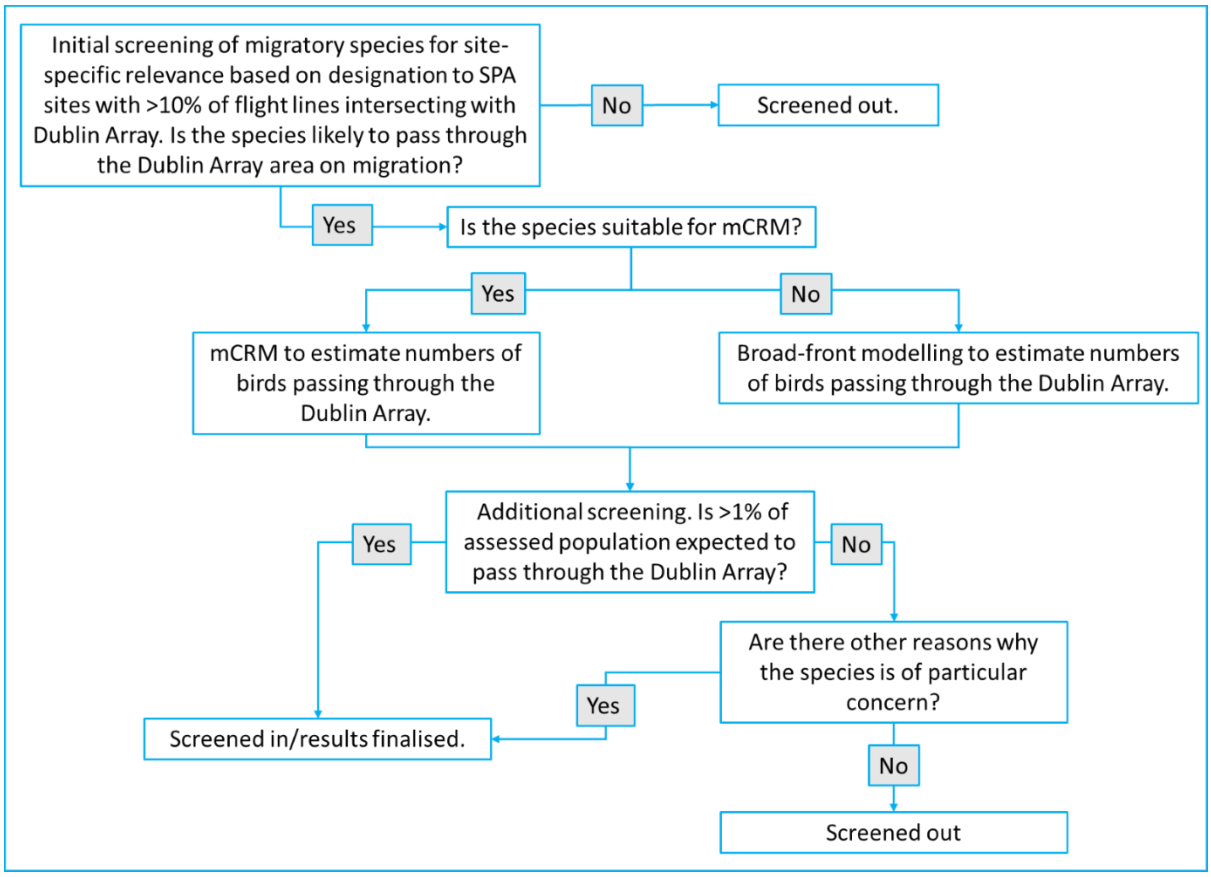


Figure 8 Flowchart illustrating the approach to screening for mCRM

Table 7 SPAs designated for migratory birds relevant to the Dublin Array (>10% intersecting migratory flight lines).

Designated site	Distance to Array (km)	Features screened in for collision risk
Dungarvan Harbour SPA [IE004032]	161.02	Great crested grebe (*Podiceps cristatus*), Light-bellied brent goose (*Branta bernicla*), shelduck (*Tadorna tadorna*), red-breasted merganser (*Mergus serrator*), oystercatcher (*Haematopus ostralegus*), golden plover (*Pluvialis apricaria*), grey plover (*Pluvialis squatarola*), lapwing (*Vanellus vanellus*), knot (*Calidris canutus*), dunlin (*Calidris alpina*), black-tailed godwit (*Limosa limosa*), bar-tailed godwit (*Limosa lapponica*), curlew (*Numenius Arquata*), redshank (*Tringa totanus),* turnstone (*Arenaria interpres*)
Ballymacoda Bay SPA [IE004023]	189.49	Wigeon (*Mareca Penelope*), teal (*Anas crecca),* ringed plover (*Charadrius hiaticula*), golden plover, grey plover, lapwing, sanderling (*Calidris alba*), dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone
Ballycotton Bay SPA [IE004022]	200.57	Teal, ringed plover, golden plover, grey plover, lapwing, black-tailed godwit, bar-tailed godwit, curlew, turnstone
Blackwater Estuary SPA [004028]	181.21	Wigeon, golden plover, lapwing, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank
North Bull Island SPA [IE004006]	10.22	Light-bellied brent goose, shelduck, teal, pintail (*Anas acuta*), shoveler (*Spatula clypeata*), oystercatcher, golden plover, grey plover, knot, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone
South Dublin Bay and River Tolka Estuary SPA [IE004024]	12.06	Light-bellied brent goose, oystercatcher, ringed plover, grey plover, knot, sanderling, dunlin, bar-tailed godwit, redshank
Baldoyle Bay Baldoyle Bay SPA [IE004016]	14.05	Light-bellied brent goose, shelduck, ringed plover, golden plover, grey plover, bar-tailed godwit
The Murrough SPA [IE004186]	2.39	Greylag goose (*Anser anser*), Light-bellied brent goose, wigeon, teal
Wicklow Mountains SPA [IE002122]	18.39	Merlin (*Falco columbarius*)

3.4.24 Please note Table 8 below identifies the qualifying features for SPAs, together with relevant assemblage features. For the purposes of screening, assemblage features were assessed individually, assuming that no AEoSI was predicted at species level, then there will be no AEoSI for the assemblage as a whole.

Table 8 SPAs identified for screening. For each SPA, both qualifying interests and assemblage features have been listed.

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Lough Derg (Donegal) SPA [IE004057]	Herring gull, Lesser black-backed gull	N/A	190.78	189.26	184.13
The Murrough SPA [IE004186]	Red-throated diver, Greylag goose, Light-bellied brent goose, Wigeon, Teal, Black-headed gull, Herring gull, Little tern	N/A	2.39	8.11	18.8
North Bull Island SPA [IE004006]	Light-bellied brent goose, Redshank, Shoveler, Shelduck, Turnstone, Oystercatcher, Teal, Black-headed gull, Golden plover, Pintail, Dunlin, Grey plover, Bar-tailed godwit, Black-tailed godwit, Knot, Curlew, Sanderling	N/A	10.22	11.44	5.39
Liverpool Bay/Bae Lerpwl SPA [UK9020294]	Common scoter, Little tern, Little gull, Common tern, Red-throated diver	Little gull, Common scoter, Red-throated diver, red-breaster merganser, cormorant	108.05	111.65	123.57
Strangford Lough SPA [UK9020111]	Sandwich tern, Arctic tern, Common tern, Light-bellied brent goose, Knot, Redshank	Bar-tailed godwit, Black-tailed godwit, Coot, Curlew, Dunlin, Eider, Gadwall, Great crested grebe, Greylag goose, Greenshank, Goldeneye, Golden plover, Grey plover, Lapwing, Mallard, Mute swan, Oystercatcher, Pintail, Red-breasted merganser, Ringed plover, Shelduck, Shoveler, Teal, Turnstone, Wigeon	112.77	121.82	117.97

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Outer Ards SPA [UK9020271]	Arctic tern, Golden plover, Light-bellied brent goose, Ringed plover, Turnstone	N/A	117.52	126.58	123.02
Saltee Islands SPA [IE004002]	Fulmar, Gannet, Razorbill, Herring gull, Shag, Cormorant, Lesser black-backed gull, Guillemot, Kittiwake, Puffin, Peregrine Chough	N/A	119.68	123.60	131.12
Ireland's Eye SPA [IE004117]	Cormorant, Kittiwake, Razorbill, Herring gull, Guillemot	N/A	12.00	16.33	11.89
South Dublin Bay and River Tolka Estuary SPA [IE004024]	Light-bellied brent goose, Arctic tern, Black-headed gull, Oystercatcher, Bar-tailed godwit, Roseate tern, Ringed plover, Redshank, Common tern, Grey plover, Knot, Sanderling, Dunlin	N/A	12.06	6.28	0.60
Lough Neagh and Lough Beg SPA [UK9020091]	Bewick's swan, Whooper swan, Pochard, Tufted duck, Goldeneye, Common tern	Pochard, Bewick's swan, Little grebe, Great crested grebe, Whooper swan, Shelduck, Wigeon, Gadwall, Mallard, Mute swan, Tufted duck, Scaup, Goldeneye, Red-breasted merganser, Teal, Cormorant, Coot, Shoveler, Lapwing	133.87	138.98	133.17
Baldoyle Bay SPA [IE004016]	Light-bellied brent goose, Ringed plover, Grey plover, Shelduck, Golden plover, Bar-tailed godwit	N/A	14.05	16.08	10.58
Lough Derg (Shannon) SPA [IE004058]	Cormorant, Tufted duck, Goldeneye, Common tern	N/A	148.38	137.75	137.00

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Copeland Islands SPA [UK9020291]	Manx shearwater, Arctic tern	N/A	153.27	161.98	157.58
Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051]	Storm petrel, Manx shearwater, Lesser black-backed gull, Puffin, Short-eared owl, Red-billed Chough	Razorbill, Guillemot, Kittiwake, Puffin, Lesser black-backed gull, Manx shearwater, Storm petrel	156.50	163.22	176.75
Grassholm SPA [UK9014041]	Gannet	N/A	157.87	164.44	177.25
Dungarvan Harbour SPA [IE004032]	Great Crested Grebe, Light-bellied Brent Goose, Shelduck, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Wetland and Waterbirds.	Great Crested Grebe, Shelduck, Red breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank and Turnstone.	161.02	160.64	164.72
Helvick Head SPA [IE00665]	Cormorant, Herring gull, Kittiwake, Peregrine, Chough	N/A	162.64	162.72	TBC
Larne Lough SPA [UK9020042]	Sandwich tern, Common tern, Roseate tern, Light-bellied brent goose	N/A	163.12	170.91	166.09
The Dee Estuary SPA [UK9013011]	Bar-tailed godwit, Black-tailed godwit, Common tern, Curlew, Dunlin, Grey plover, Knot, Little tern, Oystercatcher,	Great crested grebe, Cormorant, Shelduck, Wigeon, Teal, Pintail, Oystercatcher, Grey plover	166.03	169.40	182.08

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
	Pintail, Redshank, Sandwich tern, Shelduck, Teal				
Mersey Narrows and North Wirral Foreshore SPA [UK9020287]	Common tern, Bar-tailed godwit, Little gull, Knot	Cormorant, Oystercatcher, Grey plover, Sanderling, Knot, Dunlin, Bar-tailed godwit, Redshank	178.38	181.75	194.24
Carmathen Bay/ Bae Caerfyrddin SPA [UK9014091]	Common scoter	N/A	178.61	185.54	200.94
Blackwater Estuary SPA [IE004028]	Wigeon, Golden Plover, Lapwing,Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Wetland and Waterbirds.		181.21	180.27	187.01
Wicklow Mountains SPA [IE002122]	Merlin, Peregrine.	N/A	18.39	8.96	12.22
Malahide Estuary SPA (also known as Broadmeadow/ Swords Estuary SPA) [IE004025]	Grey crested grebe, Goldeneye, Grey plover, Light-bellied brent goose, Red breasted merganser, Knot, Shelduck, Oystercatcher, Dunlin, Pintail, Golder plover, Black tailed godwit, Bar tailed godwit, Redshank	N/A	18.62	21.51	15.93

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Ribble and Alt Estuaries SPA [UK9005103]	Bar-tailed godwit, Bewick's swan, Black-tailed godwit, Common tern, Dunlin, Golden plover, Grey plover, Knot, Lesser black-backed gull, Oystercatcher, Pink-footed Goose, Pintail, Redshank, Ringed Plover, Ruff, Sanderling, Shelduck, Teal, Whooper swan, Wigeon	Cormorant, Bewick's Swan, Whooper Swan, Pink-footed Goose, Shelduck, Wigeon, Teal, Pintail, Scaup, Common Scoter, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Whimbrel, Curlew, Redshank	184.40	188.16	199.89
Morecambe Bay and Duddon Estuary SPA [UK9020326]	Little egret, Whooper swan, Pink-footed goose, Shelduck, Pintail, Oystercatcher, Ringed plover, Golden plover, Grey plover, Knot, Sanderling, Ruff, Bar-tailed godwit, Curlew, Redshank, Turnstone, Mediterranean gull, Lesser black-backed gull, Herring gull, Sandwich tern, Common tern, Little tern, Black-tailed godwit, Dunlin	Black-headed gull, Lesser black-backed gull, Herring gull, Great black-backed gull, Little tern, Sandwich tern, Common tern, Arctic tern, Cormorant, Common gull, Light-bellied brent goose, Eider, Common goldeneye, Great white egret, Greenshank, Green-winged teal, Lapwing, Little stint, Mallard, Red-breasted merganser, Ring-necked duck, Spotted redshank, Teal, Wigeon	189.07	195.71	202.88

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Ballymacoda Bay SPA [IE004023]	Wigeon, Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Wetland and Waterbirds	Golden Plover, Black-tailed Godwit, Wigeon, Teal, Ringed Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull, Common Gull, Lesser Black-backed Gull	189.49	189.03	192.97
Lambay Island SPA [IE004069]	Fulmar, Razorbill, Lesser black-backed gull, Shag, Herring gull, Guillemot, Puffin, Kittiwake, Cormorant, Greylag goose	N/A	19.27	25.83	21.44
Wicklow Head SPA [IE004127]	Kittiwake	N/A	19.84	25.59	36.24
Ballycotton Bay SPA [IE004022]	Teal, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Turnstone, Common Gull, Lesser Black-backed Gull, Wetland and Waterbirds.	N/A	200.57	199.97	203.79

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Lough Foyle SPA [IE004087]	Teal, Wigeon, Mallard, Greylag goose, Light-bellied brent goose, Dunlin, Knot, Black-headed gull, Bewick's swan, Whooper swan, Red-throated diver, Oystercatcher, Herring gull, Common gull, Bar-tailed godwit, Red-breasted merganser, Curlew, Golden plover, Great crested grebe, Eider, Shelduck, Redshank, Lapwing	N/A	213.12	215.88	209.81
Lough Swilly SPA [IE004075]	Shoveler, Teal, Wigeon, Mallard, Greenland white-fronted goose, Greylag goose, Grey heron, Scaup, Goldeneye, Dunlin, Knot, Black-headed gull, Whooper swan, Coot, Oystercatcher, Common gull, Red-breasted merganser, Curlew, Great crested grebe, Common tern, Sandwich tern, Shelduck, Greenshank, Redshank	N/A	213.65	214.68	208.75
Rathlin Island SPA [UK9020011]	Peregrine falcon, Kittiwake, Guillemot, Razorbill	Fulmar, Common gull, Lesser black-backed gull, Herring gull, Puffin, Guillemot, Razorbill, Kittiwake	216.97	223.21	217.73
Sheep Island SPA [UK9020021]	Cormorant	N/A	217.42	223.17	217.51
Ailsa Craig SPA [UK9003091]	Gannet, Lesser black-backed gull, Herring gull, Kittiwake, Guillemot	Guillemot, Herring gull, Kittiwake	219.18	228.24	224.18

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Rogerstown Estuary SPA [IE 004015]	Shoveler, Greylag goose, Light-bellied brent goose, Dunlin, Knot, Ringed plover, Oystercatcher, Black-tailed godwit, Grey plover, Shelduck, Redshank	N/A	22.25	26.72	21.43
Old Head of Kinsale SPA [IE004021]	Kittiwake, Guillemot	N/A	246.15	244.87	248.15
Inishtrahull SPA [IE004100]	Shag, Barnacle goose, Common gull	N/A	249.76	253.29	247.22
Rinns of Islay SPA [UK9003057]	Whooper swan, Common scoter, Hen harrier, Corncrake, Chough, Greenland white-fronted goose	N/A	265.29	270.92	265.20
Rockabill SPA [IE004014]	Roseate tern, Common tern, Arctic tern, Purple sandpiper	N/A	28.45	35.29	30.25
North-west Irish sea SPA [IE004236]	Common scoter, Red-throated diver, Great northern diver, Fulmar, Manx shearwater, Shag, Cormorant, Little gull, Kittiwake, Black-headed gull, Common gull, Lesser black-backed gull, Herring gull, Great black-backed gull, Little tern, Roseate tern, Common tern, Arctic tern, Puffin, Razorbill and Guillemot	N/A	3.36	10.48	5.25
Skerries Island SPA [IE004122]	Herring gull, Turnstone, Cormorant, Shag, Light-bellied brent goose, Purple sandpiper	N/A	30.15	35.45	30.20

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
North Colonsay and Western Cliffs SPA [UK9003171]	Kittiwake, Guillemot, Chough	Guillemot, Kittiwake	308.28	314.66	309.21
Puffin Island (IRE) SPA [IE004003]	Fulmar, Manx shearwater, European Storm petrel, Lesser black-backed gull, Razorbill, Puffin	N/A	335.87	329.42	330.68
Treshnish Isles SPA [UK9003041]	Storm Petrel, Barnacle goose	N/A	351.22	357.11	351.46
Glas Eileanan SPA [UK9003211]	Common tern	N/A	355.04	362.21	357.05
Mingulay and Berneray SPA [UK9001121]	Fulmar, Shag, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Guillemot, Kittiwake, Puffin, Shag	397.97	402.29	396.25
Rum SPA [UK9001341]	Red-throated diver, Manx shearwater, Golden eagle, Kittiwake, Guillemot	Guillemot, Kittiwake	400.05	406.41	400.93
River Nanny SPA [IE004158]	Herring gull, Oystercatcher, Ringed plover, Knot, Sanderling Golden plover	N/A	41.99	45.59	39.63
West Inverness-shire Lochs SPA [UK9020298]	Black-throated diver, Common scoter	N/A	412.76	420.70	415.81
South Uist Machair and Lochs SPA [UK9001082]	Corn crake, Oystercatcher, Ringed plover, Sanderling, Redshank, Little tern, Dunlin	N/A	438.00	442.85	436.89

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Monach Islands SPA [UK9001071]	Greenland barnacle goose, Little tern	N/A	479.20	483.96	477.97
Mointeach Scadabhaigh SPA [UK9001501]	Red-throated diver, Black-throated diver	N/A	480.46	485.75	479.90
Boyne Estuary SPA [IE004080]	Little tern, Knot, Oystercatcher, Lapwing, Sanderling, Golden plover, Black-tailed godwit, Grey plover, Turnstone, Shelduck, Redshank	N/A	49.60	53.45	47.51
Shiant Isles SPA [UK9001041]	Fulmar, Shag, Barnacle goose, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Guillemot, Kittiwake	507.35	513.69	508.20
Priest Island (Summer Isles) SPA [UK9001261]	Storm petrel	N/A	517.86	525.10	519.94
St Kilda SPA [UK9001031]	Fulmar, Manx shearwater, Storm petrel, Leach's petrel, Gannet, Great skua, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Guillemot, Kittiwake, Manx shearwater, Razorbill	519.39	523.26	517.20
Lewis Peatlands SPA [UK9001571]	Red-throated diver, Black-throated diver, Golden eagle, Merlin, Golden plover, Greenshank, Dunlin	N/A	526.72	532.53	526.85
Flannan Isle SPA [UK9001021]	Fulmar, Leach's petrel, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Guillemot, Kittiwake, Puffin, Razorbill	559.40	564.57	558.69
Handa SPA [UK9001241]	Fulmar, Great skua, Kittiwake, Guillemot, Razorbill	Fulmar, Great skua, Kittiwake	563.22	570.73	565.66

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Cape Wrath SPA [UK9001231]	Fulmar, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Guillemot, Kittiwake, Puffin, Razorbill	587.39	595.10	590.10
Sule Skerry and Sule Stack SPA [UK9002181]	Storm petrel, Leach's petrel, Gannet, Shag, Guillemot, Puffin	Guillemot, Shag	639.86	647.95	643.10
North Rona and Sula Sgeir SPA [UK9001011]	Fulmar, Storm petrel, Leach's petrel, Gannet, Great black-backed gull, Kittiwake, Guillemot, Razorbill, Puffin	Fulmar, Great black-backed gull, Kittiwake, Puffin, Razorbill	641.48	648.02	642.60
Seas off Wexford SPA [IE004237]	Red-throated diver, Fulmar, Manx shearwater, gannet, Cormorant, Shag, Common scoter, Mediterranean gull, Black-headed gull, Lesser black-backed gull, Kittiwake, Sandwich tern, Roseate tern, common tern, Arctic tern, Little tern, Guillemot, Razorbill, Puffin	N/A	68.41	74.49	84.55
Anglesey Terns / Morwenoliaid Ynys Môn potential SPA [UK9013061]	Roseate tern, Arctic tern, Common tern, Sandwich tern	N/A	73.77	77.23	89.31
Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA [UK9013121]	Manx shearwater, Chough	N/A	74.92	81.04	97.83

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Carlingford Lough SPA [UK9020161]	Sandwich tern, Common tern, Light-bellied brent goose	N/A	77.47	83.50	78.12
Howth Head Coast SPA [IE004113]	Kittiwake	N/A	8.51	12.32	8.83
Dalkey Islands SPA [IE004172]	Roseate tern, Common tern, Arctic tern	N/A	8.57	2.16	3.19
The Raven SPA [IE004019]	Common scoter, Greenland white-fronted goose, Sanderling, Grey plover, Red-throated diver, Cormorant	N/A	83.86	88.51	97.01
Wexford Harbour and Slobs SPA [IE004076]	Lesser black-backed gull, Black-headed gull, Little tern	Little Grebe, Great crested grebe, Cormorant, Grey heron, Bewick's swan, Whooper Swan, Light-bellied brent goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Goldeneye, Red-breasted merganser, Hen harrier, Coot, Oystercatcher, Golden plover, Grey plover, Lapwing, Knot, Sanderling, Dunlin, Black-tailed godwit, Bar-tailed godwit, Curlew, Redshank, Black-headed Gull, Lesser Black-backed Gull, Little Tern, Greenland White-fronted Goose, Wetland and Waterbirds.	84.82	87.45	94.03
Poulaphouca Reservoir SPA [IE004063]	Greylag goose, lesser black-backed gull		36.03	25.65	26.72

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Dundalk Bay SPA [IE004026]	Great crested grebe, greylag goose, light-bellied brent goose, shelduck, teal, mallard, pintail, common scoter, red-breasted merganser, oystercatcher, ringed plover, golden plover, lapwing, knot, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, black-headed gull, common gull, herring gull, wetland and waterbirds		64.32	68.85	63.08
Cahore Marshes SPA [IE004143]	Wigeon, golden plover, lapwing, greenland white-fronted goose, wetland and waterbirds		68.21	73.12	82.19
Bannow Bay SPA [IE004033]	Light-bellied brent goose, shelduck, pintail, oystercatcher, golden plover, grey plover, lapwing, knot, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, wetland and waterbirds		112.96	115.58	122.14
Ballyteigue Burrow SPA [IE004020]	Light-bellied brent goose, shelduck, golden plover, grey plover, lapwing, black-tailed godwit, bar-tailed godwit, wetland and waterbirds		114.01	117.34	124.52
Blackwater Callows SPA [IE004094]	Whooper swan, wigeon, teal, black-tailed godwit, wetland and waterbirds		184.99	182.11	185.20
Cork Harbour SPA [IE004030]	Little grebe, great crested grebe, cormorant, grey heron, shelduck, wigeon, teal, pintail, shoveler, red-breasted merganser, oystercatcher, golden plover, grey plover, lapwing,		205.33	203.74	207.25

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
	dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, black-headed gull, common gull, lesser black-backed gull, common tern, wetland and waterbirds				
Horn Head to Fanad Head SPA [IE004194]	Fulmar, cormorant, shag, barnacle goose, peregrine, kittiwake, guillemot, razorbill, chough, Greenland white-fronted goose		233.50	235.46	229.54
Courtmacsherry Bay SPA [IE004219]	Great northern diver, shelduck, wigeon, red-breasted merganser, golden plover, lapwing, dunlin, black-tailed godwit, bar-tailed godwit, curlew, black-headed gull, common gull, wetland and waterbirds		249.12	247.20	250.54
Clonakilty Bay SPA [IE004081]	Shelduck, dunlin, black-tailed godwit, curlew, wetland and waterbirds		262.03	259.84	263.08
Blasket Islands SPA [IE004008]	Fulmar, manx shearwater, storm petrel, shag, lesser black-backed gull, herring gull, kittiwake, arctic tern, razorbill, puffin, chough		329.30	321.53	322.52
Keeragh Islands SPA [IE004118]	Cormorant		118.48	121.47	128.32
Lady's Island Lake SPA [IE004009]	Gadwall, black-headed gull, sandwich tern, roseate tern, common tern, arctic tern, wetland and waterbirds		108.17	112.81	121.33
Mid-Waterford Coast SPA [IE004193]	Cormorant, peregrine, herring gull, chough		139.76	140.96	146.23

SPAs & site code	Qualifying Interests	Assemblage features	Distance to Array area (km)	Distance to ECC (km)	Distance to O&M (km)
Sovereign Islands SPA [IE004124]	Cormorant		236.86	235.59	239.16
Tacumshin Lake SPA [IE004092]	Little grebe, bewick's swan, whooper swan, wigeon, gadwall, teal, pintail, shoveler, tufted duck, coot, golden plover, grey plover, lapwing, black-tailed godwit, wetland and waterbirds		110.71	114.99	123.03
Tramore Back Strand SPA [IE004027]	Light-bellied brent goose, golden plover, grey plover, lapwing, dunlin, black-tailed godwit, bar-tailed godwit, curlew, wetland and waterbirds		133.32	134.83	140.35
Killough Bay [UK9020221]	light-bellied brent goose (w)		106.21	115.15	111.02

4 Receiving Environment/Receptors

4.1 Overview

4.1.1 A full description of the receiving environment is provided in Part 3: Dublin Array EIAR:

- Part 3: Volume 3 – Offshore Infrastructure Assessment Chapters;
- Part 3: Volume 4 – Offshore Infrastructure Technical Appendices;
- Part 3: Volume 5 - Onshore Infrastructure Assessment Chapters; and
- Part 3: Volume 6 - Onshore Infrastructure Technical Appendices.

4.1.2 This section has been focused to provide a baseline for receptors associated with the European sites identified with Table 4, Table 5 and Table 8. This includes information sourced from NPWS including mapping and available reports for relevant sites and Qualifying Interests (QIs) described.

4.1.3 The studies undertaken to characterise the receiving environment and inform the assessment of onshore ecology, benthic ecology, ornithology, marine mammals and fish ecology are summarised below with the full detail provided in the Dublin Array Part 3: EIAR.

4.2 Onshore Ecology

4.2.1 For the purposes of this SISAA and as defined in Table 3, onshore ecology was screened having regard to any potential pathways ie any hydrological connectivity within river catchments which might connect a source to a receptor within a European Site, including having regard to any European Sites around the TJB, OES and O&M base in Dún Laoghaire Harbour.

4.2.2 Field surveys were undertaken to characterise the terrestrial ecological environment (Biodiversity) in the area of the O&M Base within Dún Laoghaire Harbour and along the extents of the underground OES connecting with the landfall. The full details of the methodology and results are presented in the, Biodiversity l Baseline of the EIAR.

4.2.3 Aquatic ecology surveys were carried out to assess whether nearby watercourses may support a range of notable species including otter (*Lutra lutra)*, white-clawed crayfish (*Austropotamobius pallipes)*, lamprey (*Lampetra)*, salmonids, including Atlantic salmon (*Salmo salar),* and brown trout (*Salmo trutta).*

4.2.4 A static monitoring study was undertaken to detect bats using remote automated "static" bat detectors to determine presence of bat species migrating across the Irish Sea (as presented in Offshore Bats Baseline). In addition, a desk study was undertaken to identify onshore ecology of potential relevance, incorporating the National Parks and Wildlife Service (NPWS) and National Biodiversity Data Centre (NBDC) online resources and local Council survey reports for information on EU sites and on protected habitats and species.

4.2.5 Further to this field surveys were undertaken to describe the baseline based on accepted standard practice and methods. Habitats within the study area were classified in accordance with 'A Guide to Habitats in Ireland' (Fossitt, 2000). The site was also appraised for its suitability to support notable flora and fauna such as amphibians, reptiles, mammals, birds and other notable species. Incidental sightings of birds, mammals or amphibians were noted during the habitat survey and the habitats within the study area were evaluated for their potential to support protected species.

Onshore Habitats

O&M base

4.2.6 The immediate area of the O&M Base is comprised of buildings and artificial surfaces, made up of structures used for the operation of a harbour as well as roads, car parking area, and pedestrian walkways. Vegetation was negligible within these areas, with only the occasional vegetation growing on peripheral areas. This habitat is generally of negligible importance; however, was found to support nesting herring gull (*Larus argentatus)* and house martin (*Delichon urbicum)*, which are both amber-listed birds.

4.2.7 Coastal constructions through sea walls, piers and jetties were located within the surrounding area of the O&M Base used for the area's operation as a functional harbour. These comprised artificial built structures that generally lacked vegetation. In isolation these habitats are of limited ecological value. The marine habitat enclosed by the coastal structures was classified as sea inlets and bays as it was sheltered by the coastal structures. Beyond this point habitats included marine open water, which comprised the majority of the surrounding area of the harbour. These habitats were seen to support notable bird species including SPA QI birds such as tern (*Sterna* sp.) and cormorant, as well as black guillemot.

OES

4.2.8 The habitats within the OES study areas are dominated by built environment and road infrastructure as well as urban greenspaces such as public parks, private gardens and landscaped areas as part of residential and commercial developments. The less frequently occurring habitats within this study area are small areas of woodland, scrub, grassland and arable crops. There are also several watercourses within the study area. In general, these watercourses have previously been modified through canalisation, deepening and culverting.

4.2.9 The watercourses and aquatic survey sites in the vicinity of the proposed development included Barnacullia Stream and unnamed tributary, Jamestown Stream, Glenamuck North Stream and unnamed tributary, Carrickmines Stream, Laughanstown Stream, Shanganagh River and the Kill-O-The-Grange Stream. These were largely categorised as lower energy upland eroding rivers (Category FW1; Fossitt, 2000) that had been historically deepened and straightened, but retained a semi-natural profile of riffle, glide and localised pool sequences.

Onshore Species

Otters

4.2.10 The data search returned a total of four records of otter within the search area for the O&M base, as recent as 2018 with an active holt identified at Dún Laoghaire Harbour (c. 375 m from the development footprint), with spraint also noted near the entrance. A potential holt was identified near the Shanganagh Bray WWTP.

4.2.11 The data search returned two records of otter within the search area along the OECR. Both of these records were from 1980 by the Otter Survey of Ireland 1982. During the site-specific survey, otter signs were recorded at a total of four riverine survey sites. Overall, the Carrickmines Stream and Shanganagh River were considered to provide the best quality fisheries and otter habitat in the survey area given lower levels of human disturbance and greater prey resources (Macklin & Brazier, 2019).

4.2.12 Otter surveys undertaken on behalf of Dublin City Council 2019 and Dún Laoghaire-Rathdown (DLR) Council, 2020 identified a number of watercourses within their jurisdiction that included evidence of the presence of otters, including within the Dún Laoghaire Harbour. Sightings along the Dublin coastline were found in 14 watercourses and tributaries (Macklin *et al*, 2019). Along the Dún Laoghaire coastline, the highest number of holts was recorded on the Shanganagh River, although holts were also recorded on seven other watercourses (Glencullen River, Carrickmines River, Little Dargle River, County Brook Stream, Glencullen Stream, Rathmichael Stream and Slang River). The highest number of holts in the survey area was recorded along the DLR coastal boundary.

Bats

4.2.13 The data search returned records six species of bats including one record of Natterer's bat (*Myotis nattereri)* and Daubenton's bat (*Myotis daubentoniid)* in 2005; and seven records of brown long-eared bat (*Plecotus auritus)*, three records of lesser noctule (*Nyctalus leisleri),* six records of common pipistrelle (*Pipistrellus pipistrellus)*, and six records of soprano pipistrelle (*Pipistrellus pygmaeus)* as recent as 2012.

4.2.14 The bat surveys recorded significant numbers with six species recorded within the onshore area, but limited numbers within the array area (represented by Kish Bank Lighthouse).

4.2.15 The surveys recorded the following six species of bats either commuting or foraging in close proximity to the survey locations.):

- Leisler's bat;
- Common pipistrelle;
- Soprano pipistrelle;
- Brown-long eared bat;
- Nathusius' pipistrelle;

- Daubenton's bat;

4.2.16 There are nine species of bats established in Ireland. Several of them, like the common and soprano pipistrelles, are widespread and common; others, like the lesser horseshoe bat, are relatively rare and restricted in distribution. All Irish bats are protected under national and EU legislation. The lesser horseshoe bat is listed in Annex II of the EU Habitats Directive, while all bat species are listed in Annex IV of the same Directive. SACs designated for the lesser horseshoe are all located within the six western counties from Cork to Mayo (NPWS, 2013) and greater than 30 km to the Dublin coast, of note no individuals were recorded during the site-specific surveys.

Other species

4.2.17 Of note several species of invasive flora were noted across the Onshore Export Cable Route (OECR), as well as one invasive fauna, comprising a ring-neck parakeet. Invasive flora included three-cornered garlic, giant hogweed (*Heracleum mantegazzianum)*, Japanese knotweed (*Reynoutria japonica)*, and montbretia (*Crocosmia x crocosmifolia).* These were distributed heavily to the east of the OECR.

4.2.18 No invasive species were identified at the O&M base.

4.3 Habitats / Subtidal and intertidal

4.3.1 Site-specific subtidal and intertidal surveys undertaken to characterise the receiving environment were carried out in the offshore and intertidal habitats of the Dublin Array development area in 2021 and 2024. Of particular note is the 2024 underwater image analysis survey undertaken to identify and characterise reef habitat across the shallow subtidal area off the Shanganagh landfall.

4.3.2 Further to this a number of data sources have been used to support and provide additional context, including surveys to support EU Habitats Directive Article 17 reporting, Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR) and European Marine Observation and Data Network (EMODnet). For the full list of data sources please see the Benthic Baseline).

Subtidal

4.3.3 Subtidal site-specific surveys (Volume 4, Appendix 4.3.3-3: Subtidal Survey Report Main Array & ECR - Benthic Ecology Monitoring Report, hereafter referred to as the Benthic Ecology Monitoring Report) defined a relatively homogenous predominantly sandy seabed across the sites, specifically sand (12 sites), gravelly sand (12 sites) and muddy sands (four sites). The finer muddy sands were observed along the proposed northern Offshore ECC and to the seaward extent of Fraser Bank. The literature indicates that the benthic habitats of the Kish and Bray Banks are characterised with moderate faunal diversity and a range of biotopes depending on the sediment structure.

4.3.4 The Kish and Bray Banks themselves are a system of coast-parallel, north-south trending linear sandbanks located within the outer Dublin Bay area, consisting mainly of sand and gravel. The northern 10-12 km of the bank system is called the Kish Bank. The Bray bank lies to the south extending a further 10. The banks are approximately 2.2 km wide at their widest point. The detailed assessment of the seabed geomorphology and associated benthic habitats undertaken as part of the Dublin Array project specific surveys indicates that features of the Kish and Bray Banks are consistent with the Annex I habitat 'Sandbanks which are slightly covered by sea water all the time' where the feature is permanentlt submerged; water depths are greater than 20 m and the seabed sediments are predominantly composed of sand. Although the Kish and Bray Banks encompass areas of the Annex I habitat 'Sandbanks which are slightly covered by sea water all the time'[10], they are not currently included within any designated sites.

4.3.5 None of the surveys of the area carried out to-date have indicated the presence of any rare or unusual species, or benthic species of conservation importance. The 2021 site specific benthic subtidal survey (Benthic Ecology Monitoring Report) observed areas of boulders and cobbles defined as potential stony reef, some of which would qualify as Annex I. The reef habitat observed ranged from 'not a reef' to 'medium reef' and was located in the nearshore areas at Shanganagh.

4.3.6 No other Annex I habitats or Annex II species, or OSPAR[11] threatened and/or declining species and habitats (OSPAR, 2008) were observed within the survey area (Benthic Ecology Monitoring Report).

4.3.7 Sandy sediments that characterise the Kish and Bray Bank sand bank features are typically colonised by burrowing polychaete worms, crustaceans and bivalve molluscs. Epifauna at the surface of the sandbank may also include mysid shrimps, gastropods, crabs and fish. Sand-eels (*Ammodyte*s spp.), an important food for birds, often inhabit sandy sediments, whereas coarse stable material, such as shells or stones is inhabited by hydroids, bryozoans and ascidians (NPWS, 2008).

4.3.8 Site-specific surveys undertaken across the array area and the Offshore ECC (Fugro, 2021) complement this, with macrofaunal communities identified as comprising infaunal and epifaunal taxa, dominated by polychaetes and molluscs. Crustaceans and other groups were less represented by comparison. Characterising polychaetes identified from the site-specific surveys included *Spirobranchus lamarcki*, *Lumbrineris* cf. *cingulata, Pholoe baltica, Ophelia borealis, Nephtys cirrose, Spiophanes bombyx* and *Owenia borealis*. Mollusc species included opportunistic species such as the bivalves *Nucula nucleus*, *Kurtiella bidentata*, *Abra alba*, *Nucula nitidosa*, *Fabulina fabula* and *Tellimya ferruginosa*, along with the gastropod *Euspira nitida*. Overall, it is concluded that the faunal communities identified are indicative of a dynamic seabed and typical of a high energy environment.

[10] https://www.npws.ie/marine/marine-habitats/sandbanks

[11] The Convention for the Protection of the Marine Environment of the North-East Atlantic (the 'OSPAR Convention') entered into force March 1998. OSPAR is a legal mechanism whereby the contracting parties that make up the OSPAR Commission cooperate to protect the marine environment of the North East Atlantic

Potential reef

4.3.9 The potential for reef to exist outside of the SACs has been considered through an assessment of site-specific surveys across the Array and Offshore ECC (Benthic Ecology Monitoring Report) which identified areas of cobbles and boulders in the inshore section of the Offshore ECC, between Killiney and Bray. These areas were classified under the biotope 'Atlantic and Mediterranean high energy infralittoral rock' (IR.HIR). These areas were assessed for potential resemblance to stony reef habitats in accordance with the criteria outlined in Irving (2009) and Golding *et al*. (2020). Two areas were identified to be of 'medium' resemblance to a stony reef. The Broad Scale Predictive Habitat Map (EUSeaMap, 2019) indicates a band of sublittoral geogenic reef extending along the inshore section of the Offshore ECC between Killiney and Bray. This band, which is approximately 200 and 400 m wide in sections, occurs approximately 500 m from the shore. Three geogenic reef habitats are described from this area which include 'High energy circalittoral rock' (CR.HCR), 'High energy infralittoral rock' (IR.HIR) and 'Low energy infralittoral rock' (IR.LIR)

4.3.10 Site-specific intertidal surveys (Volume 4, Appendix 4.3.2-1: Marine Intertidal Ecological Survey, Shanganagh and Poolbeg, Co. Dublin) across the intertidal study area reported the presence of potential reef habitats, these included 'Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata' (LR.FLR.Eph.EphX/EUNIS Code MA4211) and '*Fucus serratus* and red seaweed on moderately exposed lower eulittoral rock' (LR.MLR.BF.Fser.R/EUNIS Code MA12441). Reef habitats on hard compact substrata (including rock, boulders and cobbles) are classified as an Annex I priority habitat (European Commission, 2013).

4.3.11 During the Ecoserve (2008) survey a significant number of the horse mussel (*Modiolus modiolus)* were recorded at a station to the south of the Dublin Bay array area, outside the current project boundary. The biotope 'Modiolus modiolus beds on open coast circalittoral mixed sediment' (SS.SBR.Smus.ModMx/EUNIS Code MC2232), was therefore recorded. *Modiolus modiolus* beds are considered a type of Annex I biogenic reef habitat and an OSPAR listed habitat. However, this station was resampled during the Aquafact (2017) re-characterisation campaign and no beds of *Modiolus modiolus* were identified, with the station classified as '*Mediomastus fragilis, Lumbrineris* spp. And venerid bivalves in circalittoral coarse sand or gravel' (SS.SCS.CCS.MedLumVen/EUNIS Code MC3212).

4.3.12 Reef habitat conforming to the EU Annex I habitat Reef (EU Habitat code 1170) has been identified from the shallow sublittoral running parallel to the shore between Killiney in the north and Bray in the south, a distance of approximately 5 km, and extending approximately 1.25 km offshore (MERC Consultants, 2022).

4.3.13 Further work was undertaken in this area in Spring 2024 with the aim of further identifying the characteristics and extent of geogenic or biogenic reef (Volume 4, Appendix 4.3.3-5: Underwater Image Analysis).

4.3.14 The most widespread habitat complex recorded in the survey area was 'Circalittoral fine mud' SS.SMu.CFiMu / EUNIS Code MC611), followed by 'Dense foliose red seaweeds on moderately exposed Atlantic infralittoral silty rock' (IR.MIR.KR.XFoR / EUNIS Code MB121B). The sedimentary biotope 'Faunal communities of Atlantic circalittoral mixed sediment' (SS.SMx.CMx / EUNIS Code MC421) as were the rock biotopes 'Faunal turf communities on Atlantic circalittoral rock' (CR.HCR.FaT / EUNIS Code MC121) and 'Kelp and seaweed communities on Atlantic infralittoral rock' (IR.HIR.KFaR / EUNIS Code MB121).

4.3.15 No evidence of biogenic reef was observed within the survey area.

Intertidal

4.3.16 Site-specific intertidal survey Particle Size Analysis (PSA) results for six stations, ranging from the upper to lower shore extents, identified sand as the predominant sediment present, with samples classified as sand, sandy gravel or slightly gravelly sand (Aquafact, 2021). Fines represented less than 0.3% of all intertidal samples.

4.3.17 These observations are further supported by historic information which indicated that the upper shore as consisted of a 10-20 m band of cobbles and pebbles with occasional boulders, which graded into finer gravel and coarse sand down the shore (Aquafact, 2021). This zone was classified as 'Barren littoral shingle' (LS.LCS.Sh.BarSh / EUNIS Code MA3211). The infaunal analysis revealed low numbers of oligochaetes and talitrid amphipods similar to the 'Talitrids on the upper shore and strand-line' (LS.Lsa.St.Tal / EUNIS Code MA5211) biotope which commonly coexists with the LS.LCS.Sh.BarSh biotope where drift lines of algae and other debris accumulate on the upper shore. Low faunal returns were consistent with low levels of organic carbon in the sediment (Aquafact, 2017).

4.3.18 The mid shore consisted of boulders and cobbles covered with ephemeral green algae (*Ulva intestinalis*) with some *Porphyra purporea*, consistent with the biotope 'Ephemeral green and red seaweeds on variable salinity and/or disturbed eulittoral mixed substrata' (LR.FLR.Eph.Eph.X / EUNIS Code 4211). This biotope was present along almost the full length of the survey area varying in width from c. 6 m to <1 m. Along most of the shore this was bounded by the low shore sandy sediments. The lower shore along the transect length was consistent with the 'Polychaetes and *Angulus tenuis* in littoral fine sand' (LS.Lsa.FiSa.Po.Aten / EUNIS Code MA5412) biotope. The sediment type in this zone was characterised as slightly gravelly sand (predominantly) fine sand. Organic carbon content was low (1.39%). Towards the southern end of the study area, where the lower shore consisted of boulders, cobbles and pebbles instead of sand, the ephemeral zone merged into a *F. serratus* dominated lower shore. A small transitional band of *F. vesiculosus* mixed with *F. serratus* and the limpet *Patella vulgata* and barnacles *Semibalabus balanoides* separated the two zones. Numerous red seaweeds were present in the lower shore and the biotope was '*Fucus serratus* and red seaweeds on moderately exposed lower eulittoral rock' (LR.MLR.BF.Fser.R / EUNIS Code MA12441) (Aquafact, 2017).

O&M base

4.3.19 Sediments within Dún Laoghaire Harbour where the O&M base will be sited are predominantly sandy muds, while coarser substrate is recorded from the adjacent coastal waters which is characterised as muddy sands. However, at the mouth of the harbour coarse shell and sand is evident. These patterns are clearly driven by the predominant current regimes (Stephen Little and Associates, 2015). Benthic studies carried out in the vicinity of the proposed O&M base in relation to a proposed cruise berth facility in Dún Laoghaire Harbour and adjacent coastal waters recorded a relatively diverse and abundant fauna characterised by polychaetes, molluscs and crustaceans with the bivalve *Abra alba* being most commonly recorded species (Hydrographic Services Ltd., 2015). The communities across the study area were considered to be similar and classified by biotope *Abra alba* and *Nucula ntidosa* in circalittoral muddy sand or slightly mixed sediment (SS.Ssa.CmuSa.AalbNuc / EUNIS Code MC5214).

4.3.20 The intertidal areas of Dún Laoghaire Harbour where the planned O&M base is to be sited are comprised of man-made structures such as the breakwater and harbour walls, concrete jetties and rock armoured structures. All substrates are made of hard materials including rock, stone and concrete. The Dún Laoghaire Harbour Masterplan Environmental Report (Dún Laoghaire Harbour Company, 2011) indicated that the intertidal habitats within the harbour are comprised of *Semibalanus balanoides* on exposed to moderately exposed or vertical sheltered eulittoral rock (LR.HLR.MusB.Sem / EUNIS Code MA1223), Barnacles and fucoids on moderately exposed shores (LR.MLR.BF / EUNIS Code MA124) and Fucus spiralis on full salinity sheltered upper eulittoral rock (LR.LLR.F.Fspi / EUNIS Code MA123C1)

4.4 Marine mammals

4.4.1 The characterisation of the receiving environment for marine mammals draws up on a wide range of data sources including the site-specific surveys undertaken between 2019 – 2021 and previous surveys 2010 -2011 and 2001-2002. Key data sources also include published survey data including SCANS III and IV[12], ObSERVE[13], IWDG survey data, seal count data and seal at sea usage telemetry data. The full list of data sources is provided in the Marine Mammals Baseline of the EIAR.

4.4.2 All cetaceans are listed under Annex IV of the Habitats Directive, which means that they are protected wherever they occur. Bottlenose dolphin and harbour porpoise, grey and harbour seals are also listed under Annex II of the Directive. Annex II species require that core areas of their habitat are designated as European Sites.

[12] SCANS ((Small Cetaceans in European Atlantic waters and the North Sea) -III is a large-scale ship and aerial survey to study the distribution and abundance of cetaceans in European Atlantic waters IN 2016 with SCANS IV undertaken in 2022
[13] ObSERVE Aerial data consists of a series of high quality aerial surveys for whales, dolphins, seabirds and other marine life which covered a significant portion of Irish EEZ across two summers and two winters

Cetaceans

4.4.3 A review of existing data sources indicates that the key species present within the Dublin Bay and surrounds are harbour porpoise (*Phocoena phocoena*). Other species have been recorded in the area, including minke whales (*Balaenoptera acutorostrata*), bottlenose dolphins (*Tursiops truncatus)* Risso's dolphins (*Grampus griseus*) and common dolphins (*Delphinus delphis*), however they are not commonly encountered, and density estimates are considered very low.

4.4.4 The harbour porpoise is the most widely distributed and most common cetacean species in the waters of Britain and Ireland (NPWS, 2019). They occur in all parts of the British and Irish continental shelf and are recorded year-round within most of their range. Harbour porpoise was the most commonly sighted marine mammals during the site-specific surveys. While sightings rates and resulting density estimates were high in November 2019 and September 2020, overall, there was no evidence of a seasonal pattern in the sightings. The Inter Agency Marine Mammal Working Group (IAMMWG) identified MUs for harbour porpoise and provided recommended abundance estimates for each MU (IAMMWG, 2022). Dublin Array is located within the Celtic and Irish Seas MU, where the estimate of abundance for harbour porpoises is 62,517 (CV: 0.13, 95% CI: 48,324 – 80,877) based on data collected during SCANS III and the ObSERVE surveys (Hammond *et al*. 2017, Rogan *et al*. 2018, Hammond *et al*. 2021).

4.4.5 Other species sighted include minke whales, known to exhibit a degree of seasonal variation in their presence in the Irish Sea, with sightings occurring more frequently during the summer months in the vicinity of Dublin Array (Rogan *et al*. 2018, Chudzinska and Burt 2021). In site-specific surveys, a total of 50 individuals were sighted, all of which were sighted in the spring and summer months between March and July. Minke whale are known to perform seasonal migrations between high latitude feeding grounds in the summer and low latitude area for breeding and calving in the winter months (Risch *et al*. 2014) and their increased presence in the summer months supports this migration pattern. Therefore, minke whale present in the vicinity of Dublin Array will most likely be undertaking feeding behaviour in this region.

4.4.6 Bottlenose dolphins are described as being one of the most frequently recorded and familiar cetaceans occurring in Ireland, occurring in group sizes between three and 30 in coastal waters, and larger groups of hundreds of individuals in offshore waters (NPWS 2019). Bottlenose dolphin sightings during the ObSERVE surveys were mainly located in the west and the south of Ireland. There are a few surveys that have recorded bottlenose dolphins in the vicinity of Dublin Array, including the site-specific surveys, the SCANS surveys and the ObSERVE surveys, however the density estimates from all surveys was fairly low. Whilst insufficient data was available for the studies conducted in the vicinity of the Dublin Array Survey to infer seasonal presence, bottlenose dolphins have been sighted all year round in Irish waters (Berrow *et al*. 2012).

4.4.7 Sightings of other species including risso dolphins are low in the vicinity of Dublin Array but have been observed within the ObSERVE surveys, Risso's dolphin sightings around Ireland were also recorded as low during the SCANS III and IV surveys and no Risso's dolphin sightings were reported during the IWDG surveys on the east coast of Ireland. No sightings were recorded during the site-specific surveys. Common dolphins are the most frequently recorded species in Irish waters, occurring in group sizes ranging from a few individuals to over a thousand individuals in the open sea (NPWS 2019). Common dolphins were sighted during the site-specific (five groups, 21 individuals) surveys and have been reported in Irish waters year-round (Wall *et al*. 2013). During the ObSERVE surveys, common dolphins were mainly sighted in deeper waters to the west and south of Ireland.

4.4.8 The offshore infrastructure lies close to a number of SACs for which harbour porpoise are designated; Rockabill to Dalkey Island SAC (1.77 km to array area), Lambay Island SAC and Codling Fault Zone SAC designated for harbour porpoise. New sites for harbour porpoise and bottlenose dolphins were added as QIs in March 2024 to existing sites within Irish waters. All sites have been captured within this SISAA.

4.4.9 For Rockabill to Dalkey Island SAC the occurrence, abundance, distribution and community composition is well informed by records collated over two decades. Porpoise density and abundance estimates were obtained in 2008, 2013, 2016 and [14]2021.

4.4.10 Density estimates in 2013 and 2016 were similar to that reported in 2008 suggesting there had been little change in porpoise densities over this eight year period. The density estimate in 2021 (0.83 harbour porpoise per km^2) is around 44% of that reported in 2013 and 2016. The number of sightings per survey were similar in 2013 and 2016 but down by around 17% on the mean of the previous surveys.

4.4.11 A slight increase in density of porpoises in 2016 compared with 2013 was found (the coefficient variation of the pooled density estimates were 0.06 and 0.10 individuals per km^2 for 2013 and 2016 respectively). In 2016, harbour porpoise were found to be distributed throughout the SAC survey area, but significant changes occurred in their spatial distribution between individual surveys with abundance higher in the northern section of the SAC during August and September when compared to June and July data. Harbour porpoise sightings in the outer Dublin Bay area also varied between surveys but were generally low compared to adjacent waters surveyed within the SAC; most sightings were distributed to the north and south of Dublin Bay (O'Brien and Berrow, 2016).

[14] Berrow, S.D., Cummins, F., Kane, G., Keogh, H. and Wall, D (2021). Harbour porpoise surveys in Rockabill to Dalkey Island SAC, 2020. Report to the National Parks and Wildlife Service, Department Housing, Local Government & Heritage, Ireland.

4.4.12 Berrow *et al* 2021 -concluded there does seem to have been a real decrease in the density of harbour porpoises recorded in the Rockabill to Dalkey Island SAC during 2021, compared to the two previous surveys in 2013 and 2016. This trend has been seen in other sites across Ireland in SACs with harbour porpoise as a QI. This does not necessarily imply a decline in overall population size but perhaps changes in distribution and habitat use at a local scale. The distribution and abundance of top predators such as harbour porpoises is strongly influenced by the availability of preferred prey. One possible reason for a decline in density within the Rockabill to Dalkey Island SAC was a change in the distribution of their preferred prey outside of the SAC boundaries, resulting in lower densities of porpoises within the site.

Pinnipeds

4.4.13 Grey seals occur throughout Irish waters, and those in Ireland are considered to be part of a meta-population that also inhabits adjacent jurisdictions (NPWS 2019). Telemetry data for grey seals tagged in UK waters have shown connectivity between the east coast of the RoI, Northern Ireland, Wales, Southwest England and the southwest coast of Scotland. They have a Favourable conservation status with an increasing trend in Irish waters (NPWS 2019).

4.4.14 Grey seals are present off all Irish coasts and were reported at low relative abundances throughout the Irish sea, with these individuals being predominantly sighted in inshore waters. In terms of seasonal variation, the Irish Marine Mammal Atlas reported grey seals year-round in Irish waters (Wall *et al*., 2013). During the site-specific surveys (2019-2021), there were a total of 14 grey seal sightings, distributed throughout the survey area, this confirms the presence of grey seals in the area, but no density estimate was able to be calculated given the low number of sightings.

4.4.15 Harbour seals occur throughout Irish waters, in estuarine, coastal and fully marine areas. Though no harbour seals were sighted during the site-specific surveys, the Lambay Island SAC is within 20 km from of Dublin Array, which is within the typical foraging range of harbour seals (40-50 km from their haul-out sites, Carter *et al*, 2022). Therefore, it is likely that there may be harbour seals in the vicinity of Dublin Array. There have been several studies on harbour seal abundance and distribution at haul-outs around Ireland, however there is uncertainty in at-sea density estimates as there is both a lack of telemetry data in Irish waters.

4.4.16 Lambay Island SAC is designated for grey and harbour seals lies to the north, of Dublin Array but within likely foraging range for both species. Grey seals and harbour seals occur year-round, and the island's intertidal shorelines, coves and caves are used by resting and moulting seals. Dalkey Island (within Rockabill to Dalkey Island SAC) is also a known haul-out and breeding site for grey seals (NPWS, 2009). Harbour seal forms part of the mixed colony (with greys) around Dalkey Island and Dublin Bay.

4.5 Offshore and intertidal ornithology

4.5.1 The characterisation of the receiving environment for offshore and intertidal ornithology draws upon a wide range of data sources including the site-specific boat-based surveys undertaken between 2019 – 2021 and previous surveys 2016-2017, 2010 -2011 and 2001-2002.

4.5.2 Onshore bird surveys were undertaken at the landfall location and the O&M base. Intertidal bird surveys were undertaken at the landfall location in the winter of 2019/20 and the autumn of 2020 and over winter 2023/24 (September 2023 to March 2024 inclusive)

4.5.3 Key data sources also include published survey data including JNCC Report No. 267 (Pollock *et al.* 1997) and ObSERVE 2016 aerial surveys (Jessop *et al.* 2018) Birdwatch Ireland website and iWEBS[15]. The full list of data sources is provided in the Ornithology Baseline for offshore species and Biodiversity Baseline of the EIAR for intertidal species.

4.5.4 The offshore infrastructure, TJB, OES or O&M base do not directly overlap with any ornithological designated sites. Nevertheless, as breeding seabirds can travel considerable distances when foraging it is necessary to give consideration to designated sites beyond the extent of the development. The extent of connectivity between designated seabird species and the development during the breeding season is largely a function of distance and species-specific foraging ranges. The potential for birds from designated breeding colonies to interact with the development has been identified based on foraging distances (Woodward *et al*., 2019) as described in Table 3.

4.5.5 An SPA of particular note is the NWIS SPA (3.36 km to array area), a proposed SPA which extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333 km^2 in area. The designation is proposed for common scoter, red-throated diver, great northern diver, fulmar, Manx shearwater, shag, cormorant, little gull, kittiwake, black-headed gull, common gull, lesser black-backed gull, herring gull, great black-backed gull, little tern, roseate tern, common tern, Arctic tern, puffin, razorbill and guillemot. The area has been identified as an important marine area for foraging and other maintenance behaviours for those seabirds at nearby breeding colonies, and the estuaries and bays along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. The NWIS SPA thereby focuses on the habitat provided to support birds, therefore the connectivity is designated specifically to the area designated, rather than potential foraging range connectivity as with breeding SPAs. The relevant breeding sites associated with the NWIS SPA have been assessed on their own accord.

4.5.6 Bird species may also have connectivity with the development during migration. To quantify the percentage of bird migratory pathways that could intersect with the development from all UK or ROI SPAs, flight pathways from each SPA were mapped to migration end points. This method was used to infer which terrestrial/coastal sites are designated for non-breeding species that may pass through the proposed development during migration, if >10% of the SPA flight pathways intersected with the proposed development then the SPA was considered further. Species-specific patterns of migration were then assessed to identify which features were to be screened in for further assessments, based on species-specific migration zones (Woodward *et al*., 2023).

[15] I-WeBS (Irish Wetland Bird Survey) counters record waterbirds at wetland sites across Ireland during the winter 'non-breeding' season (September to March).

Offshore species

4.5.7 Irish waters provide important foraging grounds for breeding, wintering and passage seabirds, seaducks, divers and grebes. In addition, breeding seabirds nest within range of these productive areas on offshore islands, mainland cliffs and beaches. Ireland is internationally important for breeding bird populations. When considering breeding birds in Ireland as a whole, for fifteen species more than 1% of the biogeographical population breeds in Ireland. For two species, European storm-petrel (*Hydrobates pelagicus*) and roseate tern (*Sterna dougallii*), more than 10% of the biogeographical populations are found breeding in Ireland, while significant numbers of great cormorant (*Phalacrocorax carbo*) and Manx shearwater (*Puffinus puffinus*) also breed here.

There are several bird species that have been identified in previous Dublin Array site survey reports (Table 9; EIAR, Ornithology Baseline). Those considered as key species for other offshore impact assessments elsewhere in Ireland and the UK due to their sensitivity to the potential effects of plans and projects are listed in

4.5.8 Table 10.

Table 9 Bird species sighted during the 2016-2017 and 2019-2021 boat-based site-specific surveys [16]

Seabird species reported during the project specific surveys (2016-2017 and 2019-2021)			
Manx shearwater (*Puffinus puffinus*)	Herring gull (*Larus argentatus)*	Mediterranean gull (*Ichthyaetus melanocephalus*)	Common tern *(Sterna hirundo)*
Guillemot *(Uria aalge)*	Lesser black-backed gull (*Larus fuscus*)	Kittiwake *(Rissa tridactyla)*	Arctic tern (*Sterna paradisaea)*
Razorbill *(Alca torda)*	Great black-backed gull *(Larus marinus)*	Common scoter (*Melanitta nigra*)	Roseate tern (*Sterna dougallii*)
Puffin (*Fratercula arctica*)	Common gull (*Larus canus*)	Red-throated diver (*Gavia stellata*)	Arctic skua (*Stercorarius parasiticus*)
Black guillemot (*Cepphus grylle*)	Black-headed gull (*Chroicocephalus ridibundus*)	Cormorant (*Phalacrocorax carbo*)	Fulmar (*Fulmarus glacialis)*
Gannet (*Morus bassanus*)	Little gull *(Hydrocoloeus minutus)*	Shag (*Phalacrocorax aristotelis*)	
Non-seabird species reported during the specific surveys (2016-2017 and 2019-2021)			
Brent Goose (*Branta bernicla*)	Swallow (*Hirundo rustica*)	Meadow pipit (*Anthus pratensis*)	Starling (*Sturnus vulgaris*)

[16] For the full methodology of the 2019-2021 surveys please refer to Appendices 4.3.5-4 and 4.3.5-5 of Volume 4 of the EIAR.

Table 10 Summary of key bird species

Key species	Key season
Manx shearwater	Breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Gannet	Breeding season – most gannets move south in non-breeding season.
Shag	Predominantly breeding season.
Herring gull	All year.
Great black-backed gull	Predominantly breeding season, although some birds present all year.
Kittiwake	All year.
Little gull	Non-breeding season.
Common tern	Post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Arctic tern	Post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Roseate tern	Breeding and post-breeding season – birds leave the Irish Sea and migrate south for non-breeding season.
Guillemot	Predominantly breeding season.
Razorbill	Predominantly breeding and post-breeding season.

4.5.9 In addition, there were a further 13 seabird and 14 non-seabird species that were recorded infrequently during the 2016-2017 and 2019-2021 boat-based site-specific surveys, these include:

- Black-throated diver (*Gavia arctica)*
- Great northern diver (*Gavia immer)*
- Great shearwater (*Ardenna gravis)*
- Sooty shearwater (*Ardenna grisea)*
- Balearic shearwater (*Puffinus mauretanicus)*
- European storm-petrel (*Hydrobates pelagicus)*
- Eider (*Somateria mollissima)*
- Pomarine skua (*Stercorarius pomarinus)*
- Great skua (*Stercorarius skua)*
- Yellow-legged Gull (*Larus michahellis)*
- Sandwich tern (*Thalasseus sandvicensis)*
- Little tern (*Sternula albifrons)*
- Black tern (*Chlidonias niger)*
- Mute swan (*Cygnus olor)*
- Shelduck (*Tadorna tadorna)*
- Purple sandpiper (*Calidris maritima)*
- Dunlin (*Calidris alpina)*
- Whimbrel (*Numenius phaeopus*)
- Curlew (*Numenius arquata)*

- Turnstone (*Arenaria interpres)*
- Swift (*Apus apus)*
- Sand martin (*Riparia riparia)*
- Pied wagtail (*Motacilla alba)*
- Song thrush (*Turdus philomelos)*
- Goldcrest (*Regulus regulus)*
- Chaffinch (*Fringilla coelebs)*
- Linnet (*Carduelis cannabina)*

Intertidal bird species

4.5.10 The 2019/20 intertidal surveys were conducted to establish the non-breeding intertidal species present at the landfall location. At least 30 species were recorded throughout the intertidal survey, the majority of which were *Laridae* (gull species) and *Phalacrocoracidae* (shags and cormorants). In general, black-headed gull and shag were the most frequently recorded species in the inter-tidal study area. Oystercatcher was the most regularly recorded species of wader recorded on inter-tidal surveys. The most frequently recorded species was shag, which was recorded in 81% of counts and had a peak count of nine individuals. Black-headed gull was the second most frequently recorded species, recorded in 78% of the counts and with a peak count of 120 individuals. Herring gull was recorded in 70% of counts and had a peak count of 27 individuals and great black-backed gull was recorded in 48% of counts and had a peak count of 11 individuals.

4.5.0 Oystercatchers were the most regularly recorded species of wader, with small numbers recorded each month and a peak of 19 birds in January 2020. Ringed Plover were recorded between December 2019 and February 2020, with a peak count of 60 birds in December 2019, while turnstone (*Arenaria interpres)* were regularly recorded in low numbers over the period, with a peak of 14 birds in January 2020. Other wader species such as knot (*Calidris canutus)*, redshank (*Tringa tetanus)* and greenshank were also recorded occasionally over the survey period in lower numbers. Species that are known to be susceptible to disturbance such as divers and common scoter were only recorded in the Inter-tidal study area in very low numbers over the study period

4.5.1 Foraging was the most frequent behaviour recorded during the intertidal surveys for all shorebirds with species foraging in and out of the water. Loafing was the next most frequent behaviour observed followed by roosting and maintenance. The relatively low proportion of birds observed roosting (the majority relating to gulls) indicates that there are no sites which are regularly used for roosting by significant numbers of shorebirds close to the landfall.

4.5.2 Between September 2023 and March 2023, at least 22 waterbird species were recorded. Gull species and shags and cormorants were the most frequently occurring species groups recorded in the study area. Herring gull was recorded during 91% of counts throughout the season, with a peak count of 106 birds in October 2023. In addition, black-headed gulls were recorded on 69% of counts, with a peak count of 29 birds in December 2023, great black-backed gull were recorded on 66% of counts, with a peak count of six birds in September 2023, and cormorants were recorded on 53% of counts, with a peak count of six birds in December 2023 and February 2024. Excluding gulls, the highest peak count for any species was for light-bellied brent goose (n = 220). This species was only recorded on surveys in January 2024 (n = 50 and n = 12) and one count in March 2024 (n = 220). These data show that although some peak counts of light-bellied brent goose were relatively high, the frequency of their occurrence within the study area was low. This species was only recorded flying through the study area with no indication that the geese were using the survey area other than flying through it.

4.5.3 Excluding gulls, the highest peak count for any species was for light-bellied brent goose (n = 220). This species was only recorded on surveys in January 2024 (n = 50 and n = 12) and one count in March 2024 (n = 220). These data show that although some peak counts of light-bellied brent goose were relatively high, the frequency of their occurrence within the study area was low. This species was only recorded flying through the study area with no indication that the geese were using the survey area.

4.5.4 Overall, as with the 2019-2020 surveys, no species were recorded in numbers exceeding 1% of the national population, which would be considered significant.

4.5.5 While extensive desktop data is available for wintering wildfowl and waders, a dedicated field survey was undertaken to search for breeding birds at the O&M Base. The survey methodology was based upon guidelines from the Bird Survey & Assessment Steering Group (2023). This states that six breeding bird survey visits should be undertaken unless the project will have limited impacts, or the site contains habitats of low value for breeding birds, or the habitats present are such that detection of birds is difficult.

4.5.6 A scoping survey was undertaken on 27/04/2023. The absence of densely vegetated habitats meant that detection of birds was not impeded. In addition, the highly artificial nature of the harbour habitats plus continued disturbance suggested that in general, the O&M base was of lower value for breeding birds. The exception was the presence of potentially nesting black guillemots (*Cepphus grylle*). Consequently, the survey methodology was tailored to focus on this species, using the 'productivity monitoring method 2 (inaccessible nest sites)' outlined in Walsh *et al.* (1995). Thus, a second visit was carried out in summer 2023 to determine which potential nest sites had fish delivered to them, thereby indicating breeding success. Black guillemots were confirmed to be breeding within the underside of Carlisle Pier within the study area, ca. 190 m from the development footprint. A peak count of 10 birds was recorded during the survey.

4.5.7 Previous surveys recorded a maximum peak count of twelve birds within 300 m of Carlisle Pier. All of these birds are considered to be utilising nesting locations on Carlisle Pier with four nest sites recorded on the western face of the pier wall and two nest sites on the eastern face. All of these nesting locations are on the original pier wall. It is considered likely that the population of nesting black guillemot recorded at Carlisle Pier is of ecological significance at the local to regional level. In addition to recording the breeding population of Black Guillemots along the pier, one other species (feral pigeon) was also confirmed to breed on the jetty. Although black guillemot are present at the O&M base, they are not a designated feature in Ireland, therefore, they have not been included for assessment within the AA. Potential impacts to black guillemot from the O&M base have been assessed in EIAR Ornithology Chapter.

4.5.8 The survey findings and review of iWeBS data found that there were 54 species recorded within the study area over the last five winters. The most abundant species recorded in the study area were dunlin (*Calidris alpina)*, herring gull (*Larus argentatus)*, great black-backed gull *(Larus marinus)*, black-headed gull *(Chroicocephalus ridibundus)*, oystercatcher *(Haematopus ostralegus)*, and sanderling *(Calidris alba)*.

4.5.9 Species recorded in the study area by IweBS surveys in numbers comprising the largest proportion (>50%) of the combined South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA population include common scoter (*Melanitta nigra)*, great black-backed gull, great northern diver (*Gavia immer)*, kingfisher (*Alcedo atthis)*, Mediterranean gull (*Ichthyaetus melanocephalus)*, moorhen (*Gallinula chloropus)*, purple sandpiper (*Calidris maritima)*, red-throated diver (*Gavia stellata)*, and shag (*Phalacrocorax aristotelis)*. However, of these species, great northern diver, kingfisher, moorhen, purple sandpiper, and red-throated diver were recorded in the study area in low numbers (i.e., ten or fewer individuals).

4.5.10 Species recorded in the study area by IweBS surveys in numbers comprising the largest proportion (>50%) of the Dalkey Island SPA population include black-headed gull, common gull (*Larus canus)*, common scoter, great black-backed gull, greenshank (*Tringa nebularia)*, grey heron (*Ardea cinerea)*, herring gull, lesser black-backed gull (*Larus fuscus)*, light-bellied brent goose (*Branta Branta hrota)*, Mediterranean gull, oystercatcher (*Haemotopus ostralegus)*, redshank (*Tringa tetanus),* red-throated diver, sandwich tern (*Thalasseus sandvicensis)*, shag and turnstone (*Arenaria interpres)*. However, of these species, common gull, greenshank, grey heron, lesser black-backed gull, red-throated diver, sandwich tern were recorded in the study area in low numbers (i.e., ten or fewer individuals).

4.5.11 A total of 13 bird species were recorded within the O&M study area during dedicated field surveys. Herring gulls were confirmed to be breeding on the roof of an existing building within the Site. Two chicks were observed begging for food from an adult bird. This was the only species confirmed breeding that is also an SCI for nearby SPAs.

4.5.12 House martin (*Delichon urbicum)*, house sparrow (*Passer domesticus)* and starling (*Sturnus vulgaris)* were assessed as possibly breeding within the study area due to their presence in suitable nesting habitat. A remaining eight species were recorded as non-breeding within the study area. Other relevant ornithological observations included large numbers (c. 500 individuals) of starlings roosting on structures at the end of St Michael's pier, c. 200 m from the O&M base.

4.6 Fish ecology

4.6.1 The characterisation of the receiving environment for fish ecology draws on regional datasets, scientific literature, commercial fisheries information, and industry-specific survey data collected for infrastructure projects within the wider western Irish Sea region. In addition, site-specific survey data was included (Aquafact, 2019). Relevant to this AA screening, migratory fish species designated as QIs have been considered, together with prey species for qualifying features of SACs and SPAs. For the full list of data sources please refer to Fish and Shellfish Ecology Baseline.

Migratory fish species

4.6.2 Fish species designated as QIs of SACS that may occur in the fish and shellfish study area are the diadromous species; Atlantic salmon (*Salmo salar)*, sea trout (*Salmo trutta)*, twaite shad (*Alosa fallax*) and lamprey species (as discussed in the Fish and Shellfish Baseline). Diadromous species are not generally present in the study area for much of their life cycle. They, nonetheless, can be present at times when migrating to and from rivers and transitional water bodies in the area, and they may therefore be affected by impacts arising from the development process as they transit the study area.

4.6.3 Atlantic salmon are known to be present within several rivers entering the Irish Sea close to the development area, including the Rivers Varty, Dargle, Liffey, Dodder and Tolka (Inland Fisheries Ireland (IFI), 2018, 2022; O'Connor, 2006), with the latter three rivers flowing into Dublin Bay north-west of the Shanganagh landfall site. The nearest rivers designated as Salmonid waters under the Salmonid River Regulations are the river Boyne and the river Dargle, the latter entering the Irish Sea at Bray approximately 2.5 km to the south of the Offshore ECC.

4.6.4 The marine phase of Atlantic salmon begins between spring and early summer when large numbers of young salmon (smolts) leave Irish rivers to migrate into the rich feeding grounds of the Norwegian Sea and the greater expanse of the North Atlantic Ocean. On leaving natal rivers, it has been reported that salmon undertake a rapid and active migration away from their river of origin, as reported, for example, by Martin and Mitchell (1985), who caught post-smolts tagged in Scottish rivers in the Faroese fishery within 6 months of leaving freshwater. The return migration of salmon into their native rivers mainly takes place during spring and summer, and spawning occurs during the following autumn and winter (Finstad *et al.*, 2005).

4.6.5 Adult salmon return to natal rivers generally from a northerly direction, which suggests they utilise dominant feeding grounds around the Faroe Islands and Greenland during their marine phase. Fish counters operated by the IFI on the Lower Liffey and Upper Liffey show figures ranging from 1000-2000 in any given year. A review of monthly fish counter returns on the Liffey for several years shows that while salmon can run into the Liffey in every month of the year, the main months are June to September, with years when October can also contribute significantly (Aquatic Services Unit, 2020; IFI, 2018). However, since the 1980's the number of wild salmon returning to their natal Irish rivers has decreased from 15-20% to approximately 5%, indicating a decrease in salmon survival in the marine environment (Millane *et al.*, 2023). Analysis of data from fish counters indicate that salmon stocks within the Rivers Liffey, Boyne and Slaney are currently below river-specific conservation limits (Millane *et al.*, 2023).

4.6.6 The migratory routes of Atlantic salmon away from coastal waters to their oceanic feeding grounds are generally poorly understood. Experimental post-smolt trawls in the Norwegian sea and Western Scotland have provided evidence for a northerly migration route for Irish salmon stocks in the early months of their long migration. Recent acoustic telemetry data suggest that young salmon (smolts) from the River Boyne and other rivers along the east coast of Ireland move north upon leaving their home rivers (Barry *et al.*, 2020). The tracking data further suggest that on leaving their natal rivers, smolts move rapidly away from the coast towards the deep waters of the Irish Sea, possibly to take advantage of the northwards flowing surface currents, which can assist their journey to the oceanic feeding grounds in the north-east Atlantic (Barry *et al.*, 2020). Tracking data further suggest that salmon smolts within the south-east coast of Ireland (where the river Slaney is located) head in a south-westerly direction upon leaving the estuary (Rikardsen, *et al.*, 2021), suggesting that they do not migrate through the study area to reach their oceanic feeding grounds.

4.6.7 During site specific trawls for Dublin Array, no records of Atlantic salmon were made (Aquafact, 2019; Saorgus Energy Limited, 2013). However, the evidence suggests that there is the potential for salmon smolt and adult salmon to occur within the Dublin Array site during outward and return migrations.

4.6.8 River systems flowing into Dublin Bay also support sea trout (*Salmo trutta*). Sea/brown trout is a facultative anadromous species, beginning its life in freshwater (Celtic Sea Trout Project (CSTP), 2016). Juveniles may spend their entire life in natal streams or they may migrate to the sea; anadromous individuals are commonly referred to as sea trout (CSTP, 2016). Netting and tracking data for post-smolt sea trout provide evidence supporting relative local movement along the coast for the first couple of months at sea (Finstad *et al.*, 2005). This is supported by more recent data (Barry *et al.*, 2020; CSTP, 2016), which indicate that a large proportion of sea trout remain relatively close to their river of origin, with those individuals undertaking longer distance migrations being strongly influenced by the prevailing currents of the area.

4.6.9 Sea trout are widespread in all major rivers and lakes systems of Ireland, including the Boyne, Nanny, Dargle, Varty, Dee, Castletown and Slaney (Cocoran *et al*., 2022; CSTP, 2016; IFI, 2022). River systems flowing into Dublin Bay (i.e., Liffey, Tolka and Dodder) also support sea trout (CSTP, 2016; Holmes *et al*., 2018). During site specific trawls for Dublin Array, sea trout were not recorded (Aquafact, 2019;Saorgus Energy Limited, 2013), but it is assumed that sea trout may be present in the coastal regions surrounding Dublin Array for at least a proportion of the year. Environmental DNA (eDNA) samples collected upstream in rivers surrounding the onshore export cable route showed the presence of brown/sea trout within the Shanganagh River, the Carrickmines Stream and the Kill Of The Grange River, confirming the wide distribution of trout in rivers draining into the study area (Terrestrial Ecology technical baseline). From the onshore surveys undertaken the Carrickmines Stream and Shanganagh River provided the best quality salmonid habitat (including brown trout) in the survey area, although hydro-morphological and water quality pressures notably reduced the value of spawning habitat. Of note is that the lower Shanganagh River is known to support anadromous sea trout (Terrestrial Ecology technical baseline, which is unusual for an urban watercourse.

4.6.10 There are three species of lamprey native to Ireland, the sea lamprey (*Petromyzon marinus*), the river lamprey (*Lampetra fluviatilis*) and the brook lamprey (*L. planeri*) (Kelly and King, 2001). On the east coast of Ireland, river lamprey have been reported from the Rivers Boyne, Liffey, Dodder, Aughrim, and Avoca (Kelly and King, 2001; King and Linnane, 2004; O'Connor, 2006). There are no recent records of sea lampreys in rivers along Ireland's east coast, though historic records exist for sea lampreys in the Liffey (Igoe *et al.*, 2004; RPS, 2014). In the south-eastern coastal regions, important spawning populations of river and sea lamprey are present within the Rivers Slaney, Barrow, Nore, Suir, and Munster Blackwater (Kelly and King, 2001; King and Linnane, 2004; King, 2006; Kurz and Costello, 1999).

4.6.11 In north-west Europe, the upstream spawning migration of mature sea lamprey into rivers occurs throughout spring and early summer, one or two months before the onset of spawning (Kelly and King, 2001; Maitland, 2003), while the seaward movement of newly metamorphosed young adults takes place during autumn and early winter (Kelly and King, 2001). The upstream migration of mature river lampreys from the sea to freshwater spawning streams typically begins in late summer and autumn (Kelly and King, 2001), and spawning takes place the following spring throughout March and April (Maitland, 2003). Newly metamorphosed young adults migrate downstream into estuaries between summer and late autumn/early winter (Kelly and King, 2001; Maitland, 2003). The young larvae, known as ammocoetes, spend several years in soft sediment before migrating to the sea as adults.

4.6.12 The Lower Liffey is a migratory corridor for river lamprey, and it is known to occur in the wider Liffey Catchment. The data suggests a strong spring migration and smaller autumn run for the species in the Liffey. Recent detailed surveys in main stem and tributary sites throughout the Liffey catchment confirmed the widespread occurrence of juvenile lamprey. These could be either brook or river lamprey, (*L. planeri* or *L. fluviatilis*) but because the two species are indistinguishable at the juvenile stage they are treated as paired species. It is likely that the brook lamprey is the more widespread within the catchment, but these species undergo an upstream migration and do not migrate out to sea. *L. planeri* have been observed in the middle reaches of the Rivers Dodder and Liffey with ammocoetes of the same species found in middle reaches of Liffey. Instream barriers, such as weirs and culverts, would heavily restrict the passage of lamprey species within the survey area, in addition to siltation and water quality pressures. *Lampetra* sp. eDNA (likely brook lamprey, *L. planeri)* was detected in the lower reaches of the Shanganagh River, where suitable nursery and spawning habitat was present, in addition to a more natural river profile. *Lampetra* sp. are also known from the Carrickmines Stream (Triturus 2020).

4.6.13 Most research on lamprey species has focussed on the freshwater portion of their life cycle, while the distribution and habitat requirements of lampreys at sea is poorly documented. River lampreys are reported to typically remain in estuarine areas during their marine stage, where they spend about one to two years feeding on a variety of fishes including herring, sprat, smelt and flounder (Kelly and King, 2001; Maitland, 2003). Adult sea lamprey have been recorded in both shallow coastal and deep offshore waters, with sightings as deep as 4,000 m (Kelly and King, 2001). The parasitic feeding phase of sea lamprey at sea is estimated to last between 18-30 months (King *et al.*, 2011; Silva *et al.*, 2013), and targeted hosts include basking sharks, cetaceans, and a variety of pelagic and demersal fishes such as herring, mackerel, cod, haddock and salmon (Kelly and King, 2001; Waldman *et al.*, 2008).

4.6.14 The distribution and habitat requirements of twaite shad while at sea are also poorly documented. The species is reported to prefer shallow waters at depths of 10-20 m, although it has also been recorded in deeper waters of up to 300 m (Maitland and Hatton-Ellis, 2003). Mature individuals start to migrate from the sea into suitable spawning rivers in early summer (April and May) and spawning takes place from May to July (King *et al.*, 2011; Maitland and Hatton-Ellis, 2003).

4.6.15 The nearest European sites to the proposed development area designated for migratory fish are the River Boyne and River Blackwater SAC and the Slaney River Valley SAC. The River Boyne and River Blackwater SAC is designated for river lamprey and Atlantic. Salmon and is located inland 51.6 km to the north-west of the array area and 53.8 km to the north of the Offshore ECC. The SAC. the Slaney River Valley SAC lies approximately 96 km (closest point to mouth of estuary) to the south of the proposed development and is designated for sea lamprey, brook lamprey, river lamprey, twaite shad and Atlantic salmon. Whilst these designated sites lie outside of the ZoIs, they have been given due consideration due to the migratory nature of the features, and therefore the potential for the features to transit the proposed development area.

Prey species (for designated features)

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

4.6.17 Fish resources at Dublin Array and within the surrounding areas (as characterised in the Fish and Shellfish Ecology Baseline of the EIAR),, were found to generally reflect the populations known to occur across the Irish Sea. Prey species known to spawn in the vicinity of Dublin Array include sandeel lemon sole (*Microstomus kitt*), sprat (*Sprattus sprattus*), plaice (*Pleuronectes platessa*), sole (*Solea solea*), whiting (*Merlangius merlangus*), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*) Atlantic mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*) (Coull *et al*., 1998; Ellis *et al.*, 2010, 2012; Marine Institute, 2016). With the exception of plaice, all spawning within the array area and Offshore ECC is recorded as being of low or unknown intensity. The nursery areas that overlap with Dublin Array and the surrounding ZoIs include those for cod, haddock, herring, lemon sole, plaice, whiting, mackerel, horse mackerel, and sandeel (Coull *et al.*, 1998; Ellis *et al*., 2010, 2012; Marine Institute, 2016).

5 Likely Significant Effects

5.1 Identification of likely significant effects

5.1.1 A number of potential effects have been identified for consideration; these are listed in Table 11 for construction, decommissioning and O&M relative to each main ecological receptor group which has the potential to be affected (as indicated by a ✓).

5.1.2 Section 5.3 provides an overview of potential effects providing evidence of guidance, and previous studies that behave been relied upon to support the assessments.

Table 11 Effects screened in for all phases of the Dublin Array

Potential effect	Receptor Group				
	Subtidal/ intertidal benthic ecology	Birds	Marine Mammals	Fish	Onshore ecology
Underwater noise	-	-	✓	✓	-
Effects on prey	-	✓	✓	✓	✓
Collision risk (vessels)	-	-	✓	✓	-
Disturbance (non physical) Light/airborne noise/visual	-	-	✓	✓	✓
Accidental pollution / Water Quality	✓	-	✓	✓	✓
Suspended sediment and deposition	✓	-	✓	✓	-
Physical habitat loss	✓	-	✓	✓	✓
Habitat disturbance	✓	-	✓	✓	✓
Invasive species	✓	-	✓	✓	✓
Hydrology (onshore)	✓	-	-	✓	✓
Electro Magnetic Fields (EMF)	✓	-	-	✓	-
Physical processes	✓	-	-	✓	-
Collision risk (turbines)	-	✓	-	-	-
Disturbance/displacement/barrier effect [17]	-	✓	-	-	-

5.2 Effects screened out

5.2.1 The identification of a potential effect does not always translate to an impact, the OPR Guidance states that if there is no ecological pathway or functional link between the proposed development and the European site (including consideration of ex situ habitats), there is no potential for impact and the relevant effect and EU site can be screened out. A European site will only be at risk from likely significant effects where the S-P-R link exists between the proposed development and the European site.

[17] This effect is specific to birds during operation and maintenance activities and dealt with as a standalone effect for this receptor given the particular sensitivities of bird species and offshore windfarms.

5.2.2 In this context, the role of the pathway is critical to the screening process. If there is no pathway, then the potential effect can be screened out with confidence. Similarly, if the QIs of the European site are not sensitive (either directly or indirectly) to any effect resulting from the proposed development, then a likely significant effect can also be ruled out through the screening process.

5.2.3 Table 12 provides details of all effects screened out by receptors , with justifications based on the most recent evidence from research and/or monitoring studies from existing offshore wind farms across UK, Europe and USA. In line with all relevant guidance where this screening identifies any uncertainty the potential effects and European Sites have been screened in.

Table 12 Effects screened out

Effect screened out	Receptor	Justification	Evidence Base
Underwater noise	Habitats (subtidal and intertidal)	The majority of benthic invertebrates (and, hence their communities) have limited or no known response to noise, although vibrations in the water column, at close proximity, may result in an avoidance response. Marlin[18] concludes this pressure is considered to be 'Not relevant' to benthic species and habitats, unless specific evidence to the contrary is found (Tyler-Walters, H *et al*, 2018). Further studies investigating the impacts of the noise generated by wind turbine operation on marine fauna concluded no significant injuries on benthic invertebrates (Pearson, 2010; Sigray and Andersson, 2011).	MARLIN provides marine evidence based sensitivity assessments (Tyler-Walters, H *et al*, 2018): https://marlin.ac.uk/assets/pdf/MarESA-Sensitivity-Assessment-Guidance-Rpt-Dec2018.pdf

[18] MarLIN provides for Marine Evidence Based Sensitivity Assessments (MarESA). The MarESA methodology is based on scientific evidence that has been used to inform assessments on biotope sensitivity to pressures. Confidence in the assessment is based on the robustness of the underlying evidence, which ranges from peer reviewed literature (high confidence) to expert judgement (low confidence). While there are limitations of the scientific evidence on the biology of features and their responses to environmental pressures on which the sensitivity assessments been based the MarESA assessments have been adopted as good practice in determining the sensitivity of species and features to pressures.

Effect screened out	Receptor	Justification	Evidence Base
	Ornithology	During all project phases the presence of noise has the potential to interact with ornithological receptors, though given the low sensitivity of birds to noise disturbance at sea and temporary nature of the impact there is no potential for LSE. Birds are highly mobile with large foraging ranges (Woodward *et al*., 2019), providing them with a significant amount of alternative foraging habitat outside of a comparatively tiny disturbance range. If birds are foraging in noisy areas then seabirds that may shallow dive, dip, dive or surface feed are of limited sensitivity to underwater noise, due to the brevity of exposure time and sensitivity to disturbance (Furness *et al*., 2012, Fleissbach *et al*., 2019). For deeper diving birds (e.g., auk species), there is some evidence (e.g., Mooney, 2020) to suggest potential impacts from underwater noise, though any effects would be limited temporally and spatially. Available evidence suggests birds do not hear well underwater and are unlikely to be impacted while diving. Anatomical studies of ear structures in diving birds (e.g., Dooling and Therrien, 2012), suggest that there are adaptations for protection against the large pressure changes that occur while diving which may protect the ear from damage due to acoustic over-exposure. Furthermore, effects will be spatially and temporally limited, with construction impacts between 18-30 months and only present within the construction area (array area, ECC and intertidal zone). The impacts of avoidance are covered within the	Moony (2020) Dooling and Therrien (2012) Furness *et al*. (2012) Fleissbach *et al*. (2019)

Effect screened out	Receptor	Justification	Evidence Base
		disturbance and displacement assessment above. The effects are also likely reversable in nature, with birds returning to the area following the end of noisy activities during construction and decommissioning. Consequently, birds are considered to be highly adaptive to this impact (owing to their mobile nature), with any indirect impacts already suitably assessed as part of the disturbance and displacement assessment. The impacts on seabirds from underwater noise as a standalone impact during the construction and decommissioning phase have, therefore, no potential to result in LSE.	
	Onshore ecology	This is no pathway for underwater noise to impact on onshore receptors; therefore this effect has been screened out. It should be noted however that onshore ecology has been screened in for disturbance from non-physical effects including airborne noise and these are assessed in the relevant section.	
Effects on prey	Habitats	There is no pathway for effects on prey to affect benthic habitats because the structure and function of benthic habitats is not influenced by the abundance of prey species, the majority of which will be in the overlying water column. This effect has therefore been screened out.	
Collision risk (vessels)	Habitats	No pathway for effect exists, vessels in transit will not come into direct contact with benthic habitats, any potential for effects from anchoring of vessels or use of jack up legs to stabilise vessels will be captured within the physical habitat loss and/or disturbance effect.	
	Onshore	No pathway exists for vessels in transit to affect onshore ecology through collision risk, vessels in transit will not come into direct contact with onshore habitats or species. This impact has therefore been screened out.	
	Ornithology	Very little evidence exists to suggest birds regularly collide with vessels. Due to the slow-moving nature of vessels, alongside the noise they produce which provides warning to birds, the likelihood of collision is very low. Therefore no realistic impact pathway is identified.	

Effect screened out	Receptor	Justification	Evidence Base
Disturbance (non-physical) Light/airborne noise/visual	Habitats	The introduction of artificial light or visual disturbance is not relevant for most benthic invertebrates. Visual disturbance is only relevant to species that respond to visual cues, for hunting, behavioural responses or predator avoidance, and that have the visual range to perceive cues at distance. It is particularly relevant to species that depend on sight but less relevant to benthic invertebrates.	MARLIN provides marine evidence based sensitivity assessments (Tyler-Walters, H *et al*, 2018): https://marlin.ac.uk/assets/pdf/MarESA-Sensitivity-Assessment-Guidance-Rpt-Dec2018.pdf
	Ornithology	Screened out as a standalone impact, with all potential disturbance effects considered within the 'Disturbance/Displacement/barrier effect' impact.	
Suspended Sediment and deposition	Onshore ecology	There is no pathway for effect to arise, as outlined in the Project Description of this Habitats Directive Assessment, a trenchless installation technique will be used for construction of onshore watercourse crossings, therefore no pathway for suspended sediment/deposition to arise within watercourses	
	Ornithology	Screened out as a standalone impact for ornithological receptors. The main impact pathway for birds from this impact will be knock on impacts to prey species which is screened in. There may be impacts due to birds being less able to forage underwater if visibility is reduced, however this impact will be temporary in nature and any resulting disturbance is already covered within the screened in 'Disturbance/Displacement/barrier effect'.	
Hydrology (onshore)	Ornithology	There is no pathway by which marine ornithology might be affected by changes in onshore hydrology such as changes to groundwater and/or potential changes to watercourses. This is because a trenchless technique will be used for construction of onshore watercourse crossings and the OES lies in different groundwater basin to SPAs and supporting habitat designated for bird species. This effect has therefore been screened out.	
	Marine mammals	There is no pathway by which changes to onshore hydrology might impact marine mammals due to the lack of spatial overlap and low sensitivity of marine mammals to any changes to groundwater and/or potential changes to watercourses. This potential effect has therefore been screened out.	
EMF	Ornithology	EMF is associated with subsea cables, and the depth at which this occurs is a large enough distance from marine birds, that there is no pathway for EMF to impact upon ornithology. This effect has therefore been screened out.	

Effect screened out	Receptor	Justification	Evidence Base
	Onshore ecology	There is no pathway through which changes to EMF could impact upon onshore hydrology, because EMF is associated with subsea cables, all cables will be buried with trenchless techniques used for watercourse crossings. This effect has therefore been screened out.	
	Marine mammals	Based on the data available to date, there is no evidence of EMF related to marine renewable devices having any impact (either positive or negative) on marine mammals (Copping, 2018) with anecdotal evidence suggesting a lack of avoidance reactions (DCCAE, 2017). There is no evidence that seals can detect or respond to EMF (Normandeau *et al*., 2011). EMFs are emitted along the lengths of subsea cables. Existing evidence suggests that the levels of EMFs emitted by offshore renewable energy export cables are at a level low enough that there is no potential for direct significant impacts on marine mammals (Copping and Hemery, 2020). Given that marine mammals are known to closely associate with offshore wind farm structures (Scheidat *et al*., 2011, Russell *et al*., 2014), it is predicted that the magnitude and vulnerability score for this impact would be negligible. Any indirect impacts from changes to prey behaviour will be considered as part of the assessment on that effect.	Copping, A., and L. Hemery. (2020). OES-Environmental 2020 State of the Science Report: Environmental Effects of Marine Renewable Energy Development Around the World. Report for Ocean Energy Systems (OES). Russell, D. J., S. M. Brasseur, D. Thompson, G. D. Hastie, V. M. Janik, G. Aarts, B. T. McClintock, J. Matthiopoulos, S. E. Moss, and B. McConnell. (2014). Marine mammals trace anthropogenic structures at sea. Current Biology 24:R638-R639. Scheidat, M., J. Tougaard, S. Brasseur, J. Carstensen, T. van Polanen Petel, J. Teilmann, and P. Reijnders. (2011). Harbour porpoises (Phocoena phocoena) and wind farms: a case study in the Dutch North Sea. Environmental Research Letters 6:1-10. Czech-Damal, N. U., G. Dehnhardt, P. Manger, and W. Hanke. 2013. Passive electroreception in aquatic mammals. Journal of Comparative Physiology A-Neuroethology Sensory Neural and Behavioral Physiology 199:555-563.

Effect screened out	Receptor	Justification	Evidence Base
			Normandeau (Normandeau Associates, Inc.), Exponent, Inc., Tricas, T., and Gill, A., (2011), 'Effects of EMFs from Undersea Power Cables on Elasmobranchs and Other Marine Species'. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Regulation, and Enforcement, Pacific OCS Region, Camarillo, CA. OCS Study BOEMRE 2011-09.
Physical processes (tides, waves and currents)	Marine Mammals / Ornithology	Marine mammals and birds are not considered sensitive to any changes in physical processes (tides, waves and currents) against the background of natural variability. It is very unlikely that seabirds simply move passively with flowing water, and all the available evidence indicates that diving seabirds move actively through the water, and often swim against the current. This effect has therefore been screened out. Any effects on prey through changes in physical processes will be considered as a standalone effect.	Lovvorn, J. R., and Jones, D. R. (1991). Body mass, volume, and buoyancy of some aquatic birds, and their relation to locomotor strategies. Can. J. Fish. Aquat. Sci. 69, 2888–2892. Doi: 10.1139/z91-407 Lovvorn and Jones, 1991; Holm and Burger, 2002; Daunt *et al*., 2003; Heath *et al*., 2006; Watanuki *et al*., 2006; Harding *et al*., 2009; Langston, 2010).
	Onshore ecology	There is no pathway for physical processes to affect onshore ecology because all onshore receptors are above MHWM. This effect has therefore been screened out.	
Collision risk (turbines)	Habitats/fish/marine mammals	Not screened in due to no pathway for effect with these receptors, this effect is specific to collisions with the turbine blades.	
	Onshore ecology	Onshore ecology has been screened out on the basis of no pathway -, onshore habitats or species will not come into direct contact with turbines, however, of note is the potential for collision risk by bats. The lesser horseshoe bat is listed in Annex II of the EU	Bat Conservation Ireland (2012) Bats and Appropriate Assessment Guidelines, Version 1, December 2012. Bat Conservation Ireland.

Effect screened out	Receptor	Justification	Evidence Base
		Habitats Directive, while all other bat species are listed in Annex IV of the same Directive. SACs designated for the lesser horseshoe are all located within the six western counties from Cork to Mayo (NPWS, 2013) and greater than 30 km to the Dublin coast. Guidance from Bat Conservation Ireland (2012) recommends that all cSACs within 15 km of the proposal that contain lesser horseshoe bats as a QI should be considered as potential impact receptors at this stage. The species is not known to be migratory in Ireland and foraging behaviours restricted to within 2.5 km of roosts (NPWS, 2018).oOn the basis of this advice and results of the site-specific surveys that recorded no lesser horseshoe individuals, this effect is screened out for this AA given the lack of pathway to any SACs for which the species is designated.	
Disturbance/ Displacement /barrier effect	Habitats/fish/ onshore ecology/marine mammals	This particular effect is used exclusively in relation to birds and does not apply to habitats/fish/onshore ecology or marine mammals. The effect describes disturbance/displacement/barrier effects on birds from the presence of WTGs during operation and maintenance activities, and is dealt with as a standalone effect given the particular sensitivities of bird species and offshore windfarms. Disturbance to these receptors is captured under the general disturbance effects – Disturbance (non-physical) Light/airborne noise/visual, underwater noise and EMF.	
Physical Habitat loss	Ornithology	Direct habitat loss has been screened out for all sites due to four factors. (1) No site designated for ornithological features overlaps with the proposed development, (2) given the large foraging ranges used by seabirds (Woodward *et al*., 2019) ornithological features have sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. Therefore, direct habitat loss due to the proposed development is unlikely to have effects on SPA breeding seabird populations. Similarly, (3) no habitat loss effects are predicted on migratory waterbird populations as a result of birds passing through (or	

Effect screened out	Receptor	Justification	Evidence Base
		over) the array area on migration. Direct habitat loss has therefore not been included within the ornithology screening tables. Finally, (4) any potential impacts from habitat loss are considered within the disturbance assessment.	
Accidental pollution / Water Quality	Ornithology	Though there is potential for impacts on birds due to accidental release of pollutants, the likelihood of release is very low birds are highly mobile receptors. In the unlikely event of accidental pollution, birds are able to forage in alternative locations within their foraging range. Standard requirements for vessels under the International Convention for the Prevention of Pollution from Ships (MARPOL) and other similar binding rules and obligations imposed on ship owners and operators by *inter alia* the International Maritime Organisation, legislate vessel operation and ban the discharge of contaminants. These legislative requirements will be adhered to throughout the project lifetime; therefore, there is no impact pathway for accidental pollution on ornithological receptors.	
Invasive species	Ornithology	There is not considered to be an impact pathway relating to marine invasive species due to offshore wind developments on ornithological receptors. The main impacts on birds relating to invasive species arise from terrestrial mammalian species, such as rats and foxes. There is not considered to be an interaction between offshore wind developments and the introduction of mammalian predators, and therefore no impact pathway is identified for ornithological receptors.	

5.3 Consideration of project effects

5.3.1 This section considers those effects identified in Table 11 as having potential to cause LSE on receptors and provides additional context on the source and identifies relevant guidance, supporting studies and thresholds relied upon to inform the screening process.

Construction and Decommissioning

Underwater noise

5.3.2 Underwater noise from the project will arise from installation during the construction phase, primarily from piling for foundations and monopiles, installation of export cables, cofferdams; and installation of other project infrastructure and seabed preparation works.

5.3.3 Project specific underwater noise modelling has been undertaken to support the assessment of the effects of underwater noise. Pile driving results in one of the loudest anthropogenic sound sources in the marine environment (e.g. Popper *et al.*, 2014) and as such is often the focus of assessments of the potential impacts from underwater noise arising from offshore wind farm construction. The modelling of the noise emissions from the piling of the foundations for Dublin Array utilises the INSPIRE noise model[19] which has been developed based on an extensive database of previous sound pressure monitoring data at a range of locations and for a variety of sound sources. Modelling for other noise sources (including operational noise) has been undertaken using a spreadsheet-based approach, with inputs and outputs validated from data retained by Subacoustech from monitoring data. Modelling has been undertaken at two representative locations, covering the extents of where piling will be undertaken within the array area. The north east and south east were chosen as they present two very different water depths across the site, as well as a wide spatial variation and therefore are an accurate representation of the extent of underwater noise generated during the piling process.

5.3.4 Underwater noise sources generate different types and intensities of sound, with different components of the sound having a varying ability to lead to impacts to marine organisms. Modelling of the underwater noise is required due to the influence of local factors on the production of noise and the transmission of the noise through water. Underwater noise is commonly described using the sound pressure levels (SPLs) and sound exposure levels (SELs), Chapter 3 of the EIAR Underwater Noise and Electromagnetic fields can be referenced for a full description of the parameters and criteria used to describe underwater noise. Specific receptor criteria and guidance that have been relied upon for screening is provided in the sections below.

5.3.5 For full reference to the underwater noise modelling please refer to: Volume 4, Appendix 4.3.5-7: Dublin Array: Underwater noise assessment.

[19] A range dependent, semi-empirical broadband noise propagation model developed and refined over 10 years using hundreds of datasets from field studies. Due to the nature of the data used to formulate and validate INSPIRE, it has shown a good level of accuracy for piling events in the waters similar to the North Sea and UK continental shelf

5.3.6 Ambient noise levels in the marine environment can vary significantly from location to location and day to day based on numerous factors, both natural and anthropogenic. Natural causes of variations in ambient (also referred to as "background") noise include sea state, weather condition (rain, wind speed), surf noise, and vocalisations from marine organisms, amongst others. Background noise within the Dublin Bay region is thought to vary between 110 – 125dB SPLRMS (Farcas *et al*., 2020), with the soundscape dominated by that from shipping and wind. Beck *et al*, 2013 reported mean noise levels as 113 ± 8.2 dB re 1 µPa for Dublin Bay as part of their assessment of ocean noise. I

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

5.3.8 Disturbance can also arise specifically from underwater noise generated by project vessels transiting to and active on site. Disturbance from vessel noise is only likely to occur where increased noise from vessel movements associated with the construction of Dublin Array is greater than the background ambient noise. The magnitude and characteristics of vessel noise varies depending on ship type, ship size, mode of propulsion, operational factors and speed with vessels of varying size producing different frequencies, generally lower frequency with increasing size. The distance at which animals may react is difficult to predict and behavioural responses can vary a great deal depending on context.

Marine mammals

5.3.9 It is widely documented that marine mammals are sensitive to underwater noise (Hildebrand, 2009; Nowacek *et al*., 2007; OSPAR 2009; Richardson *et al*., 1995; Southall *et al*., 2019; Southall *et al*., 2021), with a wealth of evidence that many anthropogenic sound sources, such as vessels and related construction activity (Culloch *et al*., 2016; Dunlop, 2016; Pirotta *et al*., 2012; Wisniewska *et al*., 2018), impact pile driving (Brandt *et al*., 2011; Graham *et al*., 2019), seismic surveys (Pirotta *et al*., 2014; Stone *et al*., 2017) and acoustic deterrent devices ((ADDs); Basran *et al*., 2020; Schaffeld *et al*., 2019) do have impacts on marine mammals.

5.3.10 These impacts have varying degrees of observed and / or predicted severity, ranging from changes in behaviour and masking (affecting communication and listening space, and / or locating prey; Basran *et al*., 2020; Dunlop, 2016; Erbe *et al*., 2016; Heiler *et al*., 2016; Pine *et al*., 2019; Pirotta *et al*., 2012; Wisniewska *et al*., 2018), to displacement and disturbance (Brandt *et al*., 2011; Culloch *et al*., 2016; Graham *et al*., 2019; Pirotta *et al*., 2014; Stone *et al*., 2017) to injury and even mortality (Reichmuth *et al*., 2019; Schaffeld *et al*., 2019).

5.3.11 The severity of these potential impacts will depend, in part, on the hearing range of the species affected. It will also be dependent upon; the noise source characteristics (frequency (Hz) and amplitude (relating to the change in pressure caused by the sound wave which determines the perceived loudness of a sound)), attenuation of the noise from the source location, and the distance of the sound source from the receptor species. In addition to which, species and individual animals display variations in levels of sensitivity at different life stages and in different situations (e.g. presence of young). Project activities that have the potential to cause an impact through underwater noise include piling of foundations, UXO clearance, and vessel operations.

5.3.12 The impacts of underwater noise on marine mammals relevant to this assessment can be summarised by:

- physical/physiological effects (e.g. mortality, non-recoverable injury, permanent threshold shift (PTS) in hearing, temporary threshold shift (TTS) in hearing, recoverable injury); or
- behavioural responses (e.g. stress, displacement, disturbance).

5.3.13 To allow for a quantitative assessment of the effects of underwater noise, the assessment will take account of hearing thresholds defined for marine mammals. These differences in hearing thresholds allows for the assessment of how certain noise sources will be detected, and thus affect, the marine mammal species identified in the vicinity of Dublin Array. Underwater noise can only impact marine mammal hearing if the frequency is within their hearing range. Southall *et al.* (2019[20])

5.3.14 Given the location of the Dublin array in close proximity to a number of SACs designated for harbour porpoise , the assessment of the impacts of piling on harbour porpoise is supported by project specific Dynamic Bioenergetic modelling (DEB).

5.3.15 The DEB is a quantitative model undertaken to assess the impacts on harbour porpoise as a result of disturbance caused by impact pile driving. (Appendix B: Dublin Array bioenergetic modelling) The model provides a link between disturbance and population vital rates for a species (harbour porpoise in this instance) to help better inform this assessment. DEB models have been widely used to investigate how natural and anthropogenic disturbance might affect individuals and populations of marine mammals (Harwood *et al*., 2020). Parameters are currently provided for harbour porpoise, bottlenose dolphin, grey seals and harbour seals; however, to date, a full DEB model has only been created for harbour porpoise (Harwood *et al*., 2020).

[20] Southall *et al.* (2019) is an update of Southall *et al.* (2007). The DAHG Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters was published in 2014 and therefore, the updated Southall *et al*. (2019) presents the most up to date scientific thresholds on marine mammal hearing.

5.3.16 The DEB model predicts changes in individual body condition and predicts how changes could affect that individual's vital rates (i.e. their chances of reproduction or survival) during different life history stages (e.g. calves, juveniles and adults). The DEB model also takes into account the state of the environment (e.g., quality of the environment, presence of predators). The DEB is focused on females of the species and assesses the following vital rates: calf mortality rate, adult mortality rate and birth rate. The DEB model compares an undisturbed population and a disturbed population (i.e., inclusion of disturbance from pile driving activities).

5.3.17 The DEB model considers the potential effect of disturbance from pile driving noise on harbour porpoise as a feature of the Rockabill to Dalkey Island SAC, the Lambay Island SAC and the Codling Fault Zone SAC. The model is specific to piling alone and is not relevant to other sources of underwater noise from construction or operation. The full report and DEB model outputs can be found in Part 4: Habitats Directive Assessment, Volume 5 Appendices: Appendix B.

Fish

5.3.18 Underwater noise can potentially have a negative impact on fish and shellfish species ranging from behavioural effects to physical injury/mortality. In general, biological damage as a result of sound energy is either related to a large pressure change (barotrauma) or to the total quantity of sound energy received by a receptor. Fish and shellfish are also considered to be sensitive to the particle motion element of underwater noise; an impact considered potentially more important than sound pressure for many species (e.g. Popper and Hawkins, 2019), particularly invertebrates.

5.3.19 Fish are known to react to underwater noise (e.g. Hawkins *et al*., 2014), however, it is notable that there are clear demonstrations of changes in fish behaviour to underwater noise depending on the activity in which they are engaged (Skaret *et al*., 2005). Specifically, Skaret *et al*. (2005) found herring had a significant flee response to a stimulus when swimming for almost all individuals, whereas, when engaged in spawning activity, showed no response to the same stimulus. Other studies of fish reactions to noise (e.g. Wardle *et al*. 2001), have shown that the interaction between hearing and vision can alter the response to a noise source, with fish responses to an airgun being greater when the airgun was visible. Even when disturbed by a noise source, fish rapidly returned to the swimming track they were on prior to the noise source within seconds or minutes following exposure (Wardle *et al*., 2001; Fewtrell and McCauley, 2012).

Guidance

5.3.20 Consideration has been given to the available guidance for assessments of underwater noise (Guidance to manage the risk to mammals from manmade sound sources in Irish waters (NPWS, 2014)) but also to the most recent scientific recommendations for determining underwater noise impacts, namely:

- Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI Accredited Standards Committee S3/SC1 and registered with ANSI (Popper *et al.*, 2014); and

- Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects (Southall *et al*., 2019).

5.3.21 The studies identified above provide the most recent guidance for assessing underwater noise impacts and are based on the latest scientific studies. Notably, the Popper *et al*. (2014) has been re-identified as the best available guidance for determination of impacts to fishes in more recent peer-reviewed publications (e.g. Popper and Hawkins, 2021). Both these studies are peer-reviewed publications, authored by recognised leaders in the relevant fields and undertaken in a highly collaborative manner, utilising the best available evidence at the time of publication.

5.3.22 The Southall *et al*. (2019) reference for impacts to marine mammals is a direct update to the Southall *et al*. (2007) criteria promoted in NPWS (2014). The Southall *et al*. (2019) criteria is the result of integration of additional data and has become the standard thresholds for assessing impacts to marine mammals in the offshore wind industry, and as such the 2019 criteria has been used to ensure more recent scientific recommendation is followed.

5.3.23 Popper *et al*. (2014) is the most widely used guidance for assessing impacts on fish from underwater noise. This guidance proposes the use of primarily qualitative methods for assessing the impacts of continuous noise sources Popper *et al*. (2014) defines a risk-based approach for assessing noise impacts on fish, with different risk levels defined for three different groups, split depending on the considered relative sensitivity of the fish to underwater noise, which is determined based on the presence of a swim bladder and whether the swim bladder is linked to the auditory system for the species.

Effects on prey

5.3.24 Effects on prey may arise where the loss of habitats and the loss/disturbance of invertebrate species and displacement of fish from fishing grounds (and associated effects on reductive success and survival) could affect food availability for a range of species in particular birds, marine mammals and other fish. Whilst it is considered that alternative feeding areas may be available to species, disturbance during construction activities has the potential to create a net loss of feeding area. There may also be a knock on effect on adjacent fish populations arising from increased competition for prey species in adjacent areas. Consideration will be given to prey species throughout.

Collision risk (vessels)

5.3.25 During construction of the wind farm, a potential source of impact from increased vessel activity is physical trauma from collision with a boat or ship to marine mammals. These injuries include blunt trauma to the body or injuries consistent with propeller strikes. The risk of collision of marine mammals with vessels would be directly influenced by the type of vessel and the speed with which it is travelling (Laist *et al*., 2001) and indirectly by ambient noise levels underwater and the behaviour the marine mammal is engaged in.

5.3.26 Harbour porpoises, dolphins and seals are relatively small and highly mobile, and given observed responses to noise, are expected to detect vessels in close proximity and largely avoid collision. Predictability of vessel movement by marine mammals is known to be a key aspect in minimising the potential risks imposed by vessel traffic (Nowacek *et al*. 2001, Lusseau 2003, 2006). The majority of vessels used during construction and during O&M will be large vessels that are stationary or slow moving throughout construction activities for significant periods of time. Consideration will be given to the background levels of vessel traffic established through site surveys to establish the actual increase in vessel traffic moving around the site and to/from port to the site, however any increases will occur over short periods of the offshore construction activity. Furthermore, due to the already high volume of vessel traffic already within Dublin Bay, the introduction of additional vessels during construction of offshore infrastructure is not a novel impact for marine mammals present in the area.

5.3.27 Potential effects are likely to be more significant where developments are located in sensitive locations e.g. key feeding and breeding areas or on migration/transit routes. The significance of any potential effects also depends on individual species responses to possible risk of collision. This may lead to the avoidance of an area where there is a risk of collision and possible displacement of individuals and populations from key breeding/foraging or haul out areas.

Disturbance (non-physical)

5.3.28 Potential disturbance effects on seabirds, marine mammals and fish from construction activity offshore and the presence of vessels within the intertidal and subtidal can result from airborne noise, visual, temperature and light intrusion. This could have adverse effects on the physical condition of individual species due to increased energy expenditure due to flight reactions (roosting birds and seals in haul out sites). It can also affect diving and foraging behaviour in cetaceans and birds and could lead to the temporary abandonment of young from breeding sites (e.g. due to flight responses in seals).

5.3.29 Impacts from the presence of vessels on site and in transit will be considered against the background of existing use that species have exposure to. It is not expected that the level of vessel activity during operations would cause a significant increase in vessel-based disturbance.

Marine mammals

5.3.30 Disturbance to marine mammals could arise from the visual presence of vessels and underwater noise (dealt with under underwater noise). Increased vessel traffic during construction has the potential to result in disturbance of marine mammals whist animals are foraging or if vessels pass by haul out locations utilised by seals.

5.3.31 Thomsen *et al*. (2006). It is likely that porpoise may become habituated where vessel movements are regular and predictable whereas they may be expected to show more of a local behavioural response to novel vessel activities related to construction activities.

5.3.32 For seals, Jones *et al*. (2017) presents an analysis of the predicted co-occurrence of ships and seals at sea which demonstrates that UK wide there is a large degree of predicted co-occurrence, particularly within 50 km of the coast close to seal haul-outs. There is no evidence relating decreasing seal populations with high levels of co-occurrence between ships and animals. In fact, in areas where seal populations are showing high levels of growth (e.g. southeast England) ship co-occurrences are highest (Jones *et al*., 2017).

Onshore

5.3.33 Disturbance from airborne noise from the onshore works could arise from construction and installation of the cables, in particular though trenchless techniques used for cross terrestrial watercourses for installation along the OES. This could have the potential to disturb foraging otters.

Accidental pollution

5.3.34 Pollution events can occur as a direct or indirect result of construction, through the physical disturbance of the seabed during cable and foundation installation, that can result in the disturbance of contaminated materials or through accidental spillages.

5.3.35 The re-suspension of contaminated sediment or release of contaminated substances from the seabed can have adverse effects on habitats and species that are sensitive to contamination and reductions in water quality. The total area that could be disturbed by construction activities is small and localised in extent. In addition, the nature of the subtidal sediments is predominantly coarse, typically with low levels of fines adhering to them. The release of contaminants from the fine sediments is rapidly dispersed with the tide and/ or currents and so increased bio-availability resulting in adverse eco-toxicological effects are not expected. The levels found are all comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable.

5.3.36 The assessment for LSE draws upon site specific studies which included identification of sediment chemical concentrations reported within the Benthic Ecology Monitoring Report.

5.3.37 Substances such as grease, oil, fuel, anti-fouling paints and grouting materials have the potential for accidental release or spilt into the marine environment. Dublin Array is committed to the use of best-practice techniques and due diligence throughout all construction activities.

Suspended sediment, and deposition

5.3.38 Construction activities involving physical disturbance of the seabed/surface substrate could lead to the suspension and redistribution of surface sediment in the water column. This can lead to increased turbidity where finer particles remain suspended in the water column. The rate of dispersion of finer particles depends on tidal energy with particles being rapidly dispersed in high energy environments. Increased turbidity can lead to impacts on sessile filter feeders and can reduce underwater visibility for mobile species and sea birds, resulting in adverse effects on foraging, social and predator prey interactions. Physical disturbance of the seabed/surface substrate and suspension and redistribution of sediment in the water column can also lead to smothering where sediment is re-deposited in areas where habitats and species that are sensitive to smothering are present.

5.3.39 Increased suspended sediment and turbidity can have a range of effects for species or habitats that are sensitive to increased levels of suspended sediment due to resulting reduced levels of light penetration which can limit photosynthesis. Effects can arise on foraging behaviour (marine mammals and birds in particular grey and harbour seals which are highly sensitive to reductions in visibility and some diving birds) and social interactions (marine mammals); and predator prey interactions (marine mammals and birds).

5.3.40 it is likely that excess deposited material will be naturally resuspended and redistributed by water currents and hydrodynamic processes, The SEA for the OREDP I (AECOM, 2010) recognises that most sediment generated in offshore areas associated with offshore wind farms is likely to be readily dispersed by natural hydrodynamic processes. The regional seabed sediment map (British Geological Survey and Geological Survey of Ireland, 1990) depicts the survey area as covered by 'sand' with a tongue of 'slightly gravelly sand' extending up the western side of the Kish Bank.

5.3.41 The assessment is informed by site specific modelling that includes a Hydrodynamic (HD) model, a Spectral Wave (SW) model and a Particle Tracking (PT) model. To assess the construction impacts of the offshore infrastructure for Dublin Array the PT model is used driven by the underlying hydrodynamics derived from the calibrated HD model (Intertek, 2020a). Construction impacts examine the short-term effects to the local sediment regime of the disturbance and disposal of seabed sediments through a variety of construction processes. The assessment adopts an approach whereby once sediment settles to the bed, being similar in nature to the existing bed material, it effectively merges with existing bed material and becomes indistinguishable from it. In practise, sediment in a plume that has been deposited to a similar area of seabed will re-join the natural sedimentary environment and will be naturally eroded at the same time and rate as existing sediment at that location. The assessment defines the maximum spring tidal excursion within the proposed development as approximately 16 km based on the project specific tidal excursion modelling undertaken. For the purposes of the assessment (as defined in Table 3) a precautionary buffer has been applied for 17 km around the project to capture the maximum area of which sediment deposition could arise.

5.3.42 For full reference to the site-specific modelling please see:

- Volume 4: Appendix 4.3.1-2: Physical Process Modelling for Dublin Array Offshore Wind Farm
- Volume 4: Appendix 4.3.1-3: Hydrodynamic Calibration and Validation Report
- Volume 4: Appendix 4.3.1-4: Spectral Wave Model Calibration and Validation Report

Physical habitat loss

5.3.43 Direct temporary habitat loss is expected to occur as a result of seabed preparation prior to foundation installation, jack up and anchoring operations and the installation of inter-array and export cables. Physical loss of benthic habitats will be restricted to discrete areas only within the project footprint where overlap with the project infrastructure or temporary occupdation areas. No pathway of effect therefore exists for habitats/biotopes outside of the project footprint.

Invasive species

5.3.44 The movement of construction vessels and other project traffic to and from site has the potential to impact upon species and habitats by contributing to the risk of introduction or spread of invasive alien species (IAS). Construction activities will be undertaken within an area already heavily transited by traffic, both on and offshore, the movement of construction vessels will operate within a background of heavy use. The baseline will be informed by shipping surveys undertaken to inform the EIAR. The presence of well-established routes provides an existing and potentially more likely method of transport for IAS species particularly in the offshore environment (due to the higher variety of ports and passage routes).

5.3.45 Construction of the onshore cable route could potentially spread IAS, as vehicles/personnel could accidentally transport plants elsewhere. Giant hogweed, Japanese knotweed, montbrecia and three-cornered garlic were recorded in the area by the terrestrial surveys. Aquatic Nuttall's waterweed was also recorded by aquatic surveys.

5.3.46 The Applicant will implement avoidance and prevantative measures included within the Project Environmental Management Plan (Volume 7, Appendix 1) which includes a marine biosecurity plan, which will ensure that the risk of potential introduction and spread of IAS will be minimised, although it is recognised that the implementation of mitigation will not be taken into consideration for the purposes of screening.

Hydrology (onshore)

5.3.47 Habitat loss and/or degradation could result through the potential disruption of the hydrological functioning of riverine, coastal and or benthic habitats in close proximity to the onshore works (e.g. altered saline balance, run-off scour) during excavations and/or trenching) and/or through the permanent presence of the buried cable(s). Consideration will be given to the potential source of hydrological interference and the location of potential receptors within the catchment.

Disturbance and Displacement

1.1.1.1 During the Construction and Decommissioning phases of the proposed development, namely the installation of foundations, towers, blades, export cables and other infrastructure, and associated movement of vessels and helicopters, birds could be disturbed. This disturbance may result in displacement of birds from the proposed development area, driving a temporary habitat loss and reduce the area available to birds for foraging, loafing, and moulting.

1.1.1.2 The effect of disturbance and displacement from construction are likely to be limited spatially and temporally, primarily affecting birds foraging within the construction area (consisting of the array area, ECC and intertidal zone), with the extent of effects depending on the activities taking place. The effects are also reversable in nature, with birds returning to the area following the end of construction and/or decommissioning.

1.1.1.3 Species present in site-specific data are screened in/out based on their vulnerability to disturbance and displacement identified in available literature. The key source for this is Bradbury *et al*. (2014) which presents sensitivity levels for species based on their disturbance susceptibility and habitat specialization. Species are given a value of either very low, low, moderate, high or very high. Species with a value of low or very low are screened out from further consideration, with the exception of gannet (due to its common inclusion in displacement assessments in UK projects), and kittiwake and Manx shearwater (based on ABPmer advice).

Operation and maintenance

Underwater noise

5.3.48 The Underwater Noise Assessment (Appendix 4.3.5-7 of the EIAR) provides a summary of poperational WTG noise. WTG noise will be mechanically generated vibration from the rotating machinery in the WTGs, which is transmitted into the sea through the structure of the WTG tower and foundations (Nedwell *et al*., 2003; Tougaard *et al*., 2020). Noise levels generated above the water surface are low enough that no significant airborne source will pass from the air to the water.

5.3.49 Stöber & Thomsen (2021) produced a study of an operational wind turbine dataset and raises the potential for behavioural disturbance caused by larger wind turbines. While prospective turbine sizes are increasing, Stöber & Thomsen conclude that these might only have limited impacts related to behavioural response on marine mammals and fish, although there is considerable uncertainty in criteria available to assess these. However, based on the highly precautionary NOAA Level B behavioural threshold (120 dB SPLRMS, see NOAA, 2005) that the study utilises, it is estimated that the WTGs may only reach that threshold at around 200 m away. As the distance between turbines is considerably greater than 400 m, over twice this distance, this would indicate that any array effect from the turbines is not expected.

5.3.50 . As part of a review of available data from existing windfarms in the UK, the Marine Management Organisation (2014) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies with a particular focus on marine mammals which provide evidence that marine mammals are not displaced from operational wind farms. Recent tagging work by Russell *et al*. (2014) found that some tagged harbour and grey seals demonstrated grid-like movement patterns as these animals moved between individual wind turbine generators strongly suggestive of these structures being used for foraging.

5.3.51 An overview of the expected sources and potential effects of noise on marine fish was undertaken as part of a report for COWRIE (Thomson *et al*. 2006). Their modelling concluded that species such as dab and salmon might detect operational noise of a wind turbine at relatively short distances of no more than 1 km.

EMF

5.3.52 During operations, a source of disturbance is from electric and magnetic fields produced as a result of power transmission in the inter array cables and the export cable to shore. For EMF, the dominant source of background, natural, EMF is that from the magnetic field of the Earth. A wide range of marine organisms use the magnetic field for navigation purposes, with the potential that EMFs from cabling may mask or confuse the navigation of some species. These have the potential to affect migration in certain magneto-sensitive fish species. The other important source of EMF is bioelectric signals generated by the cells within marine organisms. These are the signals which electro-sensitive species (elasmobranchs, some teleosts, and some shellfish) rely on for prey detection.

5.3.53 EMFs are produced as a result of the electricity passing through the cables (inter-array and export cables). Three different EMF types can be generated by offshore wind cables: electric fields (E fields); magnetic fields (B fields); and induced electric fields (iE fields). Industry standard offshore wind cables all contain shielding which prevents E fields from passing into the marine environment. Cable shielding does not however significantly alter or prevent the emission of B fields. It is the movement of the B fields within a medium (i.e., seawater) which generates iE fields. These iE fields can either be produced by the movement of the alternating B field (in the case of alternating current (AC) transmission) through the seawater or by the movement of seawater and/or an organism through a static B field (in the case of direct current (DC) transmission).

5.3.54 Potential impacts of anthropogenic EMF to marine organisms are relatively sparsely studied, with assumed sensitivity of many species based on a limited number of studies on a small number of species. Additionally, due to the challenges of monitoring a wide variety of marine organisms in single studies in situ, many studies have been laboratory based. ,. A number of research reports have been undertaken by COWRIE into the likely field strengths and potential effects on marine species (CMACS 2003; CMAS 2005; CMACS 2006) which will inform the assessment.

Changes in prey behaviour and availability

5.3.55 As for construction, the loss of habitats and the loss/disturbance of invertebrate species and displacement of fish from fishing grounds (and associated effects on reproductive success and survival) could affect food availability for a range of species in particular birds, marine mammals and other fish. The presence of WTGs may exclude fish from a suitable feeding habitat by providing a physical or perceptual barrier, or producing levels of noise that results in avoidance behaviour. Whilst it is considered that alternative feeding areas may be available to species, the array area will create a net loss of feeding area.

Accidental pollution

5.3.56 As for construction, there is potential that routine maintenance operations to lead to release of contaminants to air, water and sediments through accidental discharges or through resuspension of contaminants in water or sediments. The scale of effects would be more localised and occur over a shorter duration than those considered during the construction phase given the focus on smaller discrete areas.

Suspended sediment and deposition

5.3.57 During O&M, activities that could lead to an increase in suspended sediment and deposition would arise where section of the cable become exposed or damaged which requires reburial and/ or replacement. The potential impact is expected to be more localised and of shortened duration than construction, therefore any changes in suspended sediment and resultant water quality during O&M are anticipated to be less than those associated with construction, however the approach to assessment and definition of the ZoI will remain the same.

Physical habitat loss /disturbance

5.3.58 The potential impacts from habitat disturbance on benthic habitats from the O&M phase will occur as a result of the use of jack up vessels during routine maintenance operations, cable maintenance and repair. As for construction activities, the sensitivity of benthic and intertidal species and communities will be considered as part of the assessment.

Invasive species

5.3.59 There is a risk that the introduction of hard substrate into a sedimentary habitat will enable the colonisation of the introduced substrate by IAS that otherwise may not have had a suitable habitat available. The colonisation of structures may also serve as ‘stepping-stones’ and extend the impact beyond a local scale; based on current scientific knowledge it is not possible to predict whether such a spread will occur and to what extent and which species, if any, this may involve.

5.3.60 Permanent structures on the bottom would replace natural hard substrates or, in the case of previously sandy areas, add to the amount of hard bottom habitat available to benthic algae, invertebrates, and fish. This could attract fish and invertebrate species (including biofouling organisms) that would not normally exist at that site. Marine fouling communities developed on monopiles for instance in offshore wind power plants have been found to be significantly different from the benthic communities on adjacent hard substrates (Wilhelmsson *et al*., 2006; Wilhelmsson and Malm, 2008).

Physical processes

5.3.61 During the operational phase, the main influence on marine and physical processes is from structures installed on the seabed that have the potential to interfere with passing waves and flows (and with consequential effects on sediment transport, including local scour); these effects are often termed as 'blockage'. Such changes can result in impacts on receptors including benthic and intertidal ecology. This may affect some benthic organisms as water flows may be reduced and therefore reducing the amount of suspended food particles which may inhibit feeding and growth. Alternatively, increased flows and scour may make the habitat less suitable for some species.

5.3.62 The potential for scour and changes to local hydrodynamics has been modelled using the Hydrodynamic (HD) model, this was used to predict the typical tidal conditions across the Dublin Array and the spectral wave was used to simulate the typical wave climate across the Dublin Array site and the surrounding region. The resulting models predict the scale and extent of any changes, and these outputs have been used to inform the footprint and extent of predicted effects.

Collision risk (turbines)

Birds

5.3.63 There is potential for possible injury, direct mortality or fatal injury to seabirds from direct collision with offshore wind turbines in particular moving blades. These effects would be more significant where offshore wind farms are located on migration routes or in/near to key foraging or roosting areas where there is likely to be a high level of daily activities/flight movements. The potential for these effects to occur depends on several factors including the number of flights through an area (passage rates), the length of a flight and the height above water at which flight occurs. The potential for collision to occur also depends on individual species and their avoidance response. The risk of collision is likely to increase where there are several offshore wind developments in one location as opportunities for avoidance are reduced.

5.3.64 The assessment, in relation to birds generally, is supported by Collision Risk Modelling, carried out to quantify the potential risk to ornithological receptors as a result of collisions with wind turbine generators (WTGs) and associated infrastructure. The model estimates monthly mortalities of selected species based on details of the proposed development (e.g., minimum tip height and number of WTGs) and seabird parameters (e.g., mean density of birds in flight in the array area, and seabird parameters such as flight speed and flight speed). The precautionary principle is adhered to for each input parameter and therefore the modelled results can be considered a worst-case.

5.3.65 Species present in site-specific data are screened in/out based on their vulnerability to collision risk identified in available literature. The key source for this is Bradbury *et al*. (2014) which presents sensitivity levels for species based on the proportion of birds flying at blade height, flight manoeuvrability and the percentage of time spent flying. Species with a value of low or very low are screened out from further consideration, with the exception of Manx shearwater (based on ABPmer advice).

Bats

5.3.66 The main effects in relation to bats identified include collision risk, physical damage and mortality from changes in air pressures around turbines and lights causing barrier effects and habitat exclusion. There is potential for these effects to also occur in offshore locations, however, the occurrence of bats in offshore locations is generally more limited than onshore/terrestrial environments.

5.3.67 There is evidence that bats can fly some distance over the sea and could risk collision with wind turbine blades or be affected by associated air pressure wave effects (barotrauma) (OREDP, 2009). It has been identified that there is potential for bats to be present in offshore locations either following migratory routes or foraging. However, these tend to be more nearshore areas or locations such as harbours where there are recognised features that can be used to aid sonar navigation. There is increasing research into the potential effects of renewable energy developments, in particular, wind turbines on bats.

Disturbance, Displacement and barrier effect

5.3.68 Disturbance exists when a bird's normal pattern of activity is interrupted by an anthropogenic activity. Birds using a given area of sea for a range of activities e.g. feeding, resting, commuting etc. may be disturbed by the occurrence of human activities or artifacts in or near those areas. Birds may choose to avoid such sources of disturbance (e.g. by swimming or flying away during the disturbance event to continue their activity elsewhere) and may not return until sometime later. The duration of return times coupled with the frequency of disturbing events, may combine to result in longer term and potentially continual reductions of numbers in an area of impact (i.e. displacement) which may be partial or total.

5.3.69 In relation to offshore wind farm developments, Furness *et al*. (2013) defines displacement as 'a reduced number of birds occurring within or immediately adjacent to an offshore wind farm'. Displacement, as an effect, may occur both in the area of the disturbance or development and to some distance beyond it – known as a 'buffer' (e.g. Mendel *et al*. 2014). The degree of displacement, both in terms of length of time and proportion of the original source population affected, may vary seasonally and between species. Displacement is defined as affecting birds present both in the air and on the water. This is in contrast to the definition in Cook *et al*. (2014) which included only birds on the water as capable of being displaced (birds in flight which were deterred from entering the wind farm are considered to form the component of 'macro-avoidance'), but while these birds are not at risk of collision, they are potentially at risk of impacts arising from their displacement from wind farm areas. Birds that would have previously passed through the footprint of the disturbance area to a more distant feeding, resting or nesting area, but now choose either to stop short or detour around the location are said to be affected by barrier impacts.

5.3.70 A barrier is a physical factor that limits the migration, or free movement of individuals or populations, thus requiring them to divert from their intended path in order to reach their original destination. This effect is expected to increase the energy expenditure of birds if they have to fly around the area in question in order to reach their goal. Birds experiencing barrier effects are typically in flight, but not necessarily always so. For the purposes of this description, however, we interpret barrier effects to mean applying to birds in flight. Barrier effects are more likely to result in individual/population level impacts, if they occur during the breeding season (and at colonies close to an Offshore wind farm). Individuals may repeatedly deviate from their normal foraging trajectories at this crucial stage in their annual cycle. Individuals are less constrained during the non-breeding season (i.e. no longer central-placed foragers). Therefore, increases to overall flight costs due to barrier effects while on migration are likely to be very small (Topping and Petersen 2011).

5.3.71 A key distinction between barrier and displacement is that birds experiencing barrier effects typically travel longer distances (i.e. to some point beyond the OWF) and did not intend to forage/utilise the OWF site itself, but some area beyond it. However, it is hard to define where an individual may have intended to travel to, even using tracking data.

5.3.72 The displacement assessment considers both flying and sitting birds in the analysis, and therefore this assessment accounts for any potential barrier effects (i.e., barrier effects is not considered as a standalone impact).

5.3.73 Species present in site-specific data are screened in/out based on their vulnerability to disturbance and displacement identified in available literature. The key source for this is Bradbury *et al*. (2014) which presents sensitivity levels for species based on their disturbance susceptibility and habitat specialization. Species are given a value of either very low, low, moderate, high or very high. Species with a value of low or very low are screened out from further consideration, with the exception of gannet (due to its common inclusion in displacement assessments in UK projects), and kittiwake and Manx shearwater (based on ABPmer-advice).

6 Stage 1: Screening Outcomes- project alone

6.1 Screening outcomes for SACs

6.1.1 The results of the screening for all SACs identified within the relevant ZoI and/or search areas as defined in Table 3 are provided in Table 13 and Table 14Table 14 with a summary provided in Table 24.

Table 13 Screening outcomes for SACs – Construction and Decommissioning

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
Rockabill to Dalkey Island SAC [IE003000]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Underwater noise	QI is sensitive to underwater noise and likely to be present within ZoI from construction noise of the offshore infrastructure, no pathway for UWN from onshore works. or construction at the O&M base in Dún Laoghaire. The O&M base is located within a busy working harbour with any offshore works the pathway for underwater noise is from the levelling of the rock armour, One study of a comparable activity - rock placement activities in the Yell Sound in Shetland found that rock placement noise produced low frequency tonal noise from the machinery, but that measured noise levels were within background levels (Nedwell and Howell, 2004). Therefore, it is highly likely that any generated noise will be dominated by the vessel from which activities are taking place, given the works will take place within a working harbour, no LSE is predicted.	Screened in	Screened out	Screened out
		Effects on prey	The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for effects on harbour porpoise as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon.	Screened in	Screened out	Screened out
		Collison risk (vessels)	Mortality and serious injury from vessel strike is reported in the literature as a 'low-likelihood' impact for smaller cetaceans (such as harbour porpoise) as opposed to large, slow-moving ones**.** (IAMMWG, 2015) and the avoidance behaviour of porpoises is well-documented (e.g. Siemensma, 2011). Harbour porpoises are relatively small and highly mobile, and given observed responses to noise, are expected to detect vessels in close proximity and largely avoid collision. The majority of vessels used during construction will be large, stationary or slow moving throughout construction activities for significant periods of time. Therefore, the actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore construction activity. Furthermore, due to the already high volume of vessel traffic already in Dublin Bay, the introduction of additional vessels during construction of Dublin Array is not a novel impact for marine mammals present in the area. The risk is not considered to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions. However, as the implications for an individual are so high, the impact will be given further consideration. No pathway for effects from the onshore works. Construction activity at the O&M base in Dún Laoghaire will require use of a jack up vessel and safety boat	Screened in	Screened out	Screened out
		Vessel disturbance	The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists. Marine mammals are not considered sensitive to above water noise or light. No pathway for effects from the onshore works. Construction activities within Dún Laoghaire Harbour will require use of a jack up vessel and safety boat with all works confined to within the working harbour. Due to the already high volume of vessel traffic transiting in and out of the harbour, the introduction of these vessels is not a novel impact for marine mammals present in the area	Screened in	Screened out	Screened out
		Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened in	Screened out
		Suspended sediment Invasive species	During construction of the offshore infrastructure, sediment will be disturbed and released into the water column. This will give rise to suspended sediment plumes and localised changes in bed levels as material settles out of suspension resulting in effects on prey and potential for direct effects on visibility and foraging Effects on prey are screened in separately. As highly mobile and generalist feeders, harbour porpoise have previously been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016). Therefore, the potential impacts of low light levels, turbid waters and suspended sediments are unlikely to negatively impact harbour porpoise foraging success. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected foraging habitat remaining available for prey occurring inside the MU accessible for the baseline range of individuals. For invasive species harbour porpoises are known to be highly adaptive and opportunistic in their foraging ecology with negligible potential for pathway for effect. No pathway exists from the onshore construction and O&M works given no works will interact with the seabed and disturb sediments.	Screened out	Screened out	Screened out
		Habitat disturbance	QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty identified within NPWS, 2013[21] regarding size, community structure and distribution or habitat use of harbour porpoise inhabiting Rockabill to Dalkey Island SAC, In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of	Screened in	Screened out	Screened out

[21] Rockabill to Dalkey Island SAC (site code: 3000) Conservation objectives supporting document -Marine Habitats and Species, version 1. April 2013

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance. No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.			
	Reefs [1170]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway exists for accidental pollution from the onshore construction activity	Screened in	Screened in	Screened out
		Suspended sediment and deposition	Potential for the QI to overlap with the maximum extent of any sediment plume (modelled as 16 km) extent and dispersal and likely dispersion and deposition rates and further habitat analysis to determine likely QI distribution. No pathway exists from the onshore construction and O&M works given no works will interact with the seabed, any sediment plume associated with levelling of the rock armour underneath the pontoon of the O&M base will be limited to the immediate vicinity of the works given the works will be confined to the immediate footprint of existing rock armour with habitats outside the confines of the harbour wall experiencing no increase in suspended sediment concentration (SSC) and associated deposition. No pathway exists from the onshore construction and given no works will interact with the seabed No pathway exists from the onshore construction and given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Physical habitat loss	QI distribution maps provided by NPWS (NPWS, 2013) indicate there would be no physical overlap with the construction of Dublin Array and the areas of intertidal and subtidal reef community complexes comprising the reef QI within this site. No direct habitat loss, disturbance or disruption to the reef QI are therefore anticipated, however pending further habitat analysis to determine likely QI distribution based upon site specific surveys undertaken for the project., this remains screened in.	Screened in	Screened out	Screened out
		Habitat disturbance		Screened in	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of the area has the potential to impact upon reef QI by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Hydrology	No pathway for effects to arise from any construction activity identified for direct effects on habitats due to lack of spatial overlap with the project activity and the QI.	Screened out	Screened out	Screened out
South Dublin Bay SAC [IE000210]	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising, mud and sand [1310]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway exists for accidental pollution from the onshore construction activity	Screened in	Screened in	Screened out
		Suspended sediment and deposition	Habitat present within modelled dispersal plume during construction. Effects from sediment plumes expected to be transient and fast recovery is anticipated (e.g. for meiofaunal communities would likely occur within a few tidal cycles (Sherman and Coul, 1980), however further clarification on the likely deposition rates on the intertidal areas of this site with reference to the plume dispersal modelling is required. There is the potential for sediment bound contaminants, such as metals, hydrocarbons and organic pollutants, to be released into the water column and lead to an effect on benthic subtidal and intertidal ecology receptors as a result of construction activities and sediment mobilisation. The eastern edge of South Dublin Bay SAC is 1.2 km from the O&M base, although the western seawall of Dún Laoghaire Harbour forms a barrier between the SAC and the O&M base. However, as any sediment plume associated with levelling of the rock armour underneath the pontoon of the O&M base is will be limited to the immediate vicinity of the works given the works will be confined to the immediate footprint of existing rock armour with habitats outside the confines of the harbour wall experiencing no increase in SSC and associated deposition. No pathway exists from the onshore construction and given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of area has the potential to impact upon the QI by contributing to the risk of introduction or spread of IAS. .No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Physical habitat loss Habitat disturbance EMF Hydrology (onshore)	No pathway for effects to arise from any construction activity identified for direct effects on habitats due to lack of spatial overlap with the project activity and the QI.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110]	Suspended sediment and deposition. Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for direct effects on habitats due to lack of spatial overlap with construction and decommissioning of the offshore infrastructure/ O&M base and onshore works and the QI within the SAC No pathways identified due to lack of pathway with the project activity and the feature given features as QIs located above MHWM.	Screened out	Screened out	Screened out
North Dublin Bay SAC [IE000206]	Mud/sandflats not covered by seawater at low tide [1140] Atlantic salt meadows [1330] Salicornia and other annuals colonising mud and sand [1310] Mediterranean salt meadows [1410]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened in	Screened out
		Suspended sediment and deposition	Habitat present within worse-case dispersal plume during construction of the offshore infrastructure. Effects from sediment plumes expected to be transient and fast recovery is anticipated (e.g. for meiofaunal communities would likely occur within a few tidal cycles (Sherman and Coul, 1980). Further clarification on the likely deposition rates on the intertidal areas of this site with reference to the plume dispersal modelling will be presented at Stage 2 AA. No pathway exists for increases in suspended sediment from the onshore construction and O&M works given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of Dublin Array has the potential to impact upon QI by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Habitat disturbance Physical habitat loss Hydrology (onshore)	No pathways for direct effects on habitats identified due to lack of spatial overlap with the project activity and the QIs	Screened out	Screened out	Screened out
	Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Petalophyllum ralfsii (Petalwort) [1395]	Suspended sediment and deposition. Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for direct effects on habitats due to lack of spatial overlap with construction and decommissioning of the offshore infrastructure/ O&M base and onshore works and the QI within the SAC No pathways identified due to lack of pathway with the project activity and the feature given as QIs located above MHWM.	Screened out	Screened out	Screened out
Baldoyle Bay SAC [IE000199]	Mud/sandflats not covered by seawater at low tide [1140] Atlantic salt meadows [1330] Salicornia and other annuals colonising mud and sand [1310] Mediterranean salt meadows [1410]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened in	Screened out
		Suspended sediment and deposition	Habitat present within worse-case dispersal plume during construction of offshore infrastructure Effects from sediment plumes expected to be transient and fast recovery is anticipated (e.g. for meiofaunal communities would likely occur within a few tidal cycles (Sherman and Coul, 1980). Further clarification on the likely deposition rates on the intertidal areas of this site with reference to the plume dispersal modelling will be presented at Stage 2 AA. No pathway exists for increases in suspended sediment from the onshore construction and O&M works given no works will interact with the seabe	Screened in	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of Dublin Array has the potential to impact upon the QI by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Habitat disturbance Physical habitat loss Hydrology (onshore)	No pathways identified for direct effects on habitats due to lack of spatial overlap with construction and decommissioning of the offshore infrastructure, O&M base or onshore works and the QI within the SAC	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
The Murrough Wetlands SAC [IE002249]	Mediterranean salt meadows [1410] Atlantic salt meadows [1330]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. No pathway for effects to arise from the O&M base as it lies over 21km from the SAC outside of the maximum plume.	Screened in	Screened out	Screened out
		Suspended sediment and deposition	Habitat present within worse-case dispersal plume during construction of the offshore infrastructure but outside for the O&M base. Effects from sediment plumes expected to be transient and fast recovery is anticipated (e.g. for meiofaunal communities would likely occur within a few tidal cycles (Sherman and Coul, 1980). Further clarification on the likely deposition rates on the intertidal areas of this site with reference to the plume dispersal modelling will be presented at Stage 2 AA.	Screened in	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of Dublin Array has the potential to impact upon feature by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Habitat disturbance Physical habitat loss Hydrology (onshore)	No pathways identified for direct effects on habitats due to lack of spatial overlap with construction and decommissioning of the offshore infrastructure, onshore works or O&M base and the QI within the SAC	Screened out	Screened out	Screened out
	Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] Alkaline fens [7230]	Suspended sediment and deposition. Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for direct effects on habitats due to lack of spatial overlap with construction and decommissioning of the offshore infrastructure/ O&M base and onshore works and the QI within the SAC as QIs located above MHWM.	Screened out	Screened out	Screened out
Ballyman Glen SAC [IE00713]	Alkaline fens [7230] Petrifying springs with tufa formations [7220]	Hydrological changes Accidental pollution Suspended sediment and deposition Habitat disturbance Physical habitat loss Invasive species	Habitats are defined as ground water dependent terrestrial ecosystems, however the SAC is in a different catchment and groundwater body to the OES with no pathway for hydrological dependency. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Glen of the Downs SAC [IE00719]	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for direct or indirect significant impacts from the project to the habitats for which this site is designated with no spatial overlap with the SAC or footprint of effects,	Screened out	Screened out	Screened out
Carriggower Bog SAC [IE00716]	Transition mires and quaking bogs [7140]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for direct or indirect significant impacts from the project to the habitats for which this site is designated with no spatial overlap with the SAC or footprint of effects.	Screened out	Screened out	Screened out
Codling Fault Zone SAC [IE003015]	Submarine structures made by leaking gases [1180]	Suspended sediment and deposition Accidental pollution	Sensitive QI present within worse-case dispersal plume during construction of the offshore infrastructure but outside for the O&M base. Effects from sediment plumes expected to be transient, however the habitat recognised in the Irish Sea conforms to the definition of bubbling reefs. Advice on Bubbling reefs' define sensitivity assessment based on the physical habitat (MarLIN), Submarine structures are moderately sensitive to smothering (European Environment Agency, 2012). Over a distance of 14.5 km the project's sediment plumes would be subject to considerable dilution and dispersal in the open marine environment. Substrate excavations or pollution from leaks and accidental spillages during construction activities could lead to a reduction in marine water quality, water and air pollution are both frequently reported 'highly important' pressure for this QI (European Environment Agency, 2012)). The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in			
		Invasive species	The movement of construction vessels in and out of Dublin Array has the potential to impact upon feature by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Habitat disturbance Physical habitat loss Hydrology (onshore)	There will be no interactions or pathways for direct or indirect significant impacts from the project to the habitats for which this site is designated with no spatial overlap with the SAC or footprint of effects,	Screened out	Screened out	Screened out
	Harbour Porpoise *(Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance Habitat disturbance	This feature is sensitive to underwater noise, collision risk and disturbance during construction of the offshore infrastructure. The SAC lies 30 km from the O&M base, given all works will be undertaken within a working harbour with no interaction with the seabed, there will be no pathways for direct effects on the QI. QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty regarding aquatic habitat use. In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance). No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment	During construction of the offshore infrastructure, sediment will be disturbed and released into the water column. This will give rise to suspended sediment plumes and localised changes in bed levels as material settles out of suspension resulting in effects on prey and potential for direct effects on visibility and foraging. Effects on prey are screened in separately. As highly mobile and generalist feeders, harbour porpoise have previously been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016). Therefore, the potential impacts of low light levels, turbid waters and suspended sediments are unlikely to negatively impact harbour porpoise foraging success. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected foraging habitat remaining available for prey occurring across the MU accessible for the baseline range of individuals. For invasive species harbour porpoises are known to be highly adaptive and opportunistic in their foraging ecology with negligible potential for pathway for effect.	Screened out	Screened out	Screened out
Wicklow Mountains SAC [IE002122]	Otter (*Lutra lutra*) [1355]	Disturbance and displacement Accidental pollution Effects on prey Habitat loss Habitat disturbance Underwater noise	Due to the mobility of this QI, effects could manifest on individuals from SAC population that have left the confines of the site and are present within Dublin Bay or within Dún Laoghaire Harbour. Otter foraging could experience impacts during construction works, particularly at dusk or dawn and for works near watercourses or during river crossing. Otters move along established paths between open-water habitats, including freshwater sites near the coast and are sensitive to activities that cause obstructions to these routes. Disturbances (noise and visual) during construction, and any knock-on effects from or to prey species, habitat loss (due to direct loss of riparian habitat, or holts) or through fragmentation where impacts (pollution or noise barriers) restrict access to up-river watercourses could result in the exclusion of otter from foraging habitat, a holt or otter shelter. There is potential pathways for otters from the SAC, so impacts cannot be discounted without further information on their range and behaviour. This pathway will be considered at Stage 2 AA	Screened in	Screened in	Screened in
		Suspended sediment and deposition	Species not sensitive to changes in suspended sediments, physical characteristics including mustaches are very sensitive and use them in darkness or muddy water to swim well and feel turbulence in the water. The sense of smell and hearing is strong, the vision is relatively weak,	Screened out	Screened out	Screened out
	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110], Natural dystrophic lakes and ponds [3160], Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030], Alpine and Boreal heaths [4060]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for direct or indirect significant impacts from the project to the habitats for which this site is designated with no spatial overlap with the SAC or footprint of effects,	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Calaminarian grasslands of the *Violetalia calaminariae* [6130] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230], Blanket bogs (* if active bog) [7130], Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110], Calcareous rocky slopes with chasmophytic vegetation [8210], Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]					
Glenasmole Valley SAC [IE001209]	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210], Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410], Petrifying springs with tufa formation (Cratoneurion) [7220]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Knocksink Wood SAC [IE0000725]	Petrifying springs with tufa formation (Cratoneurion) [7220]	Accidental pollution Hydrology (onshore) Invasive species	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated. A potential pathway from the OES activity to the European site exists given petrifying springs are defined as ground water dependent terrestrial ecosystems. However, the SAC is in a different catchment and groundwater body to the OES with no pathway for hydrological dependency. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
		Habitat disturbance Physical habitat loss Suspended sediment and deposition	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinos*a and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Howth Head SAC [IE000202]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Ireland's Eye SAC [IE002193]	Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Suspended sediment and deposition. Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore)	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
		Invasive species				
Bray Head SAC [IE000714]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	Site lies wholly above MHWM with no pathway of direct or indirect effects from the construction or decommissioning of the offshore infrastructure or O&M base and no spatial overlap for direct or indirect effects with the onshore infrastructure along the OES or O&M. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Slaney River Valley SAC [000781]	Harbour Seal *(Phoca vitulina*) [1365]	Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance Accidental pollution Suspended sediment Invasive species Habitat disturbance Habitat loss	Site falls outside of the typical foraging range for harbour seal, the distance between the effect and the QI (around 95km) is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of available habitat for harbour seal across the foraging range and the likelihood that the majority of seals present at Dublin Array are those associated with more local (and undesignated) haul out sites, it is considered that the risk is low to negligible and could only result in negligible effects in the wider environmental context. There will be no interactions or pathways for significant impacts from the project on supporting habitats given there is no overlap with the project footprint, effect limited to impacts on supporting foraging habitat ex situ of the site, given the distance and available alternative habitat available, the QI is not considered sensitive to this effect. The SAC lies 95 km from the O&M base, given all works will be undertaken within a working harbour with no interaction with the seabed, there will be no pathways for direct effects on the QI.	Screened out	Screened out	Screened out
	Twaite shad (*Alosa fallax*) [1103] Atlantic salmon (*Salmo salar*) [1106] Sea lamprey (*Petromyzon marinus*) [1095]	Underwater noise	Exposure to noise and vibration during construction and decommissioning activities could result in permanent and/or temporary effects, ranging from recoverable injury, changes in hearing (i.e., TTS) and behavioural response (e.g., Popper *et al.*, 2014). In addition, mortality and potential mortal injury may occur at close range to the noise source. Exposure of individuals from the SAC population is possible during migration or while living at sea. Underwater noise modelling has been undertaken to quantify potential impact ranges for the onset of effects arising from piling, high and lower order UXO clearance and non-impulse noise sources such as dredging, rock placement and vessel traffic. No pathway for significant impacts were identified for underwater noise from onshore works or construction at the O&M base in Dun Laoghaire. The O&M base is located within a busy working harbour with any offshore works restricted to the levelling of the rock armour by backhoe.	Screened in	Screened out	Screened out
		Suspended sediment	Exposure of individuals of the SAC population is possible; however, the likelihood of exposure is expected to be limited to passing migratory fish undertaking large migrations or to individuals during their marine phase. In the context of the open ocean, suspended sediment plumes are not considered to constitute a barrier to these mobile receptors. Fish present within the dispersal plume could experience a reduction in the quality of foraging habitat and at very high suspended sediment concentrations, abrasion and damage to gills (Wilber and Clarke, 2001). Sediment plumes would be transient, and levels would not exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged	Screened out	Screened out	Screened out
		Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality. Any accidental spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. Project-level mitigation is anticipated to manage this risk of accidental pollution; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical habitat loss Habitat disturbance	Atlantic salmon and twaite shad are pelagic feeders (Rikardsen and Dempson, 2011; Taverny and Ellie, 2001), while sea lamprey are parasitic feeders that prey on cetaceans and a variety of pelagic and demersal fishes (Kelly and King, 2001; Waldman *et al.*, 2008). In addition, the receptors spawn in freshwater, and as such they do not depend on the seabed at Dublin Array for reproduction. Therefore, it is concluded that the disturbance and loss of benthic habitat associated with the proposed development has no potential to result in likely significant effects to Atlantic salmon, sea lamprey and twaite shad. Any indirect effects through effects on prey that depend on the seabed have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Collision risk (vessels)	There is no evidence that suggest migratory fish regularly collide with vessels. Moreover, owing to the mobile nature of the receptors and the slow-moving nature of vessels, the likelihood of collision is considered to be low. Therefore, it is considered that there is no pathway for significant impacts from the project to the migratory fish QIs with respect to this impact.	Screened out	Screened out	Screened out
		Effects on prey	As Atlantic salmon, sea lamprey and twaite shad depend on fish as prey, there is potential for effects on prey species and their supporting habitats. Effects on prey may arise during all phases of the proposed development, for example through direct damage and disturbance, temporary increase in SSC and sediment deposition, seabed disturbance leading to the release of sediment contaminants and/or accidental contamination, and additional underwater noise and vibration leading to mortality, injury, behavioural changes or auditory masking in fish. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for effects on prey from the onshore construction activity.	Screened in	Screened out	Screened out
		Invasive species	The movement of vessel to and from the proposed development has the potential to impact upon migratory fish by contributing to the risk of introduction or spread of IAS. For example, infestations of Atlantic salmon with the parasitic salmon louse (*Lepeophtheirus salmonis*) have been shown to negatively impact wild Atlantic salmon populations by increasing mortality rates (Vormedal, 2024). Project-level mitigation is anticipated to manage this risk of introduction or spread of IAS; however, as mitigation cannot be taken into account at screening, this impact remains screened in.	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.			
		Physical processes	Changes to hydrodynamic and sediment transport processes are anticipated to be localised and restricted to areas in close proximity to seabed infrastructure. Atlantic salmon, twaite shad and sea lamprey will not be directly affected by changes in sediment transport processes and seabed conditions as they spawn in freshwater and do not depend on benthic prey for feeding. Moreover, owing to their mobile nature, the receptors are not considered sensitive to any local changes in hydrodynamic conditions (tides, waves and currents). Therefore, no pathway for significant effects were identified for this impact. Any indirect effects through effects on prey have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Hydrology (onshore)	There is no pathway for effects to arise from changes to groundwater and/or potential changes to watercourses during landfall or O&M construction due to lack of spatial overlap with the project activity and the SAC.	Screened out	Screened out	Screened out
		Disturbance (non-physical)	Atlantic salmon are commonly located near the sea surface, and therefore have the potential to be exposed to visual stimuli associated with offshore infrastructure, such as artificial lights and flicker effects from moving turbines. The majority of published research on the behavioural effects of diadromous fish species to visual effects relate to artificial light, as opposed to shadow/flicker effects from moving turbines (reviewed by Dodd and Briers, 2021). For example, Riley *et al.* (2012) reported that Atlantic salmon smolts at the River Itchen, England, exposed to streetlights during downstream migration, showed more random timing of migration, when compared to non-lit years, when migration was correlated to sunset. Furthermore, Atlantic salmon, in fish farms, when exposed to submerged artificial light, were observed to increase their swimming depth (Juell *et al.*, 2003). The lack of published scientific literature on the potential effects of shadow flicker from turbine blades on Atlantic salmon was highlighted by Dodd and Briers (2021), who concluded that there is no specific evidence available to support or refute any biological or ecological impact of shadow flicker from onshore wind turbine blades on Atlantic salmon in rivers. No data are available on the effects of artificial lights and shadow flicker from offshore turbines; however, taking into consideration the distance of the wind turbines from the coast (where it is anticipated that olfactory and visual stimuli together with magnetic cues play an important navigational role for fish returning to natal rivers (Keefer and Caudill, 2014)), it is considered that there is no potential for adverse behavioural responses that could significantly affect the migration behaviour of Atlantic salmon. Moreover, considering the height of the turbine blades above the surface of the water, in the context of other visual stimuli such as distortions of the water surface and cloud cover, it is considered unlikely that artificial lights and flicker effects will have likely significant effects on Atlantic salmon while at sea. Therefore, no pathway for significant impacts is identified for migratory fish receptors.	Screened out	Screened out	Screened out
		Underwater noise				
	Brook lamprey (*Lampetra planeri*) [1096] River lamprey (*Lampetra fluviatalis*) [1099]	Underwater noise Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution Collision risk (vessels) Effects on prey EMF Invasive species Physical processes Hydrology (onshore) Disturbance (non physical)	Brooke lamprey do not migrate from freshwater into the sea at any life stage (Kurz and Costello, 1999; Maitland, 2003). Consequently, there is no pathway for effects for any impact. River lamprey migrate from rivers into estuaries as adults before returning to freshwater to spawn. River lampreys are thought to remain mainly in estuarine areas during their marine stage rather than heading out to sea like sea lamprey 2003). The SAC is located outside of the modelled sediment dispersal footprint and the predicted maximum impact ranges for effects from underwater noise. Therefore, and given the limited nature of migratory pathways of river lamprey away from the coast, there will be no interactions or pathways for significant impacts from the project.	Screened out	Screened out	Screened out
	Freshwater pearl mussel (*Margaritifera margaritifera*) [1029]	Underwater noise (indirect) EMF (indirect) Accidental Pollution (indirect) Effects on prey (indirect) Invasive species (indirect)	In their first year, freshwater pearl mussel live on the gills of young Atlantic salmon. As the viability of the mussel population is inherently linked to the viability of the salmon population, conclusions made to the salmon population will mirror those for freshwater pearl mussel.	Screened out	Screened out	Screened out
	Otter (*Lutra lutra*) [1355]	Collision risk Effects on prey Vessel disturbance Accidental pollution Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 95 km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream).	Screened out	Screened out	Screened out
	Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	Accidental pollution Suspended sediment Habitat disturbance Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for direct effects with the project activity and the QI given the lack of overlap and the site falls outside of the ZoI for plume dispersal, which defines the maximum extent of the sediment dispersal. Site is located 95 km from offshore infrastructure with no overlap from direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0], Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae) [91E0]					
River Boyne and River Blackwater SAC [IE004232]	Atlantic salmon (*Salmo salar*) [1106]	Underwater noise	Exposure to noise and vibration during construction and decommissioning activities could result in permanent and/or temporary effects, ranging from recoverable injury, changes in hearing (i.e., TTS) and behavioural response (e.g., Popper *et al.*, 2014). In addition, mortality and potential mortal injury may occur at close range to the noise source. Exposure of individuals from the SAC population is possible. Underwater noise modelling has been undertaken to quantify the potential impact ranges for the onset of effects arising from piling, high and lower order UXO clearance and non-impulse noise sources such as dredging, rock placement and vessel traffic. No pathway for significant impacts were identified for underwater noise from onshore works or construction at the O&M base in Dun Laoghaire. The O&M base is located within a busy working harbour with any offshore works restricted to the levelling of the rock armour by backhoe.	Screened in	Screened out	Screened out
		Suspended sediment	Exposure of individuals of the SAC population is possible; however, the likelihood of exposure is expected to be limited to passing migratory fish undertaking large migrations or to individuals during their marine phase. In the context of the open ocean, the suspended sediment plume is unlikely to constitute a barrier to fish on migration. Fish present within the dispersal plume could experience a reduction in the quality of foraging habitat and at very high suspended sediment concentrations, abrasion and damage to gills (Wilber and Clarke, 2001). Sediment plumes would be transient, and levels would not exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged.	Screened out	Screened out	Screened out
		Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality. Any accidental spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. Project-level mitigation is anticipated to manage this risk of accidental pollution; however, as mitigation cannot be taken into account at screening, this impact remains screened in. The offshore location of the project (away from major coastal development) is low risk for the dispersal and redistributed of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical habitat loss Habitat disturbance	Atlantic salmon are pelagic feeders, which often forage close to the water surface (Rikardsen and Dempson, 2011). In addition, Atlantic salmon spawn in freshwater, and as such they do not depend on the seabed at Dublin Array for reproduction. Therefore, it is concluded that the disturbance and loss of benthic habitat associated with the proposed development has no potential to result in likely significant effects to Atlantic salmon. Any indirect effects through effects on prey that depend on the seabed have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Collision risk (vessels)	There is no evidence that suggest Atlantic salmon regularly collide with vessels. Moreover, owing to the mobile nature of the receptor and the slow-moving nature of vessels, the likelihood of collision is considered to be low. Therefore, it is considered that there is no pathway for significant impacts from the project to Atlantic salmon with respect to this impact.	Screened out	Screened out	Screened out
		Effects on prey	As Atlantic salmon depend on fish as prey, there is potential for effects on prey species and their supporting habitats. Effects on prey may arise during all phases of the proposed development, for example through direct damage and disturbance, temporary increase in SSC and sediment deposition, seabed disturbance leading to the release of sediment contaminants and/or accidental contamination, and additional underwater noise and vibration leading to mortality, injury, behavioural changes or auditory masking in fish. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for effects on prey from the onshore construction activity.	Screened in	Screened out	Screened out
		Invasive species	The movement of vessel to and from the proposed development has the potential to impact upon Atlantic salmon by contributing to the risk of introduction or spread of IAS. For example, infestations of Atlantic salmon with the parasitic salmon louse (*Lepeophtheirus salmonis*) have been shown to negatively impact wild Atlantic salmon populations by increasing mortality rates (Vormedal, 2024). Project-level mitigation is anticipated to manage this risk of introduction or spread of IAS; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical processes	Changes to hydrodynamic and sediment transport processes are anticipated to be localised and restricted to areas in close proximity to seabed infrastructure. Atlantic salmon will not be directly affected by changes in sediment transport processes and seabed conditions as they spawn in freshwater and do not depend on benthic prey for feeding. Moreover, owing to their mobile nature, Atlantic salmon are not considered sensitive to any local changes in hydrodynamic conditions (tides, waves and currents). Therefore, no pathway for	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			significant effects were identified for this impact. Any indirect effects through effects on prey have been considered as a standalone effect.			
		Hydrology (onshore)	There is no pathway for effects to arise from changes to groundwater and/or potential changes to watercourses during landfall or O&M construction due to lack of spatial overlap with the project activity and the SAC.	Screened out	Screened out	Screened out
		Disturbance (non-physical)	Atlantic salmon are commonly located near the sea surface, and therefore have the potential to be exposed to visual stimuli associated with offshore infrastructure, such as artificial lights and flicker effects from moving turbines. The majority of published research on the behavioural effects of diadromous fish species to visual effects relate to artificial light, as opposed to shadow/flicker effects from moving turbines (reviewed by Dodd and Briers, 2021). For example, Riley *et al.* (2012) reported that Atlantic salmon smolts at the River Itchen, England, exposed to streetlights during downstream migration, showed more random timing of migration, when compared to non-lit years, when migration was correlated to sunset. Furthermore, Atlantic salmon, in fish farms, when exposed to submerged artificial light, were observed to increase their swimming depth (Juell *et al.*, 2003). The lack of published scientific literature on the potential effects of shadow flicker from turbine blades on Atlantic salmon was highlighted by Dodd and Briers (2021), who concluded that there is no specific evidence available to support or refute any biological or ecological impact of shadow flicker from onshore wind turbine blades on Atlantic salmon in rivers. No data are available on the effects of artificial lights and shadow flicker from offshore turbines; however, taking into consideration the distance of the wind turbines from the coast (where it is anticipated that olfactory and visual stimuli together with magnetic cues play an important navigational role for fish returning to natal rivers (Keefer and Caudill, 2014)), it is considered that there is no potential for adverse behavioural responses that could significantly affect the migration behaviour of Atlantic salmon. Moreover, considering the height of the turbine blades above the surface of the water, in the context of other visual stimuli such as distortions of the water surface and cloud cover, it is considered unlikely that artificial lights and flicker effects will have adverse effects on Atlantic salmon while at sea. Therefore, no pathway for significant impacts is identified for migratory fish receptors.	Screened out	Screened out	Screened out
	River lamprey (*Lampetra fluviatalis*) [1099]	Underwater noise Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution Collision risk (vessels) Effects on prey EMF Invasive species Physical processes Hydrology (onshore) Disturbance (non physical)	River lamprey migrate from rivers into estuaries as adults before returning to freshwater to spawn. River lampreys are thought to remain mainly in estuarine areas during their marine stage rather than heading out to sea like sea lamprey (Maitland, 2003). The SAC is located outside of the modelled sediment dispersal footprint and the predicted maximum impact ranges for effects from underwater noise. Therefore, and given the limited nature of migratory pathways of river lamprey away from the coast, there will be no interactions or pathways for significant impacts from the project.	Screened out	Screened out	Screened out
	Alkaline fens [7230] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Accidental pollution Suspended sediment Habitat disturbance Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for effects with the project activity and the QIs given the lack of overlap and the site falls outside of the ZoI for plume dispersal which defines the maximum extent of sediment dispersal as defined by the modelling. SAC is located 48 km from all offshore infrastructure with no overlap from direct or indirect effects.	Screened out	Screened out	Screened out
	Otter (*Lutra lutra*) [1355]	Collision risk (vessels) Effects on prey Vessel disturbance Accidental pollution uSuspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located over 48km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream).	Screened out	Screened out	Screened out
North Channel SAC [UK0030399]	Harbour Porpoise *(Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction of the offshore infrastructure. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists. Marine mammals are not considered sensitive to above water noise or light. No pathway for effects from the onshore works. Construction activities within Dún Laoghaire Harbour will require use of a jack up vessel and safety boat with all works confined to within the working harbour. Due to the already high volume of vessel traffic transiting in and out of the harbour, the introduction of these vessels is not a novel impact for marine mammals present in the area			
		Invasive species Suspended sediment Habitat disturbance Habitat loss	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat) Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which has been screened in and assessed in the NIS.	Screened out	Screened out	Screened out
Lambay Island SAC [004069]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance Habitat disturbance	This feature is sensitive to underwater noise and collision risk and accidental pollution risk during construction of the offhsore infrastructure. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for effects on harbour porpoise as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists. QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty regarding aquatic habitat use, In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by grey and harbour seals. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance). No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment	During construction of the offshore infrastructure, sediment will be disturbed and released into the water column. This will give rise to suspended sediment plumes and localised changes in bed levels as material settles out of suspension resulting in effects on prey and potential for direct effects on visibility and foraging. Effects on prey are screened in separately. As highly mobile and generalist feeders, harbour porpoise have previously been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al.*, 2009, Hastie *et al.*, 2016). Therefore, the potential impacts of low light levels, turbid waters and suspended sediments are unlikely to negatively impact harbour porpoise foraging success. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected foraging habitat remaining available for prey occurring inside the MU accessible for the baseline range of individuals. For invasive species harbour porpoises are known to be highly adaptive and opportunistic in their foraging ecology with negligible potential for pathway for effect. No spatial overlap with the habitats supported within the SAC, site lies 21 km from the offshore infrastructure.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus)* [1364] Harbour Seal (*Phoca vitulina*) [1365]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Effects on prey Collision risk (vessels) Vessel disturbance	The offshore infrastructure falls within the typical foraging range of both species, however given the distance from the SAC, effects are for seals present in the water as opposed to when at their haul out or breeding sites within the SAC. Seals are less dependent on hearing for foraging than cetaceans but rely on sound for communication and predator avoidance (Deecke *et al.*, 2002).	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
		Habitat disturbance	QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty identified regarding aquatic habitat use. In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by grey and harbour seals. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance). No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.			
		Suspended sediment Invasive species	There will be no interactions or pathways for significant impacts from the project on supporting habitats (breeding sites, resting or moulting haul out sites) given there is no overlap with the project footprint and breeding and haul out sites and the site falls outside the ZoI for suspended sediment. The effect limited to impacts on supporting foraging habitat ex situ of the site, given the distance and available alternative habitat available, the QI is not considered sensitive to this effect. For invasive species harbour porpoises are known to be highly adaptive and opportunistic in their foraging ecology with negligible potential for pathway for effect.	Screened out	Screened out	Screened out
	Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal.	Screened out	Screened out	Screened out
Blackwater Bank SAC [IE002953]	Harbour Porpoise *(Phocoena phocoena)* [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	
		Underwater noise Collision risk (vessels) Vessel disturbance Effects on prey	This QI is sensitive to underwater noise and collision risk and accidental pollution risk during construction of the offshore infrastructure. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists. No pathway for effects from the onshore works. Construction activities within Dún Laoghaire Harbour will require use of a jack up vessel and safety boat with all works confined to within the working harbour. Due to the already high volume of vessel traffic transiting in and out of the harbour, the introduction of these vessels is not a novel impact for marine mammals present in the area.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat) Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which has been screened in and assessed in the NIS.	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110]	Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 70 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
Pen Llyn a'r Sarnau/ Lleyn Peninsula and the Sarnau SAC [UK0013117]	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This QI sensitive to underwater noise and collision risk and accidental pollution risk during construction of the offshore infrastructure. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied The pathway for effects on distant SACs is considered unlikely, especially given the low numbers of bottlenose dolphin recorded in project site specific surveys and little evidence of bottlenose dolphins from Wales being present on the Irish Coast, rather there is	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			evidence of a nearshore population which move around the coast of Ireland with some connectivity with Scotland (IWDG, pers comm[22]). The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for ieffects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting.			
		Suspended sediment Habitat loss Habitat disturbance Invasive species	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of available habitat for bottlenose dolphin associated with the SAC is extensive and given the low numbers of bottlenose dolphin recorded in project site specific surveys and little evidence of bottlenose dolphins from Wales being present on the Irish Coast it is considered that the risk is low to negligible and could only result in negligible effects in the wider environmental context. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus*) [1364]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	The offshore infrastructure falls within the typical foraging range for species and due to the mobility of seals effects could manifest on individuals associated with a SAC population that are present within the project's ZoI, Feature is sensitive to underwater noise and collision risk. Seals are less dependent on hearing for foraging than cetaceans but rely on sound for communication and predator avoidance (Deecke *et al*., 2002). The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting It is noted that (Jones *et al*, 2015 discounted any connectivity between seals at Dublin Bay and the UK), however, further assessment will be undertaken.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of available habitat for harbour seal associated with the SAC and elsewhere is extensive, and the likelihood that the majority of harbour seals present at Dublin Array are those associated with more local (and undesignated) haul out sites, it is considered that the risk to SAC grey seals is low to negligible. Whilst grey seal from other distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on grey seal is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170]	Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 78 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

[22] Advice from IWDG consultation meeting held on December 1st 2020

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows *(Glauco-Puccinellietalia maritimae*) [1330] Submerged or partially submerged sea caves [8330] Otter (*Lutra lutra*) [1355]					
Cardigan Bay SAC [UK0012712]	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	Marine mammals are sensitive to underwater noise during construction. The pathway for effects on distant SACs is considered unlikely, especially given the low numbers of bottlenose dolphin recorded in project site specific surveys and little evidence of bottlenose dolphins from Wales being present on the Irish Coast, rather there is evidence of a nearshore population which move around the coast of Ireland with some connectivity with Scotland (IWDG, pers comm[23]). This QI is sensitive to underwater noise and collision risk during construction of the offshore infrastructure. The majority of vessels used during construction will be large, stationary or slow moving throughout construction activities for significant periods of time. Therefore, the actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore construction activity. Furthermore, due to the already high volume of vessel traffic already in Dublin Bay, the introduction of additional vessels during construction of Dublin Array is not a novel impact for marine mammals present in the area. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions. However, as the implications for an individual are so high, the impact will be given further consideration. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon.	Screened in	Screened out	Screened out
		Suspended sediment Habitat loss Habitat disturbance Invasive species	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus)* [1364]	Underwater noise Collision risk Effects on prey Vessel disturbance Accidental pollution Suspended sediment Habitat loss Habitat disturbance Invasive species	The offshore infrastructure falls outside of the typical foraging range for grey seal, the distance between the effect and the QI (around 120 km) is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Furthermore, (Jones *et al*, 2015), outlined a lack of connectivity between UK seals and Dublin Bay. Given the range of available habitat for grey seal associated with the SAC is extensive, and the likelihood that the majority of seals present at Dublin Array are those associated with more local (and undesignated) haul out sites, it is considered that the risk is low to negligible and could only result in negligible effects in the wider environmental context. Whilst grey seal from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on grey seal is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 120km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

[23] Advice from IWDG consultation meeting held on December 1st 2020

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Sandbanks which are slightly covered by sea water all the time [1110] Sea Lamprey (*Petromyzon marinus*) [1095] River Lamprey (*Lampetra fluviatilias*) [1099]					
Hook Head SAC [IE0000764]	Bottlenose Dolphin (*Tursiops truncatus*) [1349] Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	Hook Head SAC overlaps with the MU for both bottlenose dolphin and harbour porpoise, both QIs are sensitive to underwater noise and collision risk and accidental pollution risk during construction of the offshore infrastructure. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI (119 km) is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment. Whilst grey seal from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on grey seal is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 119 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
Bunduff, Lough and Machair/ Trawalua/ Mullaghmore SAC [IE0000625]	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Machairs (* in Ireland) [21A0]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 119 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] Alkaline fens [7230] Marsh Fritillary (*Euphydryas aurinia*) [1065] Petalwort (*Petalophyllum ralfsii*) [1395]					
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk and accidental pollution risk during construction of the offshore infrastructure. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites..	Screened out	Screened out	Screened out
Kilkieran Bay and Islands SAC [IE0002111]	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows *(Juncetalia maritimi*) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 227 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Slender Naiad (*Najas flexilis*) [1833]					
	Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 227 km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream) and outside the 50 km typical foraging range of harbour seals	Screened out	Screened out	Screened out
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This QI is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Inishmore Island SAC [IE0000213]	Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. Argentea (*Salicion arenariae*) [2170]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 230 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
	Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]					
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This QI is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise, which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
West Connacht Coast SAC [IE0002998]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This QI is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.			
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Bottlenose Dolphin (Tursiops truncatus) [1349]	Underwater noise Collision risk Accidental pollution Vessel disturbance Invasive species Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to this QI, site is located 250km from source of the effects and lies outside of the management unit for bottlenose dolphins as defined in Table 8. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment for bottlenose dolphin SACs.	Screened out	Screened out	Screened out
Kenmare River SAC [IE0002158]	Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] Juniperus communis formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 280 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
	Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365]	Effects on prey Vessel disturbance Invasive species Suspended sediment Habitat loss	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 280km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream) and outside of the 50km typical foraging range for harbour seal..	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
		Habitat disturbance				
	Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]	Effects on prey Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the QI for which this site is designated, site is located 280km from source, A precautionary 30 km buffer for bats has been used for this screening as defined in Table 8.	Screened out	Screened out	Screened out
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Carnsore Point SAC [IE0002269]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.			
	Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	Site lies over 100km from Dublin Array. No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site has no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
Belgica Mound Province SAC [IE0002327]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Underwater noise Collision risk Accidental pollution Vessel disturbance Invasive species Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to this QI, site is located 424km from source of the effects and lies outside of the management unit for bottlenose dolphins as defined in Table 8. Whilst bottlenose dolphin from distant SACs (e.g. Hook Head SAC, Pen Llŷn a'r Sarnau SAC) may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment for bottlenose dolphin SACs.	Screened out	Screened out	Screened out
	Reefs [1170]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	SAC lies over 420 km from Dublin Array. No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site has no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
North Anglesey Marine / Gogledd Môn Forol SAC [UK0030398]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
West Wales Marine / Gorllewin Cymru Forol SAC [UK0030397]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Bristol Channel Approaches SAC [UK0030396]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied.	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
		Vessel disturbance	The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.			
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Roaringwater Bay and Islands SAC [IE000101]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus*) [1364] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Large shallow inlets and bays [1160] European dry heaths [4030] Submerged or partially submerged sea caves [8330] Otter (*Lutra lutra*) [1355]	Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	Roaringwater Bay SAC falls outside of the typical foraging ranges for the species and the distance between the effect and the QI (290 km is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. No pathways identified with the project activity and the feature as no direct overlap and the site falls outside the ZoI for plume dispersal.	Screened out	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
Blasket Island [E0002172]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon. The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.	Screened in	Screened out	Screened out
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus)* [1364]	Underwater noise Collision risk Effects on prey Vessel disturbance Accidental pollution Invasive species Suspended sediment Habitat loss Habitat disturbance	The site falls outside of the MU and typical foraging ranges for the species and the distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. Whilst grey seal from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on grey seal is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330]	Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	No pathways identified for direct effects with the project activity and the QI given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 318km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
French sites Listed below*	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality and will not result in a significant effect-receptor pathway if made bioavailable. Any spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Collision risk (vessels) Effects on prey Vessel disturbance	This feature is sensitive to underwater noise and collision risk during construction. The potential for a pathway for effects to arise on distant SACs is considered unlikely. However, pending quantification of potential impacts to individuals within the ZoI, a precautionary approach is applied. The effects on prey species during construction of the offshore infrastructure are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant, however pathway exists and given that marine mammals are dependent on fish prey, there is the potential for indirect effects as a result of impacts upon fish species or the habitats that support them. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and immediate footprint of the existing pontoon.	Screened in	Screened out	Screened out

Site name	QI	Effect	Connections: Source-pathway-receptor	Screened in/out offshore infrastructure	Screened in/out O&M	Screened in/out TJB & OES
			The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists.			
		Invasive species Suspended sediment Habitat loss Habitat disturbance	The distance between the effect and the QI is such that. Given the range of habitat for harbour porpoise available is extensive and does not overlap with the project and for these categories, the likelihood and or severity of the effect experienced locally is considered to be low to negligible. Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Chaussée de Sein SAC [FR5302007] 567.62 km from array						
Ouessant-Molène SAC [FR5300018] – 517.89 km from array -						
Abers – Côtes des Légendes SAC [FR5300017] – 505.60 km from array -						
Cap d'Erquy-Cap Frehel SAC [FR3102002] – 532.70 km from array -						
Baie de Morlaix SAC [FR5300015] 503.84 km from array -						
Côte de Granit Rose-Sept-Iles SAC [FR5310011] 481.94 km from array -						
Tregor Goëlo SAC [FR5300010] 489.80 km from array -						
Anse de Vauville SAC [FR2502019] – 472.88 km from array -						
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC [FR5300012] – 562.51 km from array -						
Récifs et 170ands de la Hague SAC [FR2500084] – 465.15 km from array -						
Baie du Mont Saint-Michel SAC [FR2500077] – 567.14 km from array -						
Baie de Saint-Brieuc – Est SAC [FR5310050] – 549.56 km from array -						
Chausey SAC [FR3102003] – 538.20 km from array -						
Mers Celtiques-Talus du golfe de Gascogne SAC [FR5302015] – 449.52 km from array -						
Nord Bretagne DH SAC [FR2502022] – 424.67 km from array -						
Banc et récard ifs de Surtainville SAC [FR2502018] – 490.06 km from array -						
Côtes de Crozon SAC [FR5302006] – 549.26 km from array -						
Estuaire de la Rance SAC [FR5300061] – 573.30 km from array -						

Table 14 Screening outcomes for SACs – Operation and maintenance

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Rockabill to Dalkey Island SAC [IE003000]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Underwater noise	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Tougaard *et al*. (2020) highlight that wind turbine noise could be expected to be significant in areas with low natural ambient noise and low levels of ship traffic; however, Low-level, localised noise from wind turbine generators (WTG) and operational and maintenance vessel traffic will be at a lower level than for construction and is considerably likely to be of negligible consequence in the context of background underwater noise levels generated by shipping and human activities within the South Dublin Bay area and unlikely to produce a significant behavioural response.	Screened out	Screened out	Screened out
		Collison risk (vessels)	Mortality and serious injury from vessel strike is reported in the literature as a 'low-likelihood' impact for smaller cetaceans (such as harbour porpoise) as opposed to large, slow-moving ones. (IAMMWG, 2015) and the avoidance behaviour of porpoises is well-documented (e.g. Siemensma, 2011). An increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour, It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. Harbour porpoises are relatively small and highly mobile, and given observed responses to noise, are expected to detect vessels in close proximity and largely avoid collision. The majority of vessels used during construction will be large, stationary or slow moving throughout construction activities for significant periods of time. Therefore, the actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore construction activity. Furthermore, due to the already high volume of vessel traffic already in Dublin Bay, the introduction of additional vessels during O&M activity of Dublin Array is not a novel impact for marine mammals present in the area. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions. However, as the implications for an individual are high, and mitigation cannot be used for screening, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour.	Screened in	Screened out	Screened out
		Vessel disturbance	The presence of construction vessels could cause disturbance and displacement. Any avoidance and / or displacement would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port, however harbour porpoise are expected to be present within the ZoI for vessels disturbance and therefore a pathway for effect exists. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Marine mammals are not considered sensitive to above water noise or light. No pathway for effects from the onshore works or construction of the O&M base in Dún Laoghaire with all works confined to the onshore and within the working harbour.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Effects on prey	The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available	Screened in	Screened out	Screened out
		Suspended sediment Invasive species	During O&M activities there is potential for sediment to be disturbed and released into the water column. This will give rise to suspended sediment plumes and localised changes in bed levels as material settles out of suspension resulting in effects on prey and potential for direct effects on visibility and foraging. As highly mobile and generalist feeders, harbour porpoise have previously been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016). Therefore, the potential impacts of low light levels, turbid waters and suspended sediments are unlikely to negatively impact harbour porpoise foraging success. Effects are anticipated to be negligible, localised and temporary with large areas of unaffected foraging habitat remaining available for prey occurring inside the MU accessible for the baseline range of individuals.	Screened out	Screened out	Screened out
		Habitat loss	QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty identified within NPWS, 2013[1] regarding size, community structure and distribution or habitat use of harbour porpoise inhabiting the SAC, In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance. No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.	Screened in	Screened out	Screened out
	Reefs [1170]	Accidental pollution	The exposure of reef communities to toxins can result in impaired biological function, mortality and lowered resilience to another environmental stressor. Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source	Screened in	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
			anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in			
		Suspended sediment and deposition	Potential for the QI to overlap with the maximum extent of any sediment plume (modelled as 16 km) extent and dispersal and likely dispersion and deposition rates and further habitat analysis to determine likely feature distribution. The potential for the feature to overlap with the maximum extent of any sediment plume arising from sediment mobilisation during operation and maintenance activities would be localised and intermittent in nature, however further habitat analysis is required to determine likely feature distribution, this is screened in.	Screened in	Screened out	Screened out
		Physical habitat loss	QI distribution maps provided by NPWS (NPWS, 2013) indicate there would be no direct physical overlap with the offshore infrastructure and the areas of intertidal and subtidal reef community complexes comprising the reef QI within this site. No direct habitat loss, disturbance or enduring damage to the reef is therefore anticipated during operation and maintenance activities However, as for construction, this needs to be confirmed with supplementary investigations into feature conservation status and distribution.	Screened in	Screened out	Screened out
		Habitat disturbance		Screened in	Screened out	Screened out
		Invasive species	Biofouling as a vector for the transfer of invasive aquatic species by ships. Invasive aquatic species are introduced to new environments by ships mainly through ballast water or hull fouling. Best practice approaches[24] to marine vessels and/or plant use during maintenance works would negate the risk of IAS introductions but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman). In addition to the movement of O&M vessels, during operation, the turbine foundations and cable protection could create enhanced habitat for IAS. If this habitat were to provide a sink for particles dispersing from an existing site/source, it may act as a 'stepping stone' for the propagation of IAS (Thomas *et al*, 2014), thereby increasing the risk to inter-tidal habitats within this SAC. This pathway is considered to be low risk. Existing offshore wind farm developments (e.g. within the North Sea) provide no evidence for the viability of this pathway. Best practice approaches to marine vessels and/or plant use during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman)..	Screened in	Screened out	Screened out
		Physical processes	The offshore physical presence of the array (physical presence of foundations and structures and to a lesser extent Offshore ECC (cable protection) could cause changes to current flows and sediment transport pathways that could affect local habitats. However, there is a strong scientific evidence base which demonstrates that the changes due to the presence of foundation structures are both small in magnitude and localised in spatial extent. This is confirmed by existing guidance documents (ETSU 2000; ETSU 2002; COWRIE 2009) Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC	Screened out	Screened out	Screened out
		EMF	QI distribution maps provided by NPWS (NPWS, 2013). indicate there would be no physical overlap with the Offshore ECC or inter array cables within the array area and the areas of intertidal and subtidal reef community complexes comprising the reef QI within this site. However, as for construction, this needs to be confirmed with supplementary investigations into feature conservation status and distribution. Effects would be negligible given effect is highly localised and mitigation options to avoid all reef features and bury cables will be implemented, however consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman). All cables associated with the OES will be buried with no pathway for effect.	Screened in	Screened out	Screened out
South Dublin Bay SAC [IE000210]	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising, mud and sand [1310]	Accidental pollution	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in	Screened in	Screened out	Screened out
		Suspended sediment and deposition	The site does overlap with the maximum extent of any sediment plume (modelled as 16 km) however activity during O&M with potential to mobilise sediments will be highly localised and intermittent in nature with any Sediment plumes expected to quickly dissipate after cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, the effect will be barely discernible to change in SSC concentrations and deposition occurring naturally.	Screened out	Screened out	Screened out
		Physical habitat loss Habitat disturbance	No pathways for direct effects on habitats identified due to lack of spatial overlap with the operation and maintenance activities of the offshore infrastructure and the QIs	Screened out	Screened out	Screened out
		Invasive species	The movement of construction vessels in and out of area has the potential to impact upon the QI by contributing to the risk of introduction or spread of IAS. No pathway anticipated as a result of planned mitigation, but consideration given to pathway at Stage 2 AA due to the application of mitigation (under Sweetman). In addition to the movement of O&M vessels, during operation, the turbine foundations and cable protection could create enhanced habitat for IAS. If this habitat were to provide a sink for particles dispersing from an existing site/source, it may act as a 'stepping stone' for the propagation of IAS (Thomas *et al*, 2014), This pathway is considered to be low risk . Existing offshore wind farm developments (e.g. within the North Sea) provide no evidence for the viability of this pathway.	Screened in	Screened out	Screened out
		Hydrology (onshore)	No pathways for direct effects on habitats identified due to lack of spatial overlap with the project activity at the landfall and the features	Screened out	Screened out	Screened out
		EMF	There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated. All cables associated with the OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out

[24] The IMO 2023 Guidelines for the control and management of ships biofouling to minimise the transfer of invasive aquatic species is an international agreement are intended to provide a globally consistent approach to the management of biofouling, which is the accumulation of various aquatic organisms on ships' hulls

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
North Dublin Bay SAC [IE000206]		Physical processes	The offshore physical presence of the array (physical presence of foundations and structures and to a lesser extent Offshore ECC (cable protection) could cause changes to current flows and sediment transport pathways that could affect local habitats. However, there is a strong scientific evidence base which demonstrates that the changes due to the presence of foundation structures are both small in magnitude and localised in spatial extent. This is confirmed by existing guidance documents (ETSU 2000; ETSU 2002; COWRIE 2009) Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC	Screened out	Screened out	Screened out
	Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110]	Accidental pollution Invasive species	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. Best practice approaches to marine vessels and/or plant use and compliance with legislation including MARPOL during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Suspended sediment and deposition Physical habitat loss Habitat disturbance Hydrology EMF Physical processes	No pathway for effect given no overlap with project footprint and lies above MHWS. Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated. All cables associated with ithe OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out
	Mud/sandflats not covered by seawater at low tide [1140] Atlantic salt meadows [1330] Salicornia and other annuals colonising mud and sand [1310] Mediterranean salt meadows [1410]	Accidental pollution Invasive species	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. Best practice approaches to marine vessels and/or plant use during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Physical habitat loss Habitat disturbance Hydrology EMF Physical processes Suspended sediment and deposition	No pathways were identified for these direct effects given lack of spatial overlap with the project and features. Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. The site does overlap with the maximum extent of any sediment plume (modelled as 16 km) however activity during O&M with potential to mobilise sediments will be highly localised and intermittent in nature with any Sediment plumes expected to quickly dissipate after cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, the effect will be barely discernible to change in SSC concentrations and deposition occurring naturally. There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated. With effects limited to the immediate area surrounding the cables All cables associated with the OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out
	Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Petalophyllum ralfsii (Petalwort) [1395]	Suspended sediment and deposition Physical habitat loss Habitat disturbance Hydrology EMF Physical processes	No pathway for effect given no overlap with project footprint and lies above MHWS. Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated. All cables associated with ithe OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Baldoyle Bay SAC [IE000199]	Mud/sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows [1330] Mediterranean salt meadows [1410]	Accidental pollution Invasive species	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. Best practice approaches to marine vessels and/or plant use during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Habitat disturbance Physical habitat loss Hydrology (onshore) EMF Physical processes Suspended sediment and deposition	No pathway was identified for these direct effects given lack of spatial overlap with the project and features modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. The site does overlap with the maximum extent of any sediment plume (modelled as 16 km) however activity during O&M with potential to mobilise sediments will be highly localised and intermittent in nature with any Sediment plumes expected to quickly dissipate after cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, the effect will be barely discernible to change in suspended sediment concentrations and deposition occurring naturally. There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated With any effects limited to the immediate area surrounding the cables. All cables associated with the OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out
The Murrough Wetlands SAC [IE002249]]	Mediterranean salt meadows [1410] Atlantic salt meadows [1330] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210] Alkaline fens [7230]	Accidental pollution Invasive species	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. Best practice approaches to marine vessels and/or plant use and compliance with legislation including MARPOL during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Suspended sediment and deposition Habitat disturbance Physical habitat loss Hydrology (onshore) EMF Physical processes	No pathway were identified for these direct effects given lack of spatial overlap with the project and features Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. The site does overlap with the maximum extent of any sediment plume (modelled as 16 km) however activity during O&M with potential to mobilise sediments will be highly localised and intermittent in nature with any Sediment plumes expected to quickly dissipate after cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, the effect will be barely discernible to change in SSC concentrations and deposition occurring naturally. There is no overlap between the Offshore ECC or inter array cables that generate EMF and the QIs for which the site is designated With any effects limited to the immediate area surrounding the cables. All cables associated with the OES will be buried with no pathway for effect.	Screened out	Screened out	Screened out
Ballyman Glen SAC [IE000713]	Alkaline fens [7230] Petrifying springs with tufa formations [7220]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species EMF	The SAC is in a different catchment and groundwater body to the OES. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Glen of the Downs SAC [IE000719]	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effecst.	Screened out	Screened out	Screened out
Carriggower Bog SAC [IE000716]	Transition mires and quaking bogs [7140]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effecst.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Codling Fault Zone SAC [IE003015]	Submarine structures made by leaking gases [1180]	Accidental pollution Invasive species	Any spillages would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. Best practice approaches to marine vessels and/or plant use and compliance with legislation including MARPOL during maintenance works would negate the risk of IAS introductions. No pathway anticipated, but consideration given at Stage 2 AA due to the application of mitigation (under Sweetman).	Screened in	Screened out	Screened out
		Physical processes Suspended sediment and deposition	Modelled physical processes outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area and immediate surroundings. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field. The potential change from the presence of cable protection was modelled to be of a much lesser spatial extent and therefore no effect is anticipated on the tidal regime, wave regime and to sediment transport pathways, therefore no pathway exists for effects on the SAC. The site does overlap with the maximum extent of any sediment plume (modelled as 16 km) however activity during O&M with potential to mobilise sediments will be highly localised and intermittent in nature with any Sediment plumes expected to quickly dissipate after cessation of the activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels. Therefore, the effect will be barely discernible to change in SSC concentrations and deposition occurring naturally.	Screened out	Screened out	Screened out
		Physical habitat loss Habitat disturbance Hydrology (onshore) EMF	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effecst.	Screened out	Screened out	Screened out
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Collision risk (vessels) Habitat loss Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this feature at population level especially with regard to the capacity of this feature to avoid interactions. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour Any avoidance and / or displacement from construction vessels would be temporary and restricted to occur within an area already heavily used by vessels transiting to/from Dublin Port. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts on harbour porpoises from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. QI is sensitive to any loss or disturbance of habitat within the SAC, this will include ex situ. There is some uncertainty identified regarding size, community structure and distribution or habitat use of harbour porpoise inhabiting the SAC, In acknowledging limitations in the understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by harbour porpoises. Please note this effect is intrinsically linked to the effects screened in that trigger an avoidance of the available habitat for foraging and other behaviours (in particular underwater noise and vessel disturbance. No pathway exists from the onshore construction and O&M works given no works will interact with the seabed.	Screened in	Screened out	Screened out
		Underwater noise Suspended sediment	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012).Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect.	Screened out	Screened out	Screened out
Wicklow Mountains SAC [IE002122]	Oligotrophic waters containing very few minerals of sandy plains	Suspended sediment and deposition Habitat disturbance Accidental pollution	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	(*Littorelletalia uniflorae*) [3110] Natural dystrophic lakes and ponds [3160] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal Heaths [4060] Calaminarian grasslands of the *Violetalia calaminariae* [6130] Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) [6230] Blanket bogs (* if active bog) [7130] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110] Calcareous rocky slopes with chasmophytic vegetation [8210], Siliceous rocky slopes with chasmophytic vegetation [8220] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Physical habitat loss Hydrology (onshore) Invasive species EMF				
	Otter (*Lutra lutra*) [1355]	Disturbance and displacement Accidental pollution	Due to the mobility of this QI, effects could manifest on individuals from SAC population that have left the confines of the site and are present within Dublin Bay or Dún Laoghaire Harbour. Otter foraging could experience impacts during O&M, Disturbances (noise and visual) during O&M and any knock-on effects from or to prey species, could result in the exclusion of otter from foraging habitat, a holt or otter shelter. There is potential pathways for otters from the SAC through the watercourses, so impacts cannot be discounted without further information on their range and behaviour. This pathway will be considered at Stage 2 AA.	Screened in	Screened in	Screened in
		Effects on prey Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the species, the project will not construct physical barriers or fragmentation of habitats that would restrict access to up-river watercourses given the use of trenchless techniques for all watercourses, as a result there would be no exclusion of otter from foraging habitat or active holts.	Screened out	Screened out	Screened out
Howth Head SAC [IE000202]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given features lie above MHWS and outside of project footprint. Modelled outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area, offshore ECC and immediate surroundings with no changes for any effect anticipated at the coast.	Screened out	Screened out	Screened out
Ireland's Eye SAC [IE002193]	Perennial vegetation of stony banks [1220], Vegetated sea cliffs of	Suspended sediment and deposition Habitat disturbance Accidental pollution	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given features lie above MHWS and outside of project footprint. Modelled outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area, offshore ECC and immediate surroundings with no changes for any effect anticipated at the coast.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	the Atlantic and Baltic coasts [1230]	Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF				
Bray Head SAC [IE000714]	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230], European dry heaths [4030]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given features lie above MHWS and outside of project footprint. Modelled outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area, offshore ECC and immediate surroundings with no changes for any effect anticipated at the coast.	Screened out	Screened out	Screened out
Slaney River Valley SAC [IE000781]	Harbour seal (*Phoca vitulina*) [1365]	Accidental pollution Collision risk (vessels) Underwater noise Suspended sediment and deposition Effects on prey Invasive species Vessel disturbance	The distance between the effect and the QI (around 95km) falls outside of the typical foraging range for harbour seal is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Given the range of available habitat for harbour seal across the foraging range and the likelihood that the majority of seals present at Dublin Array are those associated with more local (and undesignated) haul out sites, it is considered that the risk is low to negligible and could only result in negligible effects in the wider environmental context.	Screened out	Screened out	Screened out
			There will be no interactions or pathways for significant impacts from the project on supporting habitats given there is no overlap with the project footprint, effect limited to impacts on supporting foraging habitat ex situ of the site, given the distance and available alternative habitat available, the QI is not considered sensitive to this effect. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Twaite shad (*Alosa fallax*) [1103] Atlantic salmon (*Salmo salar*) [1106] Sea lamprey (*Petromyzon marinus*) [1095]	Underwater noise	Exposure to noise and vibration during operation and maintenance activities could result in temporary effects, ranging from recoverable injury, changes in hearing (i.e., TTS) and behavioural response (e.g., Popper *et al.*, 2014). Exposure of individuals from the SAC population is possible during migration or while living at sea. Underwater noise modelling has been undertaken to quantify potential impact ranges for the onset of effects arising from non-impulse noise sources such as vessel traffic. No pathway for significant impacts were identified for underwater noise from operations and maintenance works onshore or at the O&M base in Dun Laoghaire.	Screened in	Screened out	Screened out
		EMF	The transmission of power through subsea cables from the wind turbine generators (WTGs) to shore during the operational phase of the proposed development would produce EMFs in the surrounding sediment and water column. These fields have the potential to affect fish species that use electric or magnetic senses for foraging, navigation or communication. Exposure could result in temporary changes in swimming behaviour, including possible attraction or avoidance and short-term delays in migration (e.g., Chung-Davidson *et al.*, 2004; Wyman *et al.*, 2018). Effects are anticipated to be localised; however, the impact will occur constantly throughout the 35-year operational phase of Dublin Array when the cables are carrying a current. Therefore, using a precautionary approach, the impact has been screened into the assessment.	Screened in	Screened out	Screened out
		Suspended sediment	During the operational phase of the proposed development, jack-up and anchoring operations and cable inspection and repair work will lead to localised seabed disturbances, which will result in short-term periods of increased SSC and sediment deposition. Exposure of individuals of the SAC population is possible; however, the likelihood of exposure is expected to be limited to passing migratory fish undertaking large migrations or to individuals during their marine phase. In the context of the open ocean, suspended sediment plumes are not considered to constitute a barrier to these mobile receptors. Fish present within the dispersal plume could experience a reduction in the quality of foraging habitat and at very high suspended sediment concentrations, abrasion and damage to gills (Wilber and Clarke, 2001). However, sediment plumes would be transient, and levels would not exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged.	Screened out	Screened out	Screened out
		Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality. Any accidental spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. Project-level mitigation is anticipated to manage this risk of accidental pollution; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Physical habitat loss Habitat disturbance	Atlantic salmon and twaite shad are pelagic feeders (Rikardsen and Dempson, 2011; Taverny and Ellie, 2001), while sea lamprey are parasitic feeders that prey on cetaceans and a variety of pelagic and demersal fishes (Kelly and King, 2001; Waldman *et al.*, 2008). In addition, the receptors spawn in freshwater, and as such they do not depend on the seabed at Dublin Array for reproduction. Therefore, it is concluded that the disturbance and loss of benthic habitat associated with the proposed development has no potential to result in likely significant effects to Atlantic salmon, sea lamprey and twaite shad. Any indirect effects through effects on prey that depend on the seabed have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Collision risk (vessels)	There is no evidence that suggest migratory fish regularly collide with vessels. Moreover, owing to the mobile nature of the receptors and the slow-moving nature of vessels, the likelihood of collision is considered to be low. Therefore, it is considered that there is no pathway for significant impacts from the project to the migratory fish QIs with respect to this impact.	Screened out	Screened out	Screened out
		Effects on prey	As Atlantic salmon, sea lamprey and twaite shad depend on fish as prey, there is potential for effects on prey species and their supporting habitats. Effects on prey during the operation and maintenance phase may arise through direct damage and disturbance during cable maintenance activities, temporary increase in SSC, seabed disturbance leading to the release of sediment contaminants and/or accidental contamination, and additional underwater noise and vibration leading to TTS or behavioural changes in prey species. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for effects on prey from the onshore construction activity.	Screened in	Screened out	Screened out
		Invasive species	The movement of vessel to and from the proposed development has the potential to impact upon migratory fish by contributing to the risk of introduction or spread of IAS. For example, infestations of Atlantic salmon with the parasitic salmon louse (*Lepeophtheirus salmonis*) have been shown to negatively impact wild Atlantic salmon populations by increasing mortality rates (Vormedal, 2024). Project-level mitigation is anticipated to manage this risk of introduction or spread of IAS; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical processes	Changes to hydrodynamic and sediment transport processes are anticipated to be localised and restricted to areas in close proximity to seabed infrastructure. Atlantic salmon, twaite shad and sea lamprey will not be directly affected by changes in sediment transport processes and seabed conditions as they spawn in freshwater and do not depend on benthic prey for feeding. Moreover, owing to their mobile nature, the receptors are not considered sensitive to any local changes in hydrodynamic conditions (tides, waves and currents). Therefore, no pathway for significant effects were identified for this impact. Any indirect effects through effects on prey have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Hydrology (onshore)	There is no pathway for effects to arise from changes to groundwater and/or potential changes to watercourses during landfall or O&M construction due to lack of spatial overlap with the project activity and the SAC.	Screened out	Screened out	Screened out
		Disturbance (non-physical)	Atlantic salmon are commonly located near the sea surface, and therefore have the potential to be exposed to visual stimuli associated with offshore infrastructure, such as artificial lights and flicker effects from moving turbines. The majority of published research on the behavioural effects of diadromous fish species to visual effects relate to artificial light, as opposed to shadow/flicker effects from moving turbines (reviewed by Dodd and Briers, 2021). For example, Riley *et al.* (2012) reported that Atlantic salmon smolts at the River Itchen, England, exposed to streetlights during downstream migration, showed more random timing of migration, when compared to non-lit years, when migration was correlated to sunset. Furthermore, Atlantic salmon, in fish farms, when exposed to submerged artificial light, were observed to increase their swimming depth (Juell *et al.*, 2003). The lack of published scientific literature on the potential effects of shadow flicker from turbine blades on Atlantic salmon was highlighted by Dodd and Briers (2021), who concluded that there is no specific evidence available to support or refute any biological or ecological impact of shadow flicker from onshore wind turbine blades on Atlantic salmon in rivers. No data are available on the effects of artificial lights and shadow flicker from offshore turbines; however, taking into consideration the distance of the wind turbines from the coast (where it is anticipated that olfactory and visual stimuli together with magnetic cues play an important navigational role for fish returning to natal rivers (Keefer and Caudill, 2014)), it is considered that there is no potential for adverse behavioural responses that could significantly affect the migration behaviour of Atlantic salmon. Moreover, considering the height of the turbine blades above the surface of the water, in the context of other visual stimuli such as distortions of the water surface and cloud cover, it is considered unlikely that artificial lights and flicker effects will have adverse effects on Atlantic salmon while at sea. Therefore, no pathway for significant impacts is identified for migratory fish receptors.	Screened out	Screened out	Screened out
	Brook lamprey (*Lampetra planeri*) [1096] River lamprey (*Lampetra fluviatalis*) [1099]	Underwater noise Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution Collision risk (vessels) Effects on prey EMF Invasive species	Brook lamprey do not migrate from freshwater into the sea at any life stage (Kurz and Costello, 1999; Maitland, 2003). Consequently, there is no pathway for effects for any impact. River lamprey migrate from rivers into estuaries as adults before returning to freshwater to spawn. River lampreys are thought to remain mainly in estuarine areas during their marine stage rather than heading out to sea like sea lamprey (Maitland, 2003). The SAC is located outside of the modelled sediment dispersal footprint and the predicted maximum impact ranges for effects from underwater noise. Therefore, and given the limited nature of migratory pathways of river lamprey away from the coast, there will be no interactions or pathways for significant impacts from the project.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Physical processes Hydrology (onshore) Disturbance (non physical)				
	Freshwater pearl mussel (*Margaritifera margaritifera*) [1029]	Underwater noise (indirect) EMF (indirect) Accidental Pollution (indirect) Effects on prey (indirect) Invasive species (indirect)	In their first year, freshwater pearl mussel live on the gills of young Atlantic salmon. As the viability of the mussel population is inherently linked to the viability of the salmon population, conclusions made to the salmon population will mirror those for freshwater pearl mussel.	Screened in	Screened out	Screened out
	Otter (*Lutra lutra*) [1355]	Collision risk (vessels) Effects on prey Vessel disturbance Accidental pollution Suspended sediment	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 95km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream).	Screened out	Screened out	Screened out
	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows) [1330] Mediterranean salt meadows [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis and Callitricho-Batrachion* vegetation [3260], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Suspended sediment Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	Site falls outside of the ZoI for dispersal plume generated for construction activities and taking account of any effects generated during O&M will be less than those expected for construction there will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated. Modelled outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area, offshore ECC and immediate surroundings with no changes for any effect anticipated at the coast. No discernible change in the tidal or wave regime, will be encountered within the near-field and the adjacent areas of the far-field.	Screened out	Screened out	Screened out
Glenasmole Valley SAC [IE001209]	Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410] Petrifying springs with tufa formation (Cratoneurion) [7220]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species EMF	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effects SAC lies above MHWS.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Knocksink Wood SAC [IE0000725]	Petrifying springs with tufa formation (Cratoneurion) [7220]	Accidental pollution Hydrology (onshore) Invasive species	The SAC is in a different catchment and groundwater body to the OES. There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effects. SAC lies above MHWS	Screened out	Screened out	Screened out
		Habitat disturbance Physical habitat loss Suspended sediment and deposition		Screened out	Screened out	Screened out
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, given the lack of spatial overlap of any direct or indirect effects. SAC lies above MHWS	Screened out	Screened out	Screened out
River Boyne and River Blackwater SAC [IE002299]]	Atlantic salmon (*Salmo salar*) [1106]	Underwater noise	Exposure to noise and vibration during operation and maintenance activities could result in temporary effects, ranging from recoverable injury, changes in hearing (i.e., TTS) and behavioural response (e.g., Popper *et al.*, 2014). Exposure of individuals from the SAC population is possible during migration or while living at sea. Underwater noise modelling has been undertaken to quantify potential impact ranges for the onset of effects arising from non-impulse noise sources such as vessel traffic. No pathway for significant impacts were identified for underwater noise from operations and maintenance works onshore or at the O&M base in Dun Laoghaire.	Screened in	Screened out	Screened out
		EMF	The transmission of power through Offshore ECC from the offshore infrastructure to the landfall and subsequent connection with the OES during the operational phase of the proposed development would produce EMFs in the surrounding sediment and water column. These fields have the potential to affect fish species that use electric or magnetic senses for foraging, navigation or communication. Exposure could result in temporary changes in swimming behaviour, including possible attraction or avoidance and short-term delays in migration (e.g., Wyman *et al.*, 2018). Effects are anticipated to be localised; however, the impact will occur constantly throughout the 35-year operational phase of Dublin Array when the cables are carrying a current. Therefore, using a precautionary approach, the impact has been screened into the assessment.	Screened in	Screened out	Screened out
		Suspended sediment	During the operational phase of the proposed development, jack-up and anchoring operations and cable inspection and repair work will lead to localised seabed disturbances, which will result in short-term periods of increased SSC and sediment deposition. Exposure of individuals of the SAC population is possible; however, the likelihood of exposure is expected to be limited to passing migratory fish undertaking large migrations or to individuals during their marine phase. In the context of the open ocean, suspended sediment plumes are not considered to constitute a barrier to these mobile receptors. Fish present within the dispersal plume could experience a reduction in the quality of foraging habitat and at very high suspended sediment concentrations, abrasion and damage to gills (Wilber and Clarke, 2001). However, sediment plumes would be transient, and levels would not exceed background suspended sediment concentrations typical in estuaries and significant impacts are not envisaged.	Screened out	Screened out	Screened out
		Accidental pollution	The offshore location of the project (away from major coastal development) is low-risk for the dispersal and re-distribution of toxic contaminants from disturbed sediments. The levels of contamination within sediments associated with the offshore infrastructure were found to be comparable to the wider regional background and not considered to be of a low quality. Any accidental spillages from construction of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. Project-level mitigation is anticipated to manage this risk of accidental pollution; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical habitat loss Habitat disturbance	Atlantic salmon are pelagic feeders (Rikardsen and Dempson, 2011; Taverny and Ellie, 2001) and spawn in freshwater, and as such they do not depend on the seabed at Dublin Array for reproduction. Therefore, it is concluded that the disturbance and loss of benthic habitat associated with the proposed development has no potential to result in likely significant effects to Atlantic salmon, sea lamprey and twaite shad. Any indirect effects through effects on prey that depend on the seabed have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Collision risk (vessels)	There is no evidence that suggest migratory fish regularly collide with vessels. Moreover, owing to the mobile nature of the receptors and the slow-moving nature of vessels, the likelihood of collision is considered to be low. Therefore, it is considered that there is no pathway for significant impacts from the project to the migratory fish QIs with respect to this impact.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Effects on prey	As Atlantic salmon depend on fish as prey, there is potential for effects on prey species and their supporting habitats. Effects on prey during the operation and maintenance phase may arise through direct damage and disturbance during cable maintenance activities, temporary increase in SSC, seabed disturbance leading to the release of sediment contaminants and/or accidental contamination, and additional underwater noise and vibration leading to TTS or behavioural changes in prey species. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for effects on prey from the onshore construction activity.	Screened in	Screened out	Screened out
		Invasive species	The movement of vessel to and from the proposed development has the potential to impact upon migratory fish by contributing to the risk of introduction or spread of IAS. For example, infestations of Atlantic salmon with the parasitic salmon louse (Lepeophtheirus salmonis) have been shown to negatively impact wild Atlantic salmon populations by increasing mortality rates (Vormedal, 2024). Project-level mitigation is anticipated to manage this risk of introduction or spread of IAS; however, as mitigation cannot be taken into account at screening, this impact remains screened in. Works for the O&M base will be restricted to the confines of Dún Laoghaire Harbour with no pathway for effects on migratory fish species. Likewise, no pathway exists for accidental pollution from the onshore construction activity.	Screened in	Screened out	Screened out
		Physical processes	Changes to hydrodynamic and sediment transport processes are anticipated to be localised and restricted to areas in close proximity to seabed infrastructure. Atlantic salmon, twaite shad and sea lamprey will not be directly affected by changes in sediment transport processes and seabed conditions as they spawn in freshwater and do not depend on benthic prey for feeding. Moreover, owing to their mobile nature, the receptors are not considered sensitive to any local changes in hydrodynamic conditions (tides, waves and currents). Therefore, no pathway for significant effects were identified for this impact. Any indirect effects through effects on prey have been considered as a standalone effect.	Screened out	Screened out	Screened out
		Hydrology (onshore)	There is no pathway for effects to arise from changes to groundwater and/or potential changes to watercourses during landfall or O&M construction due to lack of spatial overlap with the project activity and the SAC.	Screened out	Screened out	Screened out
		Disturbance (non-physical)	Atlantic salmon are commonly located near the sea surface, and therefore have the potential to be exposed to visual stimuli associated with offshore infrastructure, such as artificial lights and flicker effects from moving turbines. The majority of published research on the behavioural effects of diadromous fish species to visual effects relate to artificial light, as opposed to shadow/flicker effects from moving turbines (reviewed by Dodd and Briers, 2021). For example, Riley *et al.* (2012) reported that Atlantic salmon smolts at the River Itchen, England, exposed to streetlights during downstream migration, showed more random timing of migration, when compared to non-lit years, when migration was correlated to sunset. Furthermore, Atlantic salmon, in fish farms, when exposed to submerged artificial light, were observed to increase their swimming depth (Juell *et al.*, 2003). The lack of published scientific literature on the potential effects of shadow flicker from turbine blades on Atlantic salmon was highlighted by Dodd and Briers (2021), who concluded that there is no specific evidence available to support or refute any biological or ecological impact of shadow flicker from onshore wind turbine blades on Atlantic salmon in rivers. No data are available on the effects of artificial lights and shadow flicker from offshore turbines; however, taking into consideration the distance of the wind turbines from the coast (where it is anticipated that olfactory and visual stimuli together with magnetic cues play an important navigational role for fish returning to natal rivers (Keefer and Caudill, 2014)), it is considered that there is no potential for adverse behavioural responses that could significantly affect the migration behaviour of Atlantic salmon. Moreover, considering the height of the turbine blades above the surface of the water, in the context of other visual stimuli such as distortions of the water surface and cloud cover, it is considered unlikely that artificial lights and flicker effects will have adverse effects on Atlantic salmon while at sea. Therefore, no pathway for significant impacts is identified for migratory fish receptors.	Screened out	Screened out	Screened out
	River lamprey (*Lampetra fluviatalis*) [1099]	EMF Underwater noise Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution Collision risk (vessels) Effects on prey Invasive species Physical processes Hydrology (onshore) Disturbance (non physical)	River lamprey migrate from the rivers into the estuaries as adults before returning to freshwater to spawn, River lampreys are thought to reamin mainly in estuaries during their marine stage rather than heading out to sea like the sea lamprey (Maitland, 2003). The SAC is located outside of the modelled sediment dispersal footprint and the predicted maximum impact ranges for effects from underwater noise. Therefore, and given the limited nature of migratory pathways, there will be no interactions or pathways for significant impacts from the project.	Screened out	Screened out	Screened out
	Alkaline fens [7230] Alluvial forests with Alnus glutinosa and *Fraxinus excelsior* (*Alno-padion*, *Alnion incanae, Salicion albae*) [91E0]	Accidental pollution Suspended sediment Habitat disturbance Physical habitat loss Hydrology (onshore) Invasive species	No pathways identified for effects with the project activity and the QIs given the lack of overlap and the site falls outside of the ZoI for plume dispersal which defines the maximum extent of sediment dispersal as defined by the modelling. SAC is located 48 km from all offshore infrastructure with no overlap from direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Otter (*Lutra lutra*) [1355]	Collision risk (vessels) Effects on prey Vessel disturbance Accidental pollution Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 48 from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream)..	Screened out	Screened out	Screened out
Lambay Island SAC [IE000204]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts on harbour porpoises from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al.*, 2006, Teilmann *et al.*, 2006a, Teilmann *et al.*, 2006b, CEFAS, 2010, Scheidat *et al.*, 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al.*, 2009, Hastie *et al.*, 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus*) [1364] Harbour seal (*Phoca vitulina*) [1365]	Collision risk (vessels) Vessel disturbance Effects on prey	The offshore infrastructure falls within the typical foraging range of both species, however given the distance from the SAC, effects are for seals present in the water as opposed to when at their haul out or breeding sites within the SAC. Effects from vessel disturbance and collision risk will be negligible given the actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity and a proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. Taking a precautionary approach for transit of vessels to site this effect has been screened in. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	Low-level, localised noise from wind turbine generators (WTG) and operational and maintenance vessel traffic will be at a lower level than for construction and is considerably likely to be of negligible consequence in the context of background underwater noise levels generated by shipping and human activities within the South Dublin Bay area. Seals are not considered sensitive to this effect. Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts on seals given the large foraging range of this species and given that the limited magnitude, duration and extent of effects. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment. .	Screened out	Screened out	Screened out
	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	Modelled outputs for Dublin Array (Intertek, 2021) predicted changes to tidal regime, wave regime and to sediment transport pathways will be localised to within the array area, offshore ECC and immediate surroundings with no changes for any effect anticipated at the coast. SAC falls outside of the ZoI for dispersal plume generated for construction activities and taking account of any effects generated during O&M of offshore infrastructure will be less than those expected for construction there will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated.	Screened out	Screened out	Screened out
Blackwater Bank SAC [IE002953]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts on harbour porpoises from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al.*, 2006, Teilmann *et al.*, 2006a, Teilmann *et al.*, 2006b, CEFAS, 2010, Scheidat *et al.*, 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al.*, 2009, Hastie *et al.*, 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites..	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110]	Suspended sediment Physical habitat loss Habitat disturbance Accidental pollution	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 70km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
Pen Llyn a'r Sarnau SAC [UK0013117]	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al.*, 2006, Teilmann *et al.*, 2006a, Teilmann *et al.*, 2006b, CEFAS, 2010, Scheidat *et al.*, 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al.*, 2009, Hastie *et al.*, 2016) and are not considered sensitive to this effect. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Grey Seal (*Halichoerus grypus)* [1364]	Collision risk (vessels) Effects on prey Vessel disturbance	The offshore infrastructure falls within the typical foraging range for species and due to the mobility of seals effects could manifest on individuals associated with a SAC population that are present within the project's ZoI. A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Accidental pollution Habitat loss	Low-level, localised noise from wind turbine generators (WTG) and operational and maintenance vessel traffic will be at a lower level than for construction and is considerably likely to be of negligible consequence in the context of background underwater noise levels generated by shipping and human activities within the South Dublin Bay area. Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Submerged or partially submerged sea caves [8330]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 78 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Otter (*Lutra lutra*) [1355]					
Cardigan Bay SAC [UK0012712]	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available..	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus*) [1364]	Underwater noise Suspended sediment Effects on prey Vessel disturbance Accidental pollution Collison risk Habitat loss	The offshore infrastructure falls outside of the typical foraging range for grey seal, the distance between the effect and the QI (around 120km) is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array. Furthermore, (Jones *et al*, 2015), outlined a lack of connectivity between UK seals and Dublin Bay. Given the range of available habitat for grey seal associated with the SAC is extensive, and the likelihood that the majority of seals present at Dublin Array are those associated with more local (and undesignated) haul out sites, it is considered that the risk is low to negligible and could only result in negligible effects in the wider environmental context. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Sandbanks which are slightly covered by sea water all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 120km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Sea lamprey (*Petromyzon marinus*) [1095] River lamprey (*Lampetra fluviatilias*) [1099]	EMF				
Hook Head SAC [IE0000764]	Bottlenose Dolphin (*Tursiops truncatus*) [1349] Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available..	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore)	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 119 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Invasive species Physical processes EMF		Screened out	Screened out	Screened out
Bunduff, Lough and Machair/ Trawalua/ Mullaghmore SAC [IE0000625]	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Humid dune slacks [2190] Machairs (* in Ireland) [21A0] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites) [6210] Alkaline fens [7230] Marsh Fritillary (*Euphydryas aurinia*) [1065] Petalwort (*Petalophyllum ralfsii*) [1395]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore) Invasive species Physical processes EMF	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 196 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available..	Screened in	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Kilkieran Bay and Islands SAC [IE0002111]	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*) [6510] *Najas flexilis* (Slender Naiad) [1833]	Suspended sediment and deposition Habitat disturbance Accidental pollution Habitat loss Hydrology (onshore) Invasive species Physical processes EMF	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 2-27 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
	Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 208 km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream) and 50 km for harbour seals. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available..	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al.*, 2006, Teilmann *et al.*, 2006a, Teilmann *et al.*, 2006b, CEFAS, 2010, Scheidat *et al.*, 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al.*, 2009, Hastie *et al.*, 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Inishmore Island SAC [IE0000213]	Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. Argentea (*Salicion arenariae*) [2170]	Suspended sediment and deposition Habitat disturbance Accidental pollution Habitat loss Hydrology (onshore) Invasive species Physical processes EMF	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site is located 230 km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Humid dune slacks [2190] Machairs (* in Ireland) [21A0] European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]					
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat Loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
			The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.			
West Connacht Coast SAC [IE0002998]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Bottlenose Dolphin (Tursiops truncatus) [1349]	Underwater noise Collision risk Accidental pollution Vessel disturbance Invasive species Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to this QI, site is located 250km from source of the effects and lies outside of the management unit for bottlenose dolphins as defined in Table 8. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment for bottlenose dolphin SACs.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Kenmare River SAC [IE0002158]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330] Mediterranean salt meadows (*Juncetalia maritimi*) [1410] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Suspended sediment and deposition Habitat disturbance Accidental pollution Habitat loss Hydrology (onshore) Invasive species Physical processes EMF	No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 280 km from offshore infrastructure with no overlap for direct or indirect effects	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] European dry heaths [4030] *Juniperus communis* formations on heaths or calcareous grasslands [5130] Calaminarian grasslands of the *Violetalia calaminariae* [6130] Submerged or partially submerged sea caves [8330] Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]					
	Otter (*Lutra lutra*) [1355] Harbour Seal (*Phoca vitulina*) [1365]	Effects on prey Vessel disturbance Invasive species Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the habitats for which this site is designated, site is located 280 km from source of the effects and lies outside of the maximum foraging range for otters (up to 40 km of river or stream) and outside of the 50km typical foraging range for harbour seal..	Screened out	Screened out	Screened out
	Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303	Effects on prey Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to the QI for which this site is designated, site is located 280km from source. A precautionary 30 km buffer for bats has been used for this screening as defined in Table 3.	Screened out	Screened out	Screened out
Carnsore Point SAC [IE0002269]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012).	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
			Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.			
	Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	Site lies over 100km from Dublin Array. No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site has no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
Belgica Mound Province SAC [IE0002327]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
North Anglesey Marine / Gogledd Môn Forol SAC [UK0030398]	Bottlenose Dolphin (*Tursiops truncatus*) [1349]	Underwater noise Collision risk (vessels) Accidental pollution Vessel disturbance Invasive species Suspended sediment Habitat loss Habitat disturbance	There will be no interactions or pathways for significant impacts from the project to this QI, site is located 424km from source of the effects and lies outside of the management unit for bottlenose dolphins as defined in Table 8. Whilst bottlenose dolphin from distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and disturbance on bottlenose dolphin is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Reefs [1170]	Underwater noise Habitat loss Accidental pollution Invasive species Suspended sediment Hydrology	SAC lies over 420 km from Dublin Array. No pathways identified for direct effects with the project activity and the feature given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17 km. Site has no overlap for direct or indirect effects.	Screened out	Screened out	Screened out
	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
West Wales Marine / Gorllewin Cymru Forol SAC [UK0030397]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
North Channel SAC [UK0030399]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Bristol Channel Approaches Dynesfeydd Môr Hafren [UK0030396]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites..	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Roaringwater Bay and Islands SAC [IE000101]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus*) [1364] Reefs [1170] Large shallow inlets and bays [1160] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] Otter (*Lutra lutra*) [1355]	Underwater noise Suspended sediment Accidental pollution Effects on prey Collision risk (vessels) Vessel disturbance EMF	Roaringwater Bay SAC falls outside of the typical foraging ranges for the species and the distance between the effect and the QI (290km is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. No pathways identified with the project activity and the QI as no direct overlap and the site falls outside the ZoI for plume dispersal. Whilst seals from more distant SACs (i.e. Pen Llŷn a'r Sarnau SAC) may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment for Pen Llŷn a'r Sarnau SAC, the only other grey seal SAC within the screening range.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Blasket Island SAC [IE002172]	Harbour Porpoise (*Phocoena phocoena*) [1351]	Collision risk (vessels) Effects on prey Vessel disturbance	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in. It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
	Grey Seal (*Halichoerus grypus)* [1364]	Underwater noise Suspended sediment Accidental pollution Effects on prey Collision risk (vessels) Vessel disturbance Habitat loss	The site falls outside of the typical foraging ranges for the species and the distance between the effect and the QI is such that the risk is solely linked to mobile individuals that may move into the ZoI of Dublin Array Effects would not therefore manifest on distant SACs after the likelihood and severity of effects on the SAC have been diluted over distance and could only result in negligible effects in the wider environmental context. Whilst seals from more distant SACs (i.e. Pen Llŷn a'r Sarnau SAC) may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment for Pen Llŷn a'r Sarnau SAC, the only other grey seal SAC within the screening range. Whilst seals from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the supporting habitat used by the species as detailed in the Conservation Objectives. Furthermore, for this distant SAC, the pathway of effect for habitat loss and disturbance on seals is considered to be through changes to prey, which has been screened in and assessed in the NIS in view of the Conservation Objectives. Therefore, the pathway of habitat loss and disturbance is screened out from the assessment.	Screened out	Screened out	Screened out
	Reefs [1170], Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030]	Suspended sediment and deposition Habitat disturbance Accidental pollution Physical habitat loss Hydrology (onshore)	No pathways identified for direct effects with the project activity and the QI given the lack of overlap and the site falls outside of the ZoI for plume dispersal, identified as 17km. Site is located 318km from offshore infrastructure with no overlap for direct or indirect effects.	Screened out	Screened out	Screened out

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
	Submerged or partially submerged sea caves [8330]	Invasive species Physical processes				
French sites Listed below*	Harbour Porpoise *(Phocoena phocoena)* [1351]	Collision risk (vessels) Vessel disturbance Effects on prey	A relatively small increase in vessel traffic is associated with operations and maintenance transiting between the offshore infrastructure and the O&M base in Dún Laoghaire Harbour. The risk is not considered likely to present a significant risk to this QI at population level especially with regard to the capacity of this QI to avoid interactions and given any interactions will be limited to mobile individuals transiting through the area. However, as the implications for an individual are high, and effects could cumulate, the impact should be given further consideration at Stage 2 AA. All vessels are associated with the O&M of the offshore infrastructure, as such the risk is limited to when vessels are in transit with no pathway for effects whilst vessels moored up at the O&M base within the harbour. Any spillages from the O&M of the offshore infrastructure would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in It is estimated that a maximum of four O&M vessels will be utilised, resulting in 1,080 round trips per year. A proportion of these vessels will be stationary or slow moving throughout O&M activities for significant periods of time. The actual increase in vessel traffic moving around the site and to/from port to the site will occur over short periods of the offshore O&M activity. Any effects will be limited to mobile individuals transiting through the area whilst foraging through an area already heavily used by vessels transiting to/from Dublin Port. Fewer unique vessels will be introduced to the area than during the construction phase and effects occur within an existing background of high volume of vessel traffic. The scope and short-term duration and temporary nature of works during operation and maintenance would likely have imperceptible impacts this QI from these SACs over the large foraging range of this species and given that the limited magnitude, duration and extent of effects. The effects on prey species during O&M are likely to be low level and temporary in nature and the consequent effects on prey availability are unlikely to be significant with species having a broad prey spectrum that these generalist predators can feed on. Effects are anticipated to be negligible, localised and temporary with vast areas of unaffected habitat and prey still available.	Screened in	Screened out	Screened out
		Accidental pollution	The impact of pollution including accidental spills and contaminant releases associated with the construction of infrastructure and use of supply/service vessels has the potential to lead to direct mortality of marine mammals or a reduction in prey availability either of which may affect species' survival rates. Any spillages from the O&M of the offshore infrastructure and O&M base would be small-scale and quickly subject to the flushing influence of the tide and currents. No source anticipated, project level mitigation is anticipated to manage this risk, as mitigation cannot be taken into account at screening this remains screened in.	Screened in	Screened in	Screened out
		Underwater noise Suspended sediment Habitat loss	The Marine Management Organisation (2014) review of post-consent monitoring at offshore wind farms (OWFs) found that available data on the operational noise, from the UK and abroad, in general showed that noise levels from operational wind turbines are low and the spatial extent of the potential impact of the operational wind turbine noise on marine receptors is generally estimated to be small, with behavioural response only likely at ranges close to the wind turbine. This is supported by several published studies which provide evidence that marine mammals are not displaced from operational wind farms (Madsen *et al*., 2006, Teilmann *et al*., 2006a, Teilmann *et al*., 2006b, CEFAS, 2010, Scheidat *et al*., 2012). Effects during O&M phase will be generated by the reburial or replacement of sections of cables would result in the resuspension of sediment, although the potential impact is expected to be more localised and of shortened duration than the construction phase given only discrete sections of the cable will be subject to any O&M works. Harbour porpoise have been documented foraging in areas with high tidal flows (e.g. Pierpoint, 2008, Marubini *et al*., 2009, Hastie *et al*., 2016) and are not considered sensitive to this effect. The pathway of habitat loss and disturbance as referenced in the Conservation Objectives refers to within the site itself (with consideration of ex situ habitat). Whilst harbour porpoise from more distant SACs may be present in the proposed development area, it is not expected to be part of their core habitat in the context of the habitat used or depended on by the species as detailed in the Conservation Objectives. Furthermore, for these distant SACs, the pathway of effect for habitat loss and/or disturbance on harbour porpoise is considered to be through changes to prey and disturbance from underwater noise , which have been screened in and assessed in the NIS for all sites.	Screened out	Screened out	Screened out
Chaussée de Sein SAC [FR5302007] 567.62 km from array						
Ouessant-Molène [FR5300018] – 517.89 km from array -						
Abers – Côtes des Légendes SAC [FR5300017] – 505.60 km from array -						
Cap d'Erquy-Cap Frehel SAC [FR3102002] – 532.70 km from array -						
Baie de Morlaix SAC [FR5300015] 503.84 km from array -						
Côte de Granit Rose-Sept-Iles SAC[FR5310011] 481.94 km from array -						
Tregor Goëlo SAC [FR5300010] 489.80 km from array -						
Anse de Vauville SAC [FR2502019] – 472.88 km from array -						
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC [FR5300012] – 562.51 km from array -						
Récifs et 201ands de la Hague SAC [FR2500084] – 465.15 km from array -						
Baie du Mont Saint-Michel SAC [FR2500077] – 567.14 km from array -						
Baie de Saint-Brieuc – Est SAC [FR5310050] – 549.56 km from array -						
Chausey SAC [FR3102003] – 538.20 km from array -						

Site name	QI	Effects	Connections: Source-pathway-receptor	Screened in/Screened out offshore infrastructure	Screened in/Screened out O&M	Screened in/Screened out TJB/OES
Mers Celtiques-Talus du golfe de Gascogne SAC [FR5302015] – 449.52 km from array -						
Nord Bretagne DH SAC [FR2502022] – 424.67 km from array -						
Banc et récard ifs de Surtainville SAC [FR2502018] – 490.06 km from array -						
Côtes de Crozon SAC [FR5302006] – 549.26 km from array -						
Estuaire de la Rance SAC [FR5300061] – 573.30 km from array -						

6.2 Screening outcomes for SPAs

6.2.1 Please note Table 15 below identifies the qualifying features for SPAs, together with assemblage features as relevant. For the purposes of screening, assemblage features will be assessed at a species level. If no LSE are predicted for the species screened in, then there will be no LSE for the assemblage as a whole.

6.2.2 Screening for designated ornithological features has been undertaken solely for the offshore infrastructure (Offshore ECC and array area). Any onshore works do not have a potential pathway for effect as seabirds forage offshore and the onshore works for the OES and O&M base are outside potential disturbance buffers.

6.2.3 Designated features marked with an * within the table are listed as assemblage species for the site.

Table 15 Screening outcomes for SPAs – Construction and Decommissioning

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
North West Irish Sea SPA [IE004236] (10.5 km from ECC, 3.4 km from array)	Red-throated diver Great northern diver Common scoter	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. Located 3.4 km from the array, this SPA lies within the 10 km buffer from the array area to the SPA for assessing disturbance on red-throated divers, and within the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks, and has therefore, been screened in for disturbance and displacement during construction.	Screened in
	Guillemot Razorbill Kittiwake Manx shearwater	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. Auk species have moderate to high vulnerability to disturbance associated with vessel activity (Furness *et al.,* 2013, Fleissbach *et al*., 2019, Bradbury *et al.,* 2014 and Dierschke *et al*., 2016) and have a disturbance buffer of 2 km. The SPA is 3.4 km from the array, and is, therefore, beyond the 2 km disturbance buffer. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. Kittiwake and Manx shearwater have low vulnerability to disturbance (Furness *et al.,* 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016) based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis. Nevertheless, this SPA is 3.4km from the proposed development and is, therefore, further than the 2 km disturbance buffer. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Fulmar Cormorant Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Roseate tern Common tern Arctic tern Little tern Little gull	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. As these species have low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), the Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Puffin	Site designated for foraging seabirds	Disturbance and displacement Effects on prey	Puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Red-throated diver Great northern diver Common scoter Guillemot	Site designated for foraging seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Razorbill Fulmar Manx shearwater Cormorant Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Kittiwake Roseate tern Common tern Arctic tern Little tern Little gull				
South Dublin Bay and River Tolka Estuary SPA [IE004024] (5.9km from ECC, 12.1 km from array)	Common tern Roseate tern Arctic tern Black-headed gull	Breeding, passage and non-breeding seabirds	Disturbance and displacement	Common tern are designated at this site during the breeding season. This SPA may have connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is within mean maximum foraging range (MMFR) +1SD from this site (82.0±8.9km; Woodward *et al.,* 2019). Nevertheless, tern species have very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al.*, 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. Roseate tern, common tern and Arctic tern are designated as passage features, and black-headed gull is designated as a non-breeding feature of the SPA. Black-headed gulls and terns have very low vulnerability to vessel disturbance during construction activities (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Common tern Roseate tern Arctic tern Black-headed gull	Breeding, passage and non-breeding seabirds	Effects on prey	proposed developmentDue to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
	Light-bellied brent goose Oystercatcher Ringed plover Grey plover Knot Sanderling Dunlin Bar-tailed godwit Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 5.9 km from the ECC and 12.1 km from the array, the SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
North Bull Island SPA [IE004006] (11.1 km from ECC, 10.2 km from array)	Black headed gull	Non-breeding seabird	Disturbance and displacement	Black headed gull is designated a non-breeding feature of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. In addition, very low numbers were identified on site-specific surveys. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Black headed gull	Non-breeding seabird	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
	Light-bellied goose Redshank Shoveler Shelduck Turnstone Oystercatcher Teal Golden plover Pintail Dunlin Grey plover Bar-tailed godwit Black-tailed godwit Knot Curlew Sanderling	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 10.2 km from the ECC and 11.1 km from the array, the SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE indirect impacts on prey on the species in question and can be screened out.	Screened out
Dalkey Islands SPA [IE004172] (2.2 km from ECC and 8.6 km from array)	Common tern Arctic tern	Breeding and post-breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array for common tern and Arctic tern, as Dublin Array is within MMFR +1SD for common tern (82.0±8.9 km), and Arctic tern from this site (25.7±14.8 km; Woodward *et al.,* 2019). Nevertheless, tern species very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Common tern Arctic tern Roseate tern	Breeding and post-breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
	Roseate tern	Breeding and post-breeding seabirds	Disturbance and displacement	Roseate tern are no longer considered to be breeding at Dalkey Island SPA (Communications between BWI and Codling Wind Park, on behalf of other East Coast Phase 1 projects). Roseate tern is also designated as passage feature of the SPA, and may also have connectivity during post-breeding / pre-migration (passage) as evening observations of terns arriving to the roosting areas at this SPA indicated that most terns flew in from an easterly and south-easterly direction, therefore it was expected that they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne *et al*., 2008). Terns have very low vulnerability to vessel disturbance during construction activities (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
Howth Head Coast SPA [IE004113] (12.3 km from ECC and 8.5 km from array)	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Kittiwake	Breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
Ireland's Eye SPA [IE004117] (16.3 km from ECC and 12 km from array)	Razorbill Guillemot	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for guillemot and razorbill, as Dublin Array is within MMFR+1SD for guillemot (73.2±80.5 km) and razorbill from this site (88.7±75.9 km; Woodward *et al.,* 2019). This infers potential connectivity with the project site. Auk species have moderate to high vulnerability to disturbance associated with vessel activity (Furness *et al.,* 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016) and have therefore, been screened in for disturbance and displacement during construction.	Screened in
	Razorbill Guillemot Herring gull Kittiwake Cormorant	Breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
	Herring gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season with herring gull, as Dublin Array is within MMFR +1SD for herring gull (58.8±26.8 km) from this site (Woodward *et al.,* 2019). Nevertheless, herring gull has very low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al* 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Cormorant	Breeding seabird	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for cormorant as Dublin Array is within MMFR+1SD from this site (25.6±8.3 km; Woodward *et al.,* 2019). Cormorant has moderate to high vulnerability to vessel disturbance (Furness *et al.,* 2013; Fliessbach *et al.*, 2019) and has therefore, been screened in for disturbance and displacement during construction.	Screened in
Wicklow Mountains SPA [IE002122] (18.16km from array)	Merlin	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 18.6 km from the array and 21.4 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE indirect impacts on prey on the species in question and can be screened out.	Screened out
	Peregrine	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Malahide Estuary SPA (also known as Broadmeadow/Swords Estuary SPA) [IE004025]	Grey crested grebe Goldeneye Grey plover Light bellied geese	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 18.6 km from the array and 21.4 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(21.4 km from ECC and 18.6 km from array)	Red breasted merganser Knot Shelduck Oystercatcher Dunlin Pintail Golden plover Black tailed godwit Bar tailed godwit Redshank			No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	
Baldoyle Bay SPA [IE004016] (14 km from array and 16 km from ECC)	Light-bellied brent geese Ringed plover Grey plover Shelduck Golden plover Bar tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 14 km from the array and 16 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
The Murrough SPA [IE004186] (2.39 km from array and 8.11 km from ECC)	Herring gull Black-headed gull	Non-breeding seabirds	Disturbance and displacement	Black headed gull and herring gull are designated at this SPA during the non-breeding season only. During the non-breeding season, gulls forage largely on land and are making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Little tern	Breeding and non-breeding seabird	Disturbance and displacement	During the breeding season, there is no connectivity for little tern at this site, as Dublin Array is beyond the MMFR +1SD for little tern (5 km; Woodward *et al*., 2019). Additionally, they have very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Red-throated diver	Wintering waterbird	Disturbance and displacement	As this SPA is located 2.39 km from the array and 8.11 km from the ECC, the SPA lies within the 10km buffer from the array and ECC for assessing disturbance on red-throated divers. Therefore, this site has been screened in for disturbance and displacement during construction.	Screened in
	Herring gull Black-headed gull Little tern Red-throated diver	Breeding seabirds, non-breeding seabirds and wintering waterbirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in
	Greylag goose Light-bellied brent goose Wigeon Teal	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 2.39 km from the array and 8.11 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
Rogerstown Estuary SPA [IE004015] (22.3 km from array, 26.7 km from ECC)	Greylag goose Light bellied brent goose Shelduck Shoveler Oystercatcher Ringed plover Grey plover Knot Dunlin Black tailed godwit Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 22.3 km from the array and 26.7 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds recommended by (Cutts *et al.,* 2013). Therefore, there is no pathway for effect. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Poulaphouca Reservoir SPA [IE004063] (36.03km from array, 25.65km from ECC)	Greylag goose	Wintering waterbird	Disturbance and displacement Effect on prey	Located 36.03 km from the array and 25.65 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Non-breeding seabird	Disturbance and displacement Effects on prey	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lambay Island SPA [IE004069] (IE) (19.3 km to array and 25.8 km to ECC)	Herring gull Lesser black-backed gull Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season, for these designated breeding features, as Dublin Array is within the MMFR+1SD for herring gull (58.8±26.8 km), lesser black-backed gull (127.0±109.0 km), and fulmar from this site (542.3±657.9 km; Woodward *et al*., 2019). These species have low to **very low** vulnerability to disturbance associated with vessel activity (Furness *et al.,* 2013; Fliessbach *et al.*, 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Cormorant	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for cormorant as Dublin Array is within MMFR+1SD from this site (25.6±8.3 km; Woodward *et al.,* 2019). Cormorant has moderate to high vulnerability to vessel disturbance (Furness *et al.,* 2013; Fliessbach *et al.*, 2019), and has therefore, been screened in for disturbance and displacement during construction.	Screened in
	Shag	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for shag, as Dublin Array is within MMFR+1SD for shag from this site (13.2±10.5 km; Woodward *et al*., 2019). Shag have **moderate** vulnerability (Furness *et al.,* 2013) to vessel disturbance, however, due to the short-term nature of the impact during construction, this impact is not significant for this species. Nevertheless, due to tracking data from Lambay Island, and consultation with NPWS, shag have been screened in on a precautionary basis.	Screened in

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Greylag goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 19.3 km from the array and 25.8 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Guillemot Razorbill	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for guillemot and razorbill, as Dublin Array is within MMFR+1SD for guillemot (73.2±80.5 km) and razorbill (88.7±75.9 km), at this site. Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016) and have therefore, been screened in for disturbance and displacement during construction.	Screened in
	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Herring gull Kittiwake Lesser black-backed gull Fulmar Cormorant Shag Guillemot Razorbill	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to the vast majority of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Wicklow Head SPA [IE004127] (19.8 km to array and 25.6 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
			Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Rockabill SPA [IE004014] (28.5 km to array and 25.6 km to ECC)	Arctic tern Common tern	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for Arctic tern and common tern, as Dublin Array is within MMFR+1SD for Arctic tern (25.7±14.8 km) and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Nevertheless, Arctic terns and common terns have very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al.*, 2019). Given the distances presented in Woodward *et al*., 2019, there is a significant amount of alternative foraging habitat within each species-specific range that seabirds can exploit if they are disturbed from an area. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Roseate tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no breeding season connectivity with Dublin Array for roseate tern, as Dublin Array is beyond the MMFR+1SD for roseate tern at this site (12.6±10.6 km; Woodward *et al*., 2019). Additionally, they have very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al.*, 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Arctic tern Common tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Purple sandpiper	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 25.6km from the ECC and 28.5 km from the array, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
River Nanny Estuary and Shore SPA [IE004158] (42 km to array and 45.3 km to ECC)	Herring Gull	Non-breeding seabird	Disturbance and displacement Effects on prey	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Oystercatcher Ringed plover Golden plover Knot Sanderling	Wintering waterbirds	Disturbance and displacement. Effects on prey	Located 42km from the array and 45.3 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Boyne Estuary SPA [IE004080] (49.6 km to array and 53.2 km to ECC)	Little tern	Breeding seabird	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond the MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Additionally little tern has low vulnerability to vessel disturbance during construction activities (Fliessbach *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Shelduck Oystercatcher Golden plover Grey plover Lapwing Knot Sanderling Black-tailed godwit Redshank Turnstone	Wintering non-seabirds	Disturbance and displacement Effects on prey	Located 49.6 km from the array and 53.2 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Skerries Island SPA [IE004122] (30.2 km to array and 35.6 km to ECC)	Shag	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag, as Dublin Array is beyond MMFR+1SD for shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Cormorant	Breeding and non-breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for cormorant as Dublin Array is within MMFR+1SD from this site (25.6±8.3 km; Woodward *et al.,* 2019). Cormorant has moderate to high vulnerability to vessel disturbance (Furness *et al.,* 2013; Fliessbach *et al.*, 2019) and has therefore, been screened in for disturbance and displacement during construction.	Screened in
	Cormorant Herring gull	Breeding and non-breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Herring gull	Breeding and non-breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for herring gull as Dublin Array is within MMFR+1SD to this site (58.8±26.8 km; Woodward *et al*., 2019). Herring gull has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Light-bellied brent geese Purple sandpiper Turnstone	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 30.2 km from the array and 35.6 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Dundalk Bay SPA [IE004026] (64.32 km to array, 68.85 km to ECC)	Great creseted grebe Greylag goose Light-bellied brent goose Shelduck Teal Mallard Pintail Common scoter Red-breasted merganser Oystercatcher Ringed plover Golden plover Lapwing Knot Dunlin Black-tailed godwit Bar-tailed godwit Curlew Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 64.32 km from the array and 68.85 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Black-headed gull Common gull	Non-breeding seabirds	Disturbance and displacement	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Herring gull		Effects on prey		
Cahore Marshes SPA [IE004143] (68.21 km to array, 73.12 km to ECC)	Wigeon Golden plover Lapwing Greenland white-fronted goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 64.21 km from the array and 73.12 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Seas off Wexford SPA [IE004237] (68.41 km to array and 74.51km to ECC)	Red-throated diver Fulmar Gannet Cormorant Shag Common scoter Mediterranean gull Black-headed gull Lesser black-backed gull Kittiwake Sandwich tern Roseate tern Common tern Arctic tern Little tern Guillemot Razorbill Puffin Manx shearwater	Site designated for foraging seabirds	Disturbance and displacement Effects on prey	The Seas of Wexford SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. Due to the distance from Dublin Array to this SPA (68.41 km to the array and 74.51 km to the ECC), there is no potential for disturbance or collision risk. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Anglesey Terns / Morwenoliaid Ynys Môn SPA [UK9013061] (73.8 km to array and 77.3 km to ECC)	Roseate tern Arctic tern Common tern Sandwich tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for roseate tern, arctic tern, common tern, and sandwich tern, as Dublin Array is beyond the MMFR+1SD for roseate tern (82.0±8.9 km), arctic tern (82.0±8.9 km), common tern (82.0±8.9 km), and sandwich tern at this site (82.0±8.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA [UK9013121]	Manx shearwater	Breeding seabird	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater[25]. This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methodology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during construction.	Screened in

[25] https://data.seabirdtracking.org/dataset/1557

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(74.9 km to array and 81.1 km to ECC)	Manx shearwater	Breeding seabird	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Carlingford Lough SPA [UK9020161] (77.5 km to array and 83.5 km to ECC)	Sandwich tern Common tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern and common tern, as Dublin Array is beyond MMFR+1SD for sandwich tern (34.3±23.2 km) and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Light-bellied brent goose	Wintering non-seabird	Disturbance and displacement Effects on prey	Located 77.5 km from the array and 83.5 km from the ECC, This SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Wexford Harbour and Slobs SPA [IE004076] (84.8 km to array and 87.5 km to ECC)	Lesser black-backed gull Black-headed gull	Non-breeding seabirds	Disturbance and displacement Effects on prey	During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Little tern	Breeding and non-seabird seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond the MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Little grebe* Great crested grebe* Cormorant* Grey heron* Bewick's swan* Whooper swan* Light-bellied brent goose* Shelduck* Wigeon* Teal*	Wintering waterbirds and post-breeding/roosting onshore birds	Disturbance and displacement Effects on prey	Located 84.8 km from the array and 87.5 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Mallard* Pintail* Scaup* Goldeneye* Red-breasted merganser* Hen harrier* Coot* Oystercatcher* Golden plover* Grey plover* Lapwing* Knot* Sanderling* Dunlin* Black-tailed godwit* Bar-tailed godwit* Curlew* Redshank* Greenland white-fronted goose*				
The Raven SPA [IE004019] (83.8 km to array and 88.5 km to ECC)	Red-throated diver Cormorant Common scoter Greenland white-fronted Grey plover Sanderling	Wintering waterbirds and seabirds	Disturbance and displacement Effects on prey	Located 83.8 km from the array and 88.5 km from the ECC, this SPA lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated divers, outside the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks, and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Killough Bay SPA [UK9020221] (106.21 km to array, 115.15 km to ECC)	Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 106.21 km from the array and 115.15 km from the ECCthis SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Liverpool Bay/ Bae Lerpwl SPA [UK9020294] (108.1 km to array and 111.7 km to ECC)	Little tern Cormorant* Common tern	Breeding and non-breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, cormorant, and common tern, as Dublin Array is beyond the MMFR+1SD for little tern (5 km), cormorant (25.6±8.3 km), and common tern (18.0±8.9 km) at this site (Woodward *et al*., 2019). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Little gull	Non-breeding seabird	Disturbance and displacement	During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Common scoter Red-throated diver Red-breasted merganser*	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 108.1 km from the array and 111.7 km from the ECC, this SPA lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated diver, outside the 4 km buffer from the proposed development for assessing disturbance on sea ducks, and outside the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Therefore, there is no pathway for effect. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lady's Island Lake SPA [IE004009] (108.17 km to array, 112.81 km to ECC)	Black-headed gull Sandwich tern Roseate tern Common tern Arctic tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for black-headed gull, sandwich tern, roseate tern, common tern, and arctic tern, as Dublin Array is beyond MMFR for black-headed gull (18.5 km) and beyond MMFR+1SD for sandwich tern (34.3±23.2 km), roseate tern (12.6±10,6 km), common tern (18.0±8.9 km), and arctic tern (25.7±14.8 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gadwall	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Located 108.17 km from the array and 112.81 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Tacumshin Lake SPA [IE004092] (110.71 km to array, 114.99 km to ECC)	Little grebe Bewick's swan Whooper swan Wigeon Gadwall Teal Pintail Shoveler Tufted duck Coot Golden plover Grey plover Lapwing Black-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 110.71 km from the array and 114.99 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Strangford Lough SPA [UK9020111] (112.8 km to array and 121.8 km to ECC)	Sandwich tern Arctic tern Common tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern, Arctic tern, and common tern, as Dublin Array is beyond the MMFR+1SD for sandwich tern (34.3±23.2 km), Arctic tern (25.7±14.8 km), and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Sandwich tern Arctic tern Common tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Golden plover* Bar-tailed godwit* Light-bellied brent goose Shelduck* Knot Redshank Great crested grebe* Greylag goose* Wigeon* Gadwall* Teal* Mallard* Pintail* Shoveler* Goldeneye* Red-breasted merganser* Coot* Oystercatcher* Ringed plover* Grey plover* Lapwing* Dunlin* Curlew* Turnstone*	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 112.8 km from the array and 121.8 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Bannow Bay SPA [IE004033] (112.96 km to array, 115.58 km to ECC)	Light-bellied brent goose Shelduck Pintail Oystercatcher Golden plover Grey plover Lapwing Knot Dunlin Black-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 112.96 km from the array and 115.58 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Bar-tailed godwit Curlew Redshank				
Ballyteigue Burrow SPA [IE004020] (114.01 km to array, 117.34 km to ECC)	Light-bellied brent goose Shelduck Golden plover Grey plover Lapwing Black-tailed godwit Bar-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 114.01 km from the array and 117.34 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Outer Ards SPA [UK9020271] (117.5 km to array and 126.6 km to ECC)	Arctic tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is beyond the MMFR+1SD for Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Arctic tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Ringed plover Golden plover Turnstone Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 117.5 km from the array and 126.6 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Keeragh Islands SPA [IE004118] (118.48 km to array, 121.47 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for Cormorant, as Dublin Array is beyond MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Saltee Islands SPA [IE004002] (119.7 km to array and 123.6 km to ECC)	Razorbill Guillemot Gannet	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for razorbill, guillemot, and gannet, as Dublin Array is within MMFR+1SD for razorbill (88.7±75.9 km), guillemot (73.2±80.5 km), and gannet at this site (315.2±194.2 km; Woodward *et al*., 2019). Auk species have moderate to high vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al*., 2019, Bradbury *et al*., 2014 and Dierschke *et al*., 2016) and have therefore, been screened in for disturbance and displacement during construction. Gannet has moderate vulnerability to disturbance associated with vessel activity (Fliessbach *et al*., 2019). Therefore, gannet has been screened in for disturbance and displacement during construction.	Screened in
	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Razorbill Guillemot	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Gannet Lesser black-backed gull Kittiwake Fulmar Shag Cormorant Herring gull			to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	
	Lesser black-backed gull Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull and fulmar, as Dublin Array is within MMFR+1SD for lesser black-backed gull (127.0±109.0 km) and fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). All species have low vulnerability to disturbance associated with vessel activity during construction (Furness *et al.,* 2013, Fleissbach *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Shag Cormorant Herring gull	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for shag, cormorant, and herring gull, as Dublin Array is beyond the MMFR+1SD for shag (13.2±10.5 km), cormorant (25.6±8.3 km), and herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Tramore Back Strand SPA [IE004027] (133.32 km to array, 134.83 km to ECC)	Light-bellied brent goose Golden plover Grey plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 117.5 km from the array and 126.6 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Lough Derg (Shannon) SPA [IE004058] (148.4 km to array and 137.7 km to ECC)	Tufted duck Goldeneye	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 137.7 km from the ECC and 148.4 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Common tern Cormorant	Breeding and nonbreeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for common tern and cormorant, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km) and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Common tern Cormorant	Breeding and nonbreeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
				addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	
Mid-Waterford Coast SPA [IE004193] (138.76 km to array, 140.96 km to ECC)	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects for onshore birds as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Cormorant Herring gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for herring gull and cormorant, as Dublin Array is beyond the MMFR+1SD for herring gull (58.8±26.8 km) and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lough Derg (Donegal) SPA [IE004057] (190.8 km to array and 189.3 km to ECC)	Herring gull Lesser black-backed gull	Breeding seabirds	Disturbance and displacement	Dublin Array is beyond the mean maximum +1SD foraging ranges for lesser black backed gull (127±109 km) and herring gull (58.8±26.8km; Woodward *et al.,* 2019) and therefore has no breeding season connectivity. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Herring gull Lesser black-backed gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Copeland Islands SPA [UK9020291] (153.3 km to array and 162 km to ECC)	Arctic tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is beyond the MMFR+1SD for Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al*., 2015, Horswill *et al*., 2023). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during construction.	Screened in
	Arctic tern Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051] (156.5 km to array and 163.3 km to ECC)	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3km; Woodward *et al*., 2019). Auk species, such as these, have moderate to high vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Manx shearwater Storm petrel Kittiwake* Razorbill* Guillemot* Lesser black-backed gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Storm petrel	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for storm petrel, as Dublin Array is within MMFR+1SD for storm petrel (336km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al*., 2015). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during construction.	Screened in
	Razorbill* Lesser black-backed gull Guillemot*	Breeding seabirds	Disturbance and displacement	Dublin Array is beyond the colony specific maximum foraging range for lesser black-backed gull (150.5km) and razorbill (62.0km; Woodward *et al*., 2019) and is beyond the mean-maximum +1SD foraging range of guillemot (73.2±80.5km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Red-billed chough Short-eared owl	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Dungarvan Harbour SPA [IE004032] (161.02 km from array)	Black-tailed godwit Curlew Dunlin Great crested grebe Grey plover Knot Lapwing Light-bellied brent goose Oystercatcher Red-breasted merganser Redshank Shelduck Turnstone	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 161.02 km from the array, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Grassholm SPA [UK9014041] (157.9 km to array and 164.5 km to ECC)	Gannet	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is within MMFR+1SD for gannet at this site (315.2±194.2 km; Woodward *et al*., 2019). Gannet has moderate vulnerability to disturbance associated with vessel activity (Fliessbach *et al*., 2019), and has therefore, been screened in for disturbance and displacement during construction.	Screened in
	Gannet	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Helvick Head and Ballyquin SPA [IE00665]	Cormorant Herring gull	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond the MMFR+1SD for cormorant (25.6±8.3 km) and herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(162.6 km to array and 162.7 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction and maintenance.	Screened in
	Cormorant Herring gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Peregrine Chough	Onshore terrestrial birds	-	No pathway for effects on onshore bird species. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Old Head of Kinsale SPA [IE004021] (246.1 km to array and 244.6 km to ECC)	Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, as Dublin Array is outside MMFR+1SD for guillemot at this site (73.2±80.5 km ; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Guillemot Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Larne Lough SPA [UK9020042] (163.1 km to array and 170.9 km to ECC)	Sandwich tern Common tern Roseate tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern, common tern, and roseate tern, as Dublin Array is within MMFR+1SD for sandwich tern (34.3±23.2 km), common tern (18.0±8.9km), and roseate tern at this site (12.6±10.6 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Sandwich tern Common tern Roseate tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 163.1 km from the array and 170.9 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
The Dee Estuary SPA [UK9013011] (166.1 km to array and 169.5 km to ECC)	Common tern Sandwich tern Little tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for common tern, Sandwich tern, and little tern, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km), Sandwich tern (34.3±23.2 km), and little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Common tern Sandwich tern Little tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Bar-tailed godwit Black-tailed godwit Cormorant* Curlew Dunlin Grey plover Knot Oystercatcher Pintail Redshank Shelduck Teal Great crested grebe* Wigeon* Lapwing* Sanderling*	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 166.1 km from the array and 169.5 km from the ECC, this site lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.*, 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Mersey Narrows and North Wirral Foreshore SPA [UK9020287] (178.5 km to array and 181.8 km to ECC)	Common tern Little gull	Non-breeding seabirds	Disturbance and displacement	The Mersey Narrows and North Wirral Foreshore SPA aims to conserve the habitat that supports bird populations. Only developments or activities that impact birds within the Special Protection Area (SPA) will affect the ability to meet conservation targets. Consequently, connectivity is determined by direct overlap of disturbance ranges with the SPA, rather than the potential foraging range connectivity as seen in breeding SPAs. As this SPA is 178.5 km from the Dublin Array array, there is no potential pathway for effect. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Common tern Little gull	Breeding and non-breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Bar-tailed godwit Cormorant* Sanderling* Dunlin* Redshank* Oystercatcher* Knot Grey plover*	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 178.50 km from the array and 181.80 km from the ECC, this SPA lies outside of the 0.50 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) proposed developmentthe proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Carmathen Bay/ Bae Caerfyrddin SPA [UK9014091]	Common scoter	Wintering waterbird	Disturbance and displacement	Located 178.70 km from the array and 185.60 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks (SNCB 2022). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(178.70 km to array and 185.60 km to ECC)			Effects on prey	No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	
Blackwater Estuary SPA [IE004028] (181.21 km from array)	Black-tailed godwit Curlew Dunlin Lapwing Redshank Wigeon Bar-tailed godwit Golden plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 181.21 km from the array, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Blackwater Callows SPA [IE004094] (184.99 km to array, 182.11 km to ECC)	Whooper swan Wigeon Teal Black-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 184.99 km from the array and 182.11 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Ribble and Alt Estuaries SPA [UK9005103] (184.50 km to array and 188.30 km to ECC)	Common tern Black-headed gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern and black-headed gull, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km) and black-headed gull at this site (18.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is beyond MMFR+1SD for lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Dunlin Cormorant* Golden plover Grey plover Knot oystercatcher Pink-footed goose Pintail Redshank Ringed plover Ruff Sanderling Bar-tailed godwit	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Located 184.50 km from the array and 188.3 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Bewick's swan Black-tailed godwit Whooper swan Wigeon Shelduck Teal Common scoter* Scaup* Whimbrel* Curlew* Lapwing*				
Ballymacoda Bay SPA [IE004023] (189.49 km from array)	Black-tailed godwit Curlew Dunlin Grey plover Lapwing Redshank Ringed plover Teal Turnstone Wigeon Bar-tailed godwit Golden plover Sanderling	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 189.49 km from the array, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Morecambe Bay and Duddon Estuary SPA [UK9020326] (189.20 km to array and 195.80 km to ECC)	Lesser black-backed gull Great black-backed gull* Sandwich tern Little tern Black-headed gull* Common tern Arctic tern* Herring gull Mediterranean gull Common gull* Cormorant*	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull, great black-backed gull, sandwich tern, little tern, black-headed gull, common tern, Arctic tern, herring gull, mediterranean gull, common gull, and cormorant, as Dublin Array is beyond the colony-specific maximum foraging range for lesser black-backed gull (92.7 km) and is beyond the MMFR+1SD for great black-backed gull (73 km), sandwich tern (34.3±23.2 km), little tern (5 km), black-headed gull (18.5 km), common tern (18.0±8.9 km), Arctic tern (25.7±14.8 km), herring gull (58.8±26.8 km), mediterranean gull (20 km), common gull (50 km), and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Lesser black-backed gull Great black-backed gull* Sandwich tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Little tern Black-headed gull* Common tern Arctic tern* Herring gull Mediterranean gull Common gull* Cormorant*				
	Bar-tailed godwit Black-tailed godwit Curlew Dunlin Golden plover Grey plover Knot Little egret Oystercatcher Pink-footed goose Pintail Redshank Ringed plover Ruff Sanderling Shelduck Turnstone Whooper swan Light-bellied brent goose* Eider* Common goldeneye* Great white egret* Greenshank* Green-winged teal* Lapwing* Little stint* Mallard* Red-breasted merganser* Ring-necked duck*	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 189.2 km from the array and 195.8 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.*, 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Spotted redshank* Teal* Wigeon*				
Ballycotton Bay SPA [IE004022] (200.57 km from the array)	Black-tailed godwit Curlew Grey plover Lapwing Ringed plover Teal Turnstone Bar-tailed godwit Golven plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 200.57 km from the array, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Cork Harbour SPA [IE004030] (205.33 km to array, 203.74 km to ECC)	Little grebe Great crested grebe Grey heron Shelduck Wigeon Teal Pintail Shoveler Red-breasted merganser Oystercatcher Golden plover Grey plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 205.33 km from the array and 203.74 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Black-headed gull Cormorant Common gull Lesser black-backed gull	Non-breeding seabirds	Disturbance and displacement Effects on prey	Black headed gull, cormorant, common gull, and lesser black-backed gull are designated non-breeding features of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Common tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond MMFR+1SD for common tern (18.0±8.9 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
Lough Swilly SPA [IE004075] (213.6 km to array and 214.3 km to ECC)	Black-headed gull Sandwich tern Common tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for black-headed gull, sandwich tern, and common tern, as Dublin Array is beyond MMFR+1SD for black-headed gull (18.5 km), sandwich tern (34.3±23.2 km), and common tern at this site (18.0±8.9km ; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Black-headed gull Sandwich tern Common tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Goldeneye Red-breasted merganser Coot Oystercatcher Knot Dunlin, Curlew Redshank Greenshank Great crested grebe Grey heron Whooper swan Greylag goose Shelduck Wigeon Teal Mallard Shoveler Scaup Greenland white-fronted goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 213.6 km from the array and 214.3 km from the ECC, this SPA lies outside of the 0.50 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Turnstone Tufted duck Brent goose Ringed plover Great northern diver Bar-tailed godwit Golden plover Lapwing Common gull				
Sheep Island SPA [UK9020021] (217.4 km to array and 223.1 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is beyond the MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Cormorant	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Rathlin Island SPA [UK9020011] (216.98 km to array and 223.2 km to ECC)	Peregrine	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Herring gull* Common gull* Guillemot Razorbill Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake, herring gull, common gull, guillemot, and razorbill, as Dublin Array is beyond the colony-specific maximum foraging range for kittiwake (76 km) and is beyond the MMFR+1SD for herring gull (58.8±26.8 km), common gull (50km), guillemot (73.2±80.5 km), and razorbill at this site (88.7±75.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Fulmar* Lesser black-backed gull*	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar and lesser black-backed gull, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) and lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). However, these species have very low vulnerability to disturbance associated with vessel activity, therefore impact is not significant for this species (Furness *et al*., 2013; Fliessbach *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Puffin*	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Herring gull* Common gull* Guillemot Razorbill Kittiwake Fulmar*	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Lesser black-backed gull*				
Ailsa Craig SPA [UK9003091] (219.2 km to array and 228.3 km to ECC)	Guillemot Herring gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for guillemot and herring gull, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km) and herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is within MMFR+1SD for lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). However, this species have very low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al.*, 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to disturbance and displacement during construction.	Screened in
	Gannet	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for gannet, as Dublin Arrray is within MMFR+1SD for gannet at this site (315.2±194.2 km; Woodward *et al*., 2019). Gannet has moderate vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al.*, 2019), and has therefore, been screened in for disturbance and displacement during construction.	Screened in
	Guillemot Herring gull Kittiwake Lesser black-backed gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Horn Head to Fanad Head SPA [IE004194] (233.50 km to array, 235.46 km to ECC)	Cormorant Shag Guillemot Razorbill	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, shag, guillemot, and razorbill, as Dublin Array is beyond the MMFR +1SD for cormorant (25.6±8.3 km), shag (13.2±10.5 km), guillemot (73.2±80.5 km), and razorbill at this site (88.7±75.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) at this site (Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, however Dublin Array is at the maximum extent of the MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019) when measuring around land distance. Therefore this species has been screened out for risk to disturbance and displacement during construction and decommissioning.	Screened out
	Fulmar Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
				addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	
	Barnacle goose Greenland white-fronted goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 233.50 km from the array and 235.46 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Sovereign Islands SPA [IE004124] (236.86 km to array, 235.59 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is beyond the MMFR +1SD for cormorant (25.6±8.3 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Courtmacsherry Bay SPA [IE004219] (249.12 km to array, 247.20 km to ECC)	Great northern diver Shelduck Wigeon Red-breasted merganser Golden plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 249.12 km from the array and 247.20 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Black-headed gull Common gull	Non-breeding seabirds	Disturbance and displacement Effects on prey	Black headed gull and common gull are designated non-breeding features of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Inishtrahull SPA [IE004100] (249.7 km to array and 252.9 km to ECC)	Shag Common gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag and common gull, as Dublin Array is beyond the MMFR+1SD for shag (13.2±10.5km) and common gull at this site (50km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Barnacle goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 249.7 km from the array and 252.9 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
Clonakilty Bay SPA [IE004081] (262.03 km to array, 259.84 km to ECC)	Shelduck Dunlin Black-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 262.03 km from the array and 259.84 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Rinns of Islay SPA [UK9003057] (265.3 km to array and 270.8 km to ECC)	Common scoter Corncrake Greenland white-fronted goose Whooper swan	Breeding, passage and non-breeding/wintering waterbirds and other non-seabirds	Disturbance and displacement Effects on prey	Located 265.3km from the array and 270.8km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Chough Hen harrier	Onshore terrestrial birds	-	No pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
North Colonsay and Western Cliffs SPA [UK9003171] (308.3 km to array and 314.7 km to ECC)	Guillemot Kittiwake	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for guillemot and kittiwake, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km) and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Chough	Onshore terrestrial birds	-	No pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Blasket Islands SPA [IE004008] (329.30 km to array, 321.53 km to ECC)	Shag Lesser black-backed gull Herring gull Kittiwake Arctic tern Razorbill Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for puffin, shag, lesser black-backed gull, herring gull, arctic tern, razorbill and kittiwake, as Dublin Array is beyond the MMFR+1SD for puffin (137.1±128.3 km), shag (13.2±10.5 km), lesser black backed gull (127±109 km), herring gull (58.8±26.8 km), arctic tern (25.7±14.8 km), razorbill (88.7±75.9 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Storm petrel	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) at this site (Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out. This SPA is located on the west coast of Republic of Ireland. The distance around land rather than in a straight line from this SPA to Dublin Array is beyond the mean maximum +1SD foraging ranges for storm petrel (336 km; Woodward *et al*., 2019; >400 km around land). Therefore, there is no breeding season connectivity. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on foraging data of Manx shearwater on Irish west coast colonies, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea (e.g.,	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
			Effects on prey	Wischnewski *et al*., 2019, Critchley *et al*., 2020). Consequently, the feature will not have a LSE and can be screened out for disturbance and displacement during construction based on no connectivity.	
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Puffin Island SPA [IE0004003] (335.8 km to array and 329.2 km to ECC)	Lesser black-backed gull Razorbill Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA is located on the west coast of Republic of Ireland. This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull, razorbill, and puffin, as the SPA is beyond the MMFR+1SD for lesser black backed gull (127±109 km), razorbill (88.7±75.9 km), and puffin (137.1±128.3 km; Woodward *et al*., 2019) and therefore has no breeding season connectivity (>400 km around land). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Manx shearwater European storm petrel	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar and storm petrel, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) and storm petrel at this site (336 km; Woodward *et al*., 2019). However, these species have low or very low sensitivity to displacement, and the level of impact on this west coast SPA populations is predicted to be minimal because seabirds will forage out to the continental shelf rather than the Irish Sea (e.g., Wischnewski *et al*., 2019). Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabird	Disturbance and displacement	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on foraging data of Manx shearwater on Irish west coast colonies, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea (e.g., Wischnewski *et al*., 2019, Critchley *et al*., 2020). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Manx shearwater European storm petrel	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Isles of Scilly SPA [UK9020288] (352.89km to array and 358.87km to ECC)	Lesser black-backed gull Great black-backed gull	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull and great black-backed gull as Dublin Array is beyond MMFR+1SD for lesser black-backed gull (127±109 km) and great black-backed gull (73 km; Woodward *et al*., 2019). Though the site hosts >1% of the regional non-breeding season population, these features are not vulnerable to displacement impacts. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	European storm petrel European shag	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for European storm petrel and European shag , as Dublin Array is beyond the MMFR+1SD for European storm petrel (336 km) and European shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull Great black-backed gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Glas Eileanan SPA [UK9003211] (355.1 km to array and 362.2 km to ECC)	Common tern	Breeding seabird	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond MMFR+1SD for common tern at this site (18.0±8.9 km ; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Mingulay and Berneray SPA [UK9001121]	Puffin Shag Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for puffin, shag, guillemot, razorbill, and kittiwake, as Dublin Array is within MMFR+1SD for puffin (137.1±128.3 km), shag (13.2±10.5 km), guillemot (73.2±80.5 km), razorbill (88.7±75.9 km), and	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(397.9 km to array and 401.9 km to ECC)	Razorbill Kittiwake		Effects on prey	kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	
	Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has very low sensitivity to displacement (Bradbury *et al*., 2014). Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Rum SPA [UK9001341] (400.1 km to array and 406.4 km to ECC)	Kittiwake Guillemot	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake and guillemot, as Dublin Array is beyond MMFR+1SD for kittiwake (156.1±144.5 km) and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al*., 2015). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during construction.	Screened in
	Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Red-throated diver	Breeding waterbirds	Disturbance and displacement	Located 400.1 km from the array and 406.4 km from the ECC, this SPA lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated divers. Additionally, the site is beyond MMFR+1SD for red-throated diver at this SPA, therefore there is no connectivity during the breeding season. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Golden eagle	Onshore terrestrial birds	-	No pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
South Uist Machair and Lochs SPA [UK9001082] (438 km to array and 442.5 km to ECC)	Little tern	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is within MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Dunlin Ringed plover Oystercatcher Sanderling Corncrake Redshank	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Located 438 km from the array and 442.5 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Monach Islands SPA [UK9001071]	Little tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(479.1 km to array and 483.6 km to ECC)			Effects on prey		
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 479.1 km from the array and 483.6 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Shiant Isles SPA [UK9001041] (507.4 km to array and 513.7 km to ECC)	Shag Guillemot Puffin Razorbill Kittiwake	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag, guillemot, puffin, razorbill, and kittiwake, as Dublin Array is beyond MMFR+1SD for shag (13.2±10.5 km), guillemot (73.2±80.5 km), puffin (137.1±128.3 km), razorbill (88.7±75.9 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with breeding fulmar, however this species has very low sensitivity to displacement (Bradbury *et al*., 2014). Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 507.4 km from the array and 513.7 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Priest Island (Summer Isles) SPA [UK9001261] (517.9 km to array and 525.2 km to ECC)	Storm petrel	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for storm petrel, as Dublin Array is beyond MMFR+1SD for storm petrel at this site (336 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
St Kilda SPA [UK9001031] (519.3 km to array and 522.8 km to ECC)	Gannet Puffin Kittiwake Storm petrel Razorbill Guillemot Leach's storm petrel	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for gannet, puffin, kittiwake, storm petrel, razorbill, guillemot, and Leach's storm petrel, as Dublin Array is beyond MMFR+1SD for gannet (315.2±194.2 km), puffin (137.1±128.3 km), kittiwake (156.1±144.5 km), storm petrel (336 km), razorbill (88.7±75.9 km), and guillemot (73.2±80.5 km) and is beyond the mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Fulmar Great skua	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar and great skua, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) and great skua (443.3±487.9 km) at this site (Woodward *et al*., 2019). However, these species have low or very low sensitivity to displacement. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabird	Disturbance and displacement	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on the location of this colony, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Great skua Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Flannan Isles SPA [UK9001021] (559.3 km to array and 564.3 km to ECC)	Razorbill Kittiwake Guillemot Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, kittiwake, guillemot, and puffin, as Dublin Array is beyond MMFR+1SD for razorbill (88.7±75.9 km), kittiwake (156.1±144.5 km), guillemot (73.2±80.5 km), and puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Leach's storm petrel	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar and Leach's storm petrel, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) and is within the mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). However, these species have very low sensitivity to displacement, Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Fulmar Leach's storm petrel	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Handa SPA [UK9001241] (563.3 km to array and 570.8 km to ECC)	Razorbill Guillemot Kittiwake	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, guillemot, and kittiwake, as Dublin Array is beyond MMFR+1SD for razorbill (88.7±75.9 km), guillemot (73.2±80.5 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). These designated features are beyond the mean-maximum +1SD foraging range (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Great skua Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar and great skua, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) and great skua at this site (443.3±487.9 km; Woodward *et al*., 2019). However, these species have very low sensitivity to displacement. Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Great skua Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
Cape Wrath SPA [UK9001231] (587.5 km to array and 595.2 km to ECC)	Kittiwake Razorbill Puffin Guillemot	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake, razorbill, puffin, and guillemot, as Dublin Array is beyond MMFR+1SD for kittiwake (156.1±144.5 km), razorbill (88.7±75.9 km), puffin (137.1±128.3 km), and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has very low sensitivity to displacement. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Sule Skerry and Sule Stack SPA [UK9002181] (640 km to array and 648.1 km to ECC)	Gannet Puffin Storm petrel Leach's storm petrel Guillemot Shag	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for gannet, puffin, storm petrel, Leach's storm petrel, guillemot and shag, as Dublin Array is beyond the MMFR+1SD for gannet (315.2±194.2 km), puffin (137.1±128.3 km), storm petrel (336 km), guillemot (73.2±80.5 km), and shag (13.2±10.5 km) and is beyond the mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
North Rona and Sula Sgeir SPA [UK9001011] (641.5 km to array and 648 km to ECC)	Guillemot Kittiwake Gannet Razorbill Great black-backed gull Puffin European storm petrel Leach's storm petrel	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, kittiwake, gannet, razorbill, great black-backed gull, puffin, storm petrel, and Leach's storm petrel, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km), kittiwake (156.1±144.5 km), gannet (315.2±194.2 km), razorbill (88.7±75.9 km), great black-backed gull (73 km), puffin (137.1±128.3 km), and European storm petrel (336 km) and is beyond the mean foraging range for Leach's petrel at this site (657 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has low or very low sensitivity to displacement. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Lough Neagh and Lough Beg SPA [UK9020091] (133.9 km to array and 138.8 km to ECC)	Common tern Cormorant*	Breeding and non-breeding seabirds	Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern and cormorant, as Dublin Array is beyond MMFR+1SD for common tern (18.0±8.9 km) and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Great crested grebe Whooper swan Bewick's swan	Wintering and passage waterbirds	Disturbance and displacement	Located 133.9 km from the array and 138.8 km from the ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
	Pochard Tufted duck Scaup Goldeneye Little grebe* Greylag goose* Shelduck* Wigeon* Gadwall* Teal* Mallard* Shoveler* Coot* Lapwing*		Effects on prey	No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	
Treshnish Isles SPA [UK9003041] (351.2 km to array and 357 km to ECC)	Storm petrel	Breeding seabirds	Disturbance and displacement Effects on prey	Storm petrel has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*, 2019). Given the mean max foraging range (336 km) provided by Woodward *et al* (2019) , there is a significant amount of alternative foraging habitat within each species-specific range that seabirds can exploit if they are disturbed from an area. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Located 31.2 km from the array and 357 km to ECC, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Lewis Peatlands SPA [UK9001571] (526.7 km to array and 532.4 km to ECC)	Red-throated diver Merlin Golden eagle Golden plover Greenshank Black-throated diver Dunlin	Breeding waterbirds	Disturbance and displacement Effects on prey	Located 526.7 km from the array and 532.4 km from the ECC, this SPA lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated diver, 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks and outside of the 0.5 km buffer from the proposed development for assessing disturbance on all other intertidal birds recommended by (SNCB, 22, Cutts *et al.,* 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Mointeach Scadabhaigh SPA [UK9001501] (480.4 km to array and 485.5 km to ECC)	Red-throated diver Black-throated diver	Breeding waterbirds	Disturbance and displacement Effects on prey	Located 480.4 km from the array and 485.5 km from the ECC, this SPA lies outside of the 10 km buffer from the array area for assessing disturbance on red-throated diver, 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks (SNCB, 2022). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacementon the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
West Inverness-shire Lochs SPA [UK9020298]	Common scoter Black-throated diver	Breeding waterbirds	Disturbance and displacement	Located 412.8 km from the array and 420.7 km from the ECC, this SPA lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks (SNCB 2022). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated Features	Designated Feature Site Usage	Relevant Effect	Connections: Source-Pathway-Receptor	Screened in/out
(412.8 km to array and 420.7 km to ECC)			Effects on prey	No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	

Table 16 Screening outcomes for SPAs – Operation and Maintenance

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
North West Irish Sea SPA [IE004236] (10.5 km from ECC, 3.4 km from array)	Red-throated diver Great northern diver Common scoter	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. Located 3.4 km from the array, this SPA lies within the 10 km buffer from the array area to the SPA for assessing disturbance on red-throated divers, and within the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks, and has therefore, been screened in for disturbance and displacement during operation and maintenance.	Screened in
	Red-throated diver Great northern diver Common scoterGuillemot Razorbill Kittiwake Manx shearwater Fulmar Cormorant Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Roseate tern Common tern Arctic tern Little tern Little gull	Site designated for foraging seabirds	Collision risk	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. As the ZoI for collision risk is solely within the array area, the Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Guillemot Razorbill Puffin Kittiwake Manx shearwater	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying species as with breeding SPAs. Auk species have moderate to high vulnerability to disturbance associated with vessel activity (Furness *et al.,* 2013, Fleissbach *et al*., 2019, Bradbury *et al.,* 2014 and Dierschke *et al*., 2016) and have a disturbance buffer of 2 km. The SPA is 3.4 km from the array, and is, therefore, beyond the 2 km disturbance buffer. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. Kittiwake and Manx shearwater have low vulnerability to disturbance (Furness *et al.,* 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016) based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis. Nevertheless, this SPA is 3.4km from the proposed development and is, therefore, further than the 2 km disturbance buffer. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Fulmar Cormorant	Site designated for foraging seabirds	Disturbance and displacement	The NWIS SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Roseate tern Common tern Arctic tern Little tern Little gull			species as with breeding SPAs. As these species have low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), the Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	
	Puffin	Site designated for foraging seabirds	Disturbance and displacement Collision riskEffects on prey	Puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Red-throated diver Great northern diver Common scoter Guillemot Razorbill Fulmar Manx shearwater Cormorant Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Kittiwake Roseate tern Common tern Arctic tern Little tern Little gull	Site designated for foraging seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	Screened in
South Dublin Bay and River Tolka Estuary SPA [IE004024] (5.9 km from ECC, 12.1 km from array)	Common tern Arctic tern Roseate tern	Breeding and passage seabirds	Disturbance and displacement	Common tern are designated at this site during the breeding season. This SPA may have connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is within mean maximum foraging range (MMFR) +1SD from this site (82.0±8.9km; Woodward *et al.,* 2019). Nevertheless, tern species have very low vulnerability to disturbance from vessel movements associated with construction activity (Fliessbach *et al.*, 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				Roseate tern, common tern and Arctic tern are designated as passage features of the SPA. Terns have very low vulnerability to vessel disturbance during construction activities (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	
	Arctic tern	Passage seabirds	Collision risk	Arctic tern is designated as a passage feature of this SPA. Arctic tern has low vulnerability to collision with offshore wind farms (Bradbury *et al*., 2014). Additionally, very low numbers were recorded on site-specific surveys. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Common tern Roseate tern	Breeding and passage seabirds	Collison risk	Common tern are designated at this site during the breeding season. This SPA may have connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is within mean maximum foraging range (MMFR) +1SD from this site (82.0±8.9km; Woodward *et al.,* 2019). This species has moderate vulnerability to collision with offshore wind farms (Bradbury *et al*., 2014) and has therefore been screened in for risk to collision during operation and maintenance. Roseate tern and common tern are designated as passage features of this SPA. Evening observations of terns arriving to the roosting area indicated that most flew in from an easterly and south-easterly direction, suggesting they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne *et al*., 2008), which points to potential connectivity with Dublin Array. These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*., 2014) and have therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Black headed gull	Non-breeding seabird	Disturbance and displacement Collison risk	Black headed gull is designated a non-breeding feature of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. In addition, very low numbers were identified on site-specific surveys. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Arctic tern Common tern Roseate tern Black headed gull	Breeding, passage seabirds and non-breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	Screened in
	Light-bellied brent goose Oystercatcher Ringed plover Grey plover Knot Dunlin Redshank	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	
	Sanderling Bar-tailed godwit	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly) accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
North Bull Island SPA [IE004006] (1.1 km from ECC, 10.2 km from array)	Black headed gull	Non-breeding seabird	Disturbance and displacement Collision risk	Black headed gull is designated a non-breeding feature of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. In addition, very low numbers were identified on site-specific surveys. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Black headed gull	Non-breeding seabird	Effects on prey	proposed developmentDue to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during construction on a precautionary basis.	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Light bellied goose Redshank Shoveler Shelduck Turnstone Oystercatcher Teal Pintail Dunlin Grey plover Knot Curlew	Non-breeding waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly) accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Black headed gull Golden plover Bar tailed godwit Sanderling	Non-breeding waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
		Non-breeding waterbirds	Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	
Dalkey Islands SPA [IE004172] (2.2 km from ECC and 8.6 km from array)	Roseate tern	Breeding and post-breeding seabirds	Disturbance and displacement	Roseate tern are no longer considered to be breeding at Dalkey Island SPA (Communications between BWI and Codling Wind Park, on behalf of other East Coast Phase 1 projects). Roseate tern is also designated as passage feature of the SPA. Terns have very low vulnerability to vessel disturbance during construction activities (Fliessbach *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
			Collision risk	Roseate tern are no longer considered to be breeding at Dalkey Island SPA (Communications between BWI and Codling Wind Park, on behalf of other East Coast Phase 1 projects). Roseate tern is also designated as passage feature of the SPA, and may also have connectivity during post-breeding / pre-migration (passage) as evening observations of terns arriving to the roosting areas at this SPA indicated that most terns flew in from an easterly and south-easterly direction, therefore it was expected that they were feeding in the shallow waters of the Kish/Bray and Burford Banks (Merne *et al*., 2008). This species has moderate vulnerability to collision risk with turbines (Bradbury *et al*., 2014) and has therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Common tern Arctic tern	Breeding and post-breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for common tern and arctic tern, as Dublin Array is within MMFR+1SD for common tern (18.0±8.9 km) and Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Terns have low vulnerability to displacement/disturbance from offshore wind farms (Bradbury *et al*., 2014; Dierschke *et al*., 2016). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Common tern	Breeding and post-breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is within MMFR+1SD for common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). These species have moderate vulnerability to collision risk with turbines (Bradbury *et al*., 2014). These species have therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Arctic tern	Breeding and post-breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is within MMFR+1SD for Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). However, this species has low vulnerability to collision with offshore wind farms (Bradbury *et al*., 2014) and was present in low numbers in site-specific data. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Roseate tern Common tern Arctic tern	Breeding and post-breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				km), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	
Howth Head Coast SPA [IE004113] (12.3 km from ECC and 8.5 km from array)	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Kittiwake	Breeding seabirds	Effects on prey	proposed developmentDue to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the array area. However, due to the proximity of Howth Head Coast SPA to the proposed development (12.3 km from the ECC; 8.5 km from the array), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	Screened in
Ireland's Eye SPA [IE004117] (16.3 km to ECC and 12 km to array)	Razorbill Guillemot	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for razorbill and guillemot, as Dublin Array is within MMFR+1SD for razorbill (88.7±75.9 km) and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). This infers potential connectivity with the project site. These species have high vulnerability to disturbance associated with vessel activity and moderate vulnerability to displacement from offshore wind farms (Fliessbach *et al*., 2019, Bradbury *et al*., 2014 & Dierschke *et al*., 2016). These species have therefore been screened in for risk to displacement during operation and maintenance.	Screened in
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Razorbill Guillemot	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for razorbill and guillemot, as Dublin Array is within MMFR+1SD for razorbill (88.7±75.9 km) and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). These species have very low vulnerability to collision risk with turbines (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Herring gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, as Dublin Array is within MMFR+1SD (58.8±26.8 km) and kittiwake at this site (Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Herring gull	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, as Dublin Array is within MMFR+1SD (58.8±26.8 km) at this site (Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Cormorant	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is within MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*.,	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
			Collision risk	2019). However, evidence from previous projects suggests this species is attracted to offshore wind farms (Dierschke *et al*., 2016) and is therefore unlikely to be impacted by displacement effects. This species also has low vulnerability to collision risk with turbines (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement or collision risk on the species in question and can be screened out.	
	Razorbill Guillemot Herring gull Kittiwake Cormorant	Breeding seabirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	Screened in
Wicklow Mountains SPA [IE002122] (18.16 km from array)	Merlin	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Peregrine	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Malahide Estuary SPA (also known as Broadmeadow/Swords Estuary SPA) [IE004025] (21.4 km from ECC and 18.6 from array)	Grey crested grebe Goldeneye Grey plover Light bellied geese Red breasted merganser Knot	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Shelduck Oystercatcher Dunlin Pintail Golden plover Black tailed godwit Bar tailed godwit Redshank			No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
Baldoyle Bay SPA [IE004016] (14 km from array and 16 km from ECC)	Light-bellied brent geese Ringed plover Grey plover Shelduck	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Golden plover Bar tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). These impacts on birds	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
The Murrough SPA [IE004186] (2.39 km from array and 8.11 km from ECC)	Black-headed gull Herring gull	Non-breeding seabirds	Disturbance and displacement Collision risk	Black headed gull and herring gull are designated at this SPA during the non-breeding season only. During the non-breeding season, gulls forage largely on land and are making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement and collision risk on the species in question and can be screened out.	Screened out
	Little tern	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond the mean max foraging range for little tern at this site (5 km; Woodward *et al*., 2019). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement and collision risk on the species in question and can be screened out	Screened out
	Red throated diver	Wintering waterbirds	Disturbance and displacement	This site is within 10 km of the array (2.39 km from the array; 8.11 from the ECC) therefore has been screened in as the SPA is within the 10 km displacement assessment buffer for red-throated divers.	Screened in
	Black-headed gull Herring gull Little tern Red throated diver	Breeding and non-breeding seabirds and wintering waterbirds	Effects on prey	Due to seabirds highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. However, due to the proximity to the proposed development (<17 km), these features have been screened in for effects on prey during operation and maintenance on a precautionary basis.	Screened in
	Light-bellied brent goose Wigeon Teal	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
Rogerstown Estuary SPA [IE004015] (22.3 km from array, 26.7 km from ECC)	Greylag goose Light bellied brent goose Shelduck Shoveler Oystercatcher Ringed plover Grey plover Knot Dunlin Black tailed godwit Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Poulaphouca Reservoir SPA [IE004063] (36.03km from array, 25.65km from ECC)	Greylag goose	Wintering waterbird	Disturbance and displacement Effect on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that >10% of these species migratory pathways cross through the array area (see Section 3.4). However, as these lines do not intersect with the Dublin Array area, there will not be a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Non-breeding seabird	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lambay Island SPA [IE004069] (19.3 km to array and 25.8 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is within MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Cormorant have moderate vulnerability to displacement according to Bradury *et al*. (2014) but have also been shown to be attracted to windfarms (Dierschke *et al*., 2016), so they are not considered at risk of displacement. Moreover, cormorant have very low or low vulnerability to collision risk with turbines (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement and collision risk on the species in question and can be screened out.	Screened out
	Shag	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for shag, as Dublin Array is within MMFR+1SD for shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Tracking data has identified potential overlap of shag from this SPA with the array area. Shag	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				have been shown to be attracted to windfarms (Dierschke *et al*., 2016), so they are not at risk of displacement. Nevertheless, through consultation with NPWS, shag from Lambay Island have been screened in on a precautionary basis.	
	Shag	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for shag, as Dublin Array is within MMFR+1SD for shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Tracking data has identified potential overlap of shag from this SPA with the array area. However, shag are not vulnerable to collision (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, fulmar have very low vulnerability to displacement and collision risk with turbines (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement and collision risk on the species in question and can be screened out.	Screened out
	Herring gull Lesser black-backed gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, , and lesser black-backed gull, as Dublin Array is within MMFR+1SD for herring gull (58.8±26.8 km), and lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. These species have very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Herring gull Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, and lesser black-backed gull, as Dublin Array is within MMFR+1SD for herring gull (58.8±26.8 km), and lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. These species have high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). These species have therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Guillemot Razorbill	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for guillemot and razorbill, as Dublin Array is within MMFR+1SD for guillemot (73.2±80.5 km) and razorbill (88.7±75.9 km) at this site (Woodward *et al*., 2019). This infers potential connectivity with the project site. These species have high vulnerability to disturbance associated with vessel activity and moderate vulnerability to displacement from offshore wind farms (Fliessbach *et al*., 2019, Bradbury *et al*., 2014 & Dierschke *et al*., 2016). These species have therefore been screened in for risk to displacement during operation and maintenance.	Screened in
	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	
	Guillemot Razorbill Puffin	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for guillemot, razorbill, and puffin, as Dublin Array is within MMFR+1SD for guillemot (73.2±80.5 km), razorbill (88.7±75.9 km), and puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). These species have very low vulnerability to collision risk with turbines (Bradbury *et al*., 2014). The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Cormorant Shag Fulmar Herring gull Kittiwake Lesser black-backed gull Guillemot Razorbill	Breeding seabird	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Greylag goose	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Wicklow Head SPA [IE004127] (19.8 km to array and 25.6 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*.,	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
			Collision risk	2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	
	Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. The Dublin Array windfarm will therefore not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Rockabill SPA [IE004014] (28.5 km to array and 25.6 km to ECC)	Arctic tern	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is within MMFR+1SD for Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Evidence suggests that this species is neither displaced from nor attracted to offshore wind farms (Dierschke *et al*., 2016). Additionally, the species is classified by Bradbury *et al*. (2014) as having low vulnerability to displacement by offshore wind farms and low vulnerability to collision risk with turbines. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Roseate tern Common tern	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for roseate tern and common tern, as Dublin Array is beyond MMFR+1SD for roseate tern (12.6±10.6 km) and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Arctic tern Roseate tern Common tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Purple sandpiper	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are, therefore, considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
River Nanny Estuary and Shore SPA [IE004158] (42 km to array and 45.3 km to ECC)	Herring gull	Non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Oystercatcher Ringed Plover Golden Plover Knot Sanderling	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Boyne Estuary SPA [IE004080] (49.6 km to array and 53.2 km to ECC)	Little tern	Breeding seabird	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond the mean max foraging range for little tern from this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Shelduck Oystercatcher Golden plover Grey plover Lapwing Knot Sanderling Black-tailed godwit Redshank Turnstone	Wintering non-seabirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Skerries Island SPA [IE004122] (30.2 km to array and 35.6 km to ECC)	Herring gull	Breeding and non-breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, as Dublin Array is within MMFR+1SD for herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species have very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Herring gull	Breeding and non-breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for herring gull, as Dublin Array is within MMFR+1SD for herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. These species have high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). These species have therefore been screened in for risk to collision during operation and maintenance.	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Cormorant	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is within MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). However, evidence from previous projects suggests this species is attracted to offshore wind farms (Dierschke *et al*., 2016) and is therefore unlikely to be impacted by displacement effects. This species also has low vulnerability to collision risk with turbines (Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement and collision risk on the species in question and can be screened out.	Screened out
	Shag	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag, as Dublin Array is beyond MMFR+1SD for shag at this (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Light bellied brent geese Purple sandpiper Turnstone	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Herring gull Cormorant	Breeding and non-breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Dundalk Bay SPA [IE004026] (64.32 km to array and 68.85 km to ECC)	Great crested grebe Greylag goose Light-bellied brent goose Shelduck Teal Mallard Pintail Common scoter Red-breasted merganser Oystercatcher Ringed plover Golden plover Lapwing Knot Dunlin Black-tailed godwit Bar-tailed godwit Curlew Redshank	Wintering Waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Black-headed gull Common gull Herring gull	Non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land, making only small movements between wintering sites. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Cahore Marshes SPA [IE004143] (68.21 km to array and 73.12 km to ECC)	Wigeon Golden plover Lapwing Greenland white-fronted goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Anglesey Terns / Morwenoliaid Ynys Môn SPA [UK9013061] (73.8 km to array and 77.3 km to ECC)	Roseate tern Arctic tern Common tern Sandwich tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for roseate tern, Arctic tern, common tern, and sandwich tern, as Dublin Array is beyond MMFR+1SD for roseate tern (12.6±10.6 km), Arctic tern (25.7±14.8 km), common tern (18.0±8.9 km), and sandwich tern from this site (34.3±23.2 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Seas off Wexford SPA [IE004237]	Red-throated diver Fulmar	Site designated for foraging seabirds	Disturbance and displacement	The Seas of Wexford SPA aims to conserve the habitat that supports bird populations, therefore connectivity is confined to the area designated, rather than the foraging range of qualifying	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
(68.41 km to array and 74.51 km to ECC)	Manx shearwater Gannet Cormorant Shag Common scoter Mediterranean gull Black-headed gull Lesser black-backed gull Kittiwake Sandwich tern Roseate tern Common tern Arctic tern Little tern Guillemot Razorbill Puffin		Collision risk	species as with breeding SPAs. Due to the distance from Dublin Array to this SPA (68.41 km to the array and 74.51 km to the ECC), there is no potential for disturbance or collision risk. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	
	Fulmar Manx shearwater Gannet Cormorant Shag Mediterranean gull Black-headed gull Lesser black-backed gull Kittiwake Sandwich tern Roseate tern Common tern Arctic tern Little tern Guillemot Razorbill Puffin	Site designated for foraging seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island SPA [UK9013121] (74.9 km to array and 81.1 km to ECC)	Manx shearwater	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater, as Dublin Array is within MMFR+1SD for Manx shearwater at this site (1,346.1±1,018.7 km; Woodward *et al*., 2019). However, Manx shearwater has very low vulnerability to collision by offshore wind farms (Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater[26]. This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methodology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and	Screened in

[26] https://data.seabirdtracking.org/dataset/1557

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				have therefore been screened in for disturbance and displacement during operation and maintenance.	
	Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect impacts on prey on the species in question and can be screened out.	Screened out
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Carlingford Lough SPA [UK9020161] (77.5 km to array and 83.5 km to ECC)	Sandwich tern Common tern	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern and common tern, as Dublin Array is beyond MMFR+1SD for sandwich tern (34.3±23.2 km) and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Therefore, there is no pathway for effect. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations; however, the impact is vastly different to species that may have come into contact with windfarms daily (e.g., central place foragers during the breeding season). The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Sandwich tern Common tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Wexford Harbour and Slobs SPA [IE004076] (84.8 km to array and 87.5 km to ECC)	Little tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for black-headed gull and little tern, as Dublin Array is beyond MMFR+1SD for black-headed gull (18.5 km) and little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull Black-headed gull	Non-breeding seabird	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Little grebe* Great crested grebe* Cormorant* Grey heron* Bewick's swan* Whooper swan* Light-bellied brent goose* Shelduck* Wigeon* Teal* Mallard* Pintail* Scaup* Goldeneye* Red-breasted merganser* Hen harrier* Coot* Oystercatcher* Golden plover* Grey plover* Lapwing* Knot* Sanderling* Dunlin* Black-tailed godwit* Bar-tailed godwit* Curlew* Redshank*	Wintering waterbirds and post-breeding/roosting onshore birds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Greenland white-fronted goose*				
The Raven SPA [IE004019] (83.8 km to array and 88.5 km to ECC)	Red-throated diver Cormorant Common scoter Greenland white-fronted Grey plover Sanderling	Wintering waterbirds and seabirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Killough Bay SPA [UK9020221] (106.21 km to array and 115.15 km to ECC)	Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligibleproposed development. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Lady's Island Lake SPA [IE004009] (108.17 km to array and 112.81 km to ECC)	Black-headed gull Sandwich tern Roseate tern Common tern Arctic tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for black-headed gull, sandwich tern, roseate tern, common tern, and arctic tern, as Dublin Array is beyond MMFR for black-headed gull (18.5 km) and beyond MMFR+1SD for sandwich tern (34.3±23.2 km), roseate tern (12.6±10,6 km), common tern (18.0±8.9 km), and arctic tern (25.7±14.8 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gadwall	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Liverpool Bay/ Bae Lerpwl SPA [UK9020294] (108.1 km to array and 111.7 km to ECC)	Little tern Cormorant* Common tern	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, cormorant, and common tern, as Dublin Array is beyond MMFR+1SD for little tern (5 km), cormorant (25.6±8.3 km), and common tern (18.0±8.9 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Little gull	Non-breeding seabird	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Common scoter Red-throated diver Red-breasted merganser*	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Tacumshin Lake SPA [IE004092] (110.71 km to array and 114.99 km to ECC)	Little grebe Bewick's swan Whooper swan Wigeon Gadwall Teal Pintail Shoveler Tufted duck Coot	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Golden plover Grey plover Lapwing Black-tailed godwit			site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Bannow Bay SPA [IE004033] (112.96 km to array and 115.58 km to ECC)	Light-bellied brent goose Shelduck Pintail Oystercatcher Golden plover Grey plover Lapwing Knot Dunlin Black-tailed godwit Bar-tailed godwit Curlew Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Ballyteigue Burrow SPA [IE004020] (114.01 km to array and 117.34 km to ECC)	Light-bellied brent goose Shelduck Golden plover Grey plover Lapwing Black-tailed godwit Bar-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Strangford Lough SPA [UK9020111] (112.8 km to array and 121.8 km to ECC)	Sandwich tern Arctic tern Common tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern, arctic tern, and common tern, as Dublin Array is beyond MMFR+1SD for sandwich tern (34.3±23.2 km), Arctic tern (25.7±14.8 km), and common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Golden plover* Bar-tailed godwit* Light-bellied brent goose Shelduck* Knot Redshank Great crested grebe* Greylag goose* Wigeon* Gadwall* Teal* Mallard* Pintail*	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Shoveler* Goldeneye* Red-breasted merganser* Coot* Oystercatcher* Ringed plover* Grey plover* Lapwing* Dunlin* Curlew* Turnstone*			*et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Outer Ards SPA (UK) (117.5 km to array and 126.6 km to ECC)	Arctic tern	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is beyond MMFR+1SD for arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Ringed plover Golden plover Turnstone Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Keeragh Islands SPA [IE004118] (118.48 km to array and 121.47 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for Cormorant, as Dublin Array is beyond MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Saltee Islands SPA [IE004002] (119.7 km to array and 123.6 km to ECC)	Razorbill Guillemot	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for razorbill and guillemot as Dublin Array is within MMFR+1SD for razorbill (88.7±75.9 km) and guillemot (73.2±80.5 km) at this site (137.1±128.3 km; Woodward *et al*., 2019). Furthermore, these species have been shown to have strong avoidance to offshore windfarms (Dierschke *et al*., 2016). These species have therefore been screened in for risk to displacement during operation and maintenance.	Screened in
	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Razorbill Guillemot Puffin	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for razorbill, guillemot, and puffin, as Dublin Array is within MMFR+1SD for razorbill (88.7±75.9 km), guillemot (73.2±80.5 km), and puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). However, these species have low vulnerability to collision with offshore windfarms (Bradbury *et al*., 2014) and therefore no LSE predicted. The Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Lesser black-backed gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is within MMFR+1SD (127±109 km) at this site (Woodward *et al*., 2019). However, this species is classified by Bradbury *et al*. (2014) as having very low vulnerability to displacement by offshore wind farms. Evidence from previous projects suggests species is neither displaced nor attracted from or to offshore wind farms (Dierschke *et al*., 2016). This species has therefore been screened out for risk to potential displacement with no potential for LSE during operation and maintenance.	Screened out
	Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is within MMFR+1SD (127±109 km) at this site (Woodward *et al*., 2019). Furthermore, this species have high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species have therefore been screened in for risk to collision during operation and maintenance.	Screened in
	Gannet	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is within MMFR+1SD for gannet at this site (315.2±194.2 km; Woodward *et al*., 2019). Furthermore, this species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014), as well as been shown to have strong avoidance to offshore windfarms (Dierschke *et al*., 2016). This species has therefore been screened in for risk to both collision and displacement during operation and maintenance.	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Herring gull Cormorant Shag	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for herring gull, cormorant, and shag, as Dublin Array is beyond MMFR+1SD for herring gull (58.8±26.8 km), cormorant (25.6±8.3 km), and shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has very low vulnerability to displacement and collision (Bradbury *et al*., 2014). Although previous windfarm projects have shown that to have a moderate avoidance rate (Dierschke *et al*., 2016), due to the large foraging range for this species, it is determined that significant effects would not therefore manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within foraging range. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Razorbill Guillemot Gannet Lesser black-backed gull Kittiwake Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Tramore Back Strand SPA [IE004027] (139.76 km to array and 140.96 km to ECC)	Light-bellied brent goose Golden plover Grey plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Mid-Waterford Coast SPA [IE004193] (139.76 to array and 140.96 km to ECC)	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects for onshore birds as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Cormorant Herring gull	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for herring gull and cormorant, as Dublin Array is beyond the MMFR+1SD for herring gull (58.8±26.8 km) and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lough Derg (Shannon) SPA [IE004058] (148.4 km to array and 137.7 km to ECC)	Tufted duck Goldeneye	Wintering waterbirds	Disturbance and displacement Collision risk	Located 137.7 km to the ECC and 148.4 km from the array, this SPA lies outside of the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (Cutts *et al*., 2013). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Common tern Cormorant	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern and cormorant, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km) and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Blackwater Callows SPA [IE004094] (184.99 km to array and 182.11 km to ECC)	Whooper swan Wigeon Teal Black-tailed godwit	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Lough Derg (Donegal) SPA [IE004057] (190.8 km to array and 189.3 km to ECC)	Herring gull	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	Dublin Array is beyond the mean maximum +1SD foraging ranges for lesser black backed gull (127±109 km) and herring gull (58.8±26.8 km; Woodward *et al.,* 2019) and therefore has no breeding season connectivity. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Copeland Islands SPA [UK9020291] (153 km to array and 153 km to ECC)	Manx shearwater	Breeding seabirds	Collison risk	This SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater, as Dublin Array is within MMFR+1SD for Manx shearwater at this site (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, Manx shearwater have very low vulnerability to collision by offshore wind farms (Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al*., 2015, Horswill *et al*., 2023). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during operation and maintenance.	Screened in
	Arctic tern	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for Arctic tern, as Dublin Array is beyond MMFR+1SD for Arctic tern at this site (25.7±14.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater Arctic tern	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Skomer, Skokholm the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA [UK9014051] (156.5 km to array and 163.3 km to ECC)	Puffin	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Puffin	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD for puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). However, these species have low vulnerability to collision with offshore windfarms (Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	Screened out
	Kittiwake*	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Manx shearwater	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater, as Dublin Array is within MMFR+1SD for Manx shearwater at this site (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, Manx shearwater have relatively low sensitivity to impacts from offshore windfarms and very low vulnerability to collision by	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				offshore wind farms (Bradbury *et al*., 2014). Manx shearwater have been shown to have weak avoidance to offshore windfarms (Dierschke *et al*., 2016). Due to their large foraging range, it is determined that significant effects would not manifest on this SPA after the likelihood and severity of effects on the SPA have been apportioned to all SPAs within foraging range will be trivial. Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al*., 2015). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methodology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during operation and maintenance.	Screened in
	Guillemot* Razorbill*	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, as Dublin Array is beyond the colony specific maximum foraging range for razorbill at this site (62.0 km; Woodward *et al*., 2019), or the MMFR+1SD for guillemot (73.2±80.5 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for these features, and therefore they are screened in for the non-breeding season only.	Screened in
	Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is beyond the colony specific maximum foraging range for lesser black-backed gull (150.5 km). However, this site hosts >1% of the regional non-breeding population for lesser black-backed gull, and therefore it is screened in for the non-breeding season only.	Screened in
	Storm petrel	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season, as Dublin Array is beyond MMFR+1SD for storm petrel (336 km) and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Red-billed chough Short-eared owl	Onshore terrestrial birds	-	There is no pathway for effects for onshore birds as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake Manx shearwater Storm petrel Lesser black-backed gull Guillemot Razorbill	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Grassholm SPA [UK9014041] (157.9 km to array and 164.5 km to ECC)	Gannet	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is within MMFR+1SD for gannet at this site (315.2±194.2 km; Woodward *et al*., 2019). Furthermore, this species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014), as well as been shown to have strong avoidance to offshore windfarms (Dierschke *et al*., 2016). This species has therefore been screened in for risk to both collision and displacement during operation and maintenance.	Screened in
		Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Dungarvan Harbour SPA [IE004032] (161.02 km from array)	Black-tailed godwit Curlew Dunlin Great crested grebe Grey plover Knot Lapwing Light-bellied brent goose Oystercatcher Red-breasted merganser Redshank Shelduck Turnstone	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). T The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Bar-tailed godwit Golden plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Helvick Head and Ballyquin SPA [IE00665] (162.6 km to array and 162.7 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Cormorant Herring gull	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for cormorant and herring gull, as Dublin Array is beyond the MMFR+1SD for cormorant (25.6±8.3 km) and herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects for onshore birds as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake Cormorant Herring gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Old Head of Kinsale SPA [IE004021] (246.1 km to array and 244.6 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Guillemot	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, as Dublin Array is beyond the MMFR+1SD for guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Larne Lough SPA [UK9020042]	Sandwich tern Common tern	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for sandwich tern, common tern, and roseate tern, as Dublin Array is beyond the MMFR+1SD for sandwich tern	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
(163.1 km to array and 170.9 km to ECC)	Roseate tern		Collision risk Effects on prey	(34.3±23.2 km), common tern (18.0±8.9 km), and roseate tern at this site (12.6±10.6 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	
	Light-bellied brent goose	Wintering waterbirds	Disturbance and displacement Collision risk	This non-breeding feature is unlikely to have non-breeding season connectivity with Dublin Array due to the migratory path or proximity to the array (Woodward *et al*.,2023). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
The Dee Estuary SPA [UK9013011] (166.1 km to array and 169.5 km to ECC)	Common tern Sandwich tern Little tern	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, sandwich tern, and little tern, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km), sandwich tern (34.3±23.2 km), and little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Bar-tailed godwit Black-tailed godwit Cormorant* Curlew Dunlin Grey plover Knot Oystercatcher Pintail Redshank Shelduck Teal Great crested grebe* Wigeon* Lapwing* Sanderling*	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Mersey Narrows and North Wirral Foreshore SPA [UK9020287] (178.5 km to array and 181.8 km to ECC)	Common tern Little gull	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond MMFR+1SD for common tern (18.0±8.9 km) (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Little gull	Non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Bar-tailed godwit Cormorant* Sanderling* Dunlin* Redshank* Oystercatcher* Knot Grey plover*	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Carmathen Bay/ Bae Caerfyrddin SPA [UK9014091] (178.7 km to array and 185.6 km to ECC)	Common scoter	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Blackwater Estuary SPA [IE004028] (181.21 km from array)	Black-tailed godwit Curlew Dunlin Lapwing Redshank Wigeon	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Bar-tailed godwit Golden plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE the species in question and can be screened out.	Screened out
Ribble and Alt Estuaries SPA [UK9005103] (184.5 km to array and 188.3 km to ECC))	Common tern Cormorant* Black-headed gull	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding seasons for common tern, cormorant, and black-headed gull, as Dublin Array is beyond the MMFR+1SD for common tern (18.0±8.9 km), cormorant (25.6±8.3 km), and black-headed gull (18.5 km). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
	Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA has no connectivity with Dublin Array during the breeding seasons for lesser black-backed gull, as Dublin Array is beyond the colony-specific maximum foraging range for lesser black-backed gull at this site (111.9 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for this feature, therefore lesser black-backed gull is screened in for the non-breeding season only.	Screened in
	Dunlin Golden plover Grey plover Knot Oystercatcher Pink-footed goose Pintail Redshank Ringed plover Ruff Sanderling Bar-tailed godwit	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spearman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Bewick's swan Black-tailed godwit Whooper swan Wigeon Shelduck Teal Common scoter* Scaup* Whimbrel* Curlew* Lapwing*		Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Ballymacoda Bay SPA [IE004023] (189.49 km from array)	Black-tailed godwit Curlew Dunlin Grey plover Lapwing Redshank Ringed plover Teal Turnstone Wigeon	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Bar-tailed godwit Golden plover Sanderling	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Morecambe Bay and Duddon Estuary SPA [UK9020326] (189.2 km to array and 195.8 km to ECC)	Great black-backed gull* Sandwich tern Little tern Black-headed gull* Common tern Arctic tern* Mediterranean gull Common gull* Cormorant*	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for great black-backed gull, sandwich tern, little tern, black-headed gull, common tern, arctic tern, herring gull, mediterranean gull, common gull, and cormorant, as Dublin Array is is beyond the MMFR+1SD for great black-backed gull (73 km), sandwich tern (34.3±23.2 km), black-headed gull (18.5 km), common tern (18.0±8.9 km), arctic tern (25.7±14.8 km), mediterranean gull (20 km), common gull (50 km), and cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Herring gull Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull and herring gull as Dublin Array is beyond the colony-specific maximum foraging range for lesser black-backed gull (92.7 km) and is beyond the MMFR+1SD for herring gull (58.8±26.8 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for these features, and therefore they are screened in for the non-breeding season only.	Screened in
	Bar-tailed godwit Black-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider;	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Dunlin Golden plover Grey plover Knot Little egret Oystercatcher Pink-footed goose Pintail Redshank		Effects on prey	Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	
	Ringed plover Ruff Sanderling Shelduck Turnstone Whooper swan Light-bellied brent goose* Eider* Common goldeneye* Great white egret* Greenshank* Green-winged teal* Lapwing* Little stint* Mallard* Red-breasted merganser* Ring-necked duck* Spotted redshank* Teal* Wigeon*		Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Ballycotton Bay SPA [IE004022] (200.57 km from the array)	Black-tailed godwit Curlew Grey plover Lapwing Ringed plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Teal Turnstone			negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Nevertheless, these features have been screened in for collision risk on a precautionary basis as it was estimated that >10% of these species migratory pathways cross through the array area.	Screened in
	Bar-tailed godwit Golven plover	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Cork Harbour SPA [IE004030] (205.33 km to array and 203.74 km to ECC)	Little grebe Great crested grebe Grey heron Shelduck Wigeon Teal Pintail Shoveler Red-breasted merganser Oystercatcher Golden plover Grey plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew Redshank	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al.* (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms – therefore the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area. The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Black-headed gull Cormorant Common gull Lesser black-backed gull	Non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	Black headed gull, cormorant, common gull, and lesser black-backed gull are designated non-breeding features of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Common tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond MMFR+1SD for common tern (18.0±8.9 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
Lough Swilly SPA [IE004075] (213.6 km to array and 214.3 km to ECC)	Black-headed gull Sandwich tern Common tern Common gull	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for black-headed gull, sandwich tern, common tern, and common gull, as Dublin Array is beyond MMFR+1SD for black-headed gull (18.5 km), sandwich tern (34.3±23.2 km), common tern (18.0±8.9 km), and	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				common gull at this site (50 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	
	Goldeneye Red-breasted merganser Coot Oystercatcher Knot Dunlin, Curlew Redshank Greenshank Great crested grebe Grey heron Whooper swan Greylag goose Shelduck Wigeon Teal Mallard Shoveler Scaup Greenland white-fronted goose Turnstone Tufted duck Brent goose Ringed plover Great northern diver Bar-tailed godwit Golden plover Lapwing	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
Sheep Island SPA [UK9020021] (217.4 km to array and 223.1 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is beyond the MMFR+1SD for cormorant at this site (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
Rathlin Island SPA [UK9020011] (216.98 km to array and 223.2 km to ECC)	Peregrine falcon	Onshore terrestrial birds	-	There is no pathway for effects for onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
	Puffin*	Breeding seabirds	Disturbance and displacement Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD at this site (137.1±128.3 km; Woodward *et al*., 2019). Auk species, such as these, have **moderate to high** vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013, Fleissbach *et al.,* 2019, Bradbury *et al.,* 2014 and Dierschke *et al.,* 2016). However, puffin were recorded in very low numbers in the study area in site-specific surveys and therefore, there will be no LSE from on the species in question and can be screened out.	Screened out
	Puffin*	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for puffin, as Dublin Array is within MMFR+1SD for puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). However, this species has low vulnerability to collision with offshore windfarms	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				(Bradbury *et al*., 2014). Dublin Array windfarm will, therefore, not have a LSE from collision risk on the species in question and can be screened out.	
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake as Dublin Array is beyond the colony-specific maximum foraging range for kittiwake at this site (76 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for these features, therefore they are screened in for the non-breeding season only. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance in the non-breeding season.	Screened in
	Guillemot Razorbill	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot and razorbill, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km) and razorbill (88.7±75.9 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for these features, therefore they are screened in for the non-breeding season only.	Screened in
	Herring gull* Common gull* Lesser black-backed gull*	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for, herring gull, common gull, and lesser black-backed gull, as Dublin Array is beyond the MMFR+1SD for herring gull (58.8±26.8 km), common gull (50 km), and lesser black-backed gull at this site (127±109 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar*	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has very low vulnerability to displacement and collision (Bradbury *et al*., 2014).. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
	Herring gull* Common gull* Guillemot Razorbill Kittiwake Lesser black-backed gull* Fulmar*	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Ailsa Craig SPA [UK9003091] (219.2 km to array and 228.3 km to ECC)	Guillemot Herring gull	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for guillemot and herring gull, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km) and herring gull at this site (58.8±26.8 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Breeding seabirds	Disturbance and displacement	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull as Dublin Array is within MMFR+1SD (127±109 km) at this site (Woodward *et al*., 2019). However, this species is classified by Bradbury *et al*. (2014) as having very low vulnerability to displacement by offshore wind farms. Evidence from previous projects suggests that this species is neither displaced nor attracted from or to offshore wind farms (Dierschke *et al*., 2016). Dublin Array windfarm will, therefore, not have a LSE from disturbance and displacement on the species in question and can be screened out.	Screened out
	Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for lesser black-backed gull, as Dublin Array is within MMFR+1SD for lesser black-backed gull (127±109 km) at this site (Woodward *et al*., 2019). Furthermore, this species has high vulnerability to collision	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				risk with turbines (Bradbury *et al*., 2014). This species has therefore been screened in for risk to collision.	
	Gannet	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is within MMFR+1SD for gannet at this site (315.2±194.2 km; Woodward *et al*., 2019).Furthermore, this species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014) as well as the potential for strong avoidance to offshore windfarms (Dierschke *et al*., 2016). This species has therefore been screened in for both risk to collision and displacement.	Screened in
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is within MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). This infers potential connectivity, as the project site may be used by foraging birds. This species has high or very high vulnerability to collision risk with turbines (Bradbury *et al*., 2014). This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Guillemot Herring gull Lesser black-backed gull Kittiwake Gannet	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Horn Head to Fanad Head SPA [IE004194] (233.50 km to array and 235.46 km to ECC)	Cormorant Shag Guillemot Razorbill	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, shag, guillemot, and razorbill, as Dublin Array is beyond the MMFR +1SD for cormorant (25.6±8.3 km), shag (13.2±10.5 km), guillemot (73.2±80.5 km), and razorbill at this site (88.7±75.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) at this site (Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for kittiwake, however Dublin Array is at the maximum extent of the MMFR+1SD for kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019) when measuring around land distance. Therefore this species has been screened out for risk to collision and disturbance and displacement during operation and maintenance.	Screened out
	Fulmar Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Barnacle goose Greenland white-fronted goose	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Peregrine Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Sovereign Islands SPA [IE004124] (236.86 km to array and 235.59 km to ECC)	Cormorant	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for cormorant, as Dublin Array is beyond the MMFR +1SD for cormorant (25.6±8.3 km) at this site (Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Courtmacsherry Bay SPA [IE004219] (249.12 km to array and 247.20 km to ECC)	Great northern diver Shelduck Wigeon Red-breasted merganser Golden plover Lapwing Dunlin Black-tailed godwit Bar-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	Screened out
	Black-headed gull Common gull	Non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	Black headed gull and common gull are designated non-breeding features of this SPA; therefore, there is no connectivity during the breeding season. During the non-breeding season, gulls forage largely on land and are largely sedentary, making only small movements between wintering sites. The Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Inishtrahull SPA [IE004100] (249.7 km to array and 252.9 km to ECC)	Shag Common gull	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag and common gull, as Dublin Array is beyond the MMFR +1SD for shag (13.2±10.5 km) and common gull at this site (50 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out. proposed development	Screened out
	Barnacle goose	Wintering waterbirds	Disturbance and displacement Collision risk Effects on prey	This non-breeding feature is unlikely to have non-breeding season connectivity with Dublin Array due to the migratory path or proximity to the array (Woodward *et al*.,2023). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Clonakilty Bay SPA [IE004081] (262.03 km to array and 259.84 km to ECC)	Shelduck Dunlin Black-tailed godwit Curlew	Wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Rinns of Islay SPA [UK9003057] (265.3 km to array and 270.8 km to ECC)	Common scoter Corncrake Greenland white-fronted goose Hen harrier Whooper swan	Breeding, passage and non-breeding/wintering waterbirds and other non-seabirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
North Colonsay and Western Cliffs SPA [UK9003171]	Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot as Dublin Array is beyond the MMFR+1SD (73.2±80.5 km; Woodward *et al*., 2019). However, the	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
(308.3 km to array and 314.7 km to ECC)				site hosts >1% of the regional non-breeding population for this feature, therefore it is are screened in for the non-breeding season only.	
	Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is beyond the MMFR+1SD at this site (156.1±144.5 km; Woodward *et al*., 2019). However, the site hosts >1% of the regional non-breeding population for this feature, therefore it is are screened in for the non-breeding season only. This species has very low vulnerability to displacement from offshore wind farms (Bradbury *et al*., 2014), however based on ABPmer feedback, consideration is given to this impact. This species has therefore been screened in for risk to collision and disturbance and displacement during operation and maintenance.	Screened in
	Guillemot Kittiwake	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species.as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
Puffin Island (IRE) SPA [IE004003] (335.8 km to array and 329.2 km to ECC)	Lesser black-backed gull Razorbill Storm petrel Puffin	Breeding seabirds	Disturbance and displacement Collision risk	This SPA is located on the west coast of Republic of Ireland. The distance around land rather than in a straight line from this SPA to Dublin Array is beyond the mean maximum +1SD foraging ranges for lesser black-backed gull (127±109 km), razorbill (88.7±75.9 km), storm petrel (336 km), and puffin (137.1±128.3 km; Woodward *et al*., 2019; >400 km around land). Therefore, there is no breeding season connectivity. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar	Breeding seabird	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) at this site (Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabird	Disturbance and displacement Collision risk	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on foraging data of Manx shearwater on Irish west coast colonies, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea (e.g., Wischnewski *et al*., 2019, Critchley *et al*., 2020). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull Razorbill Storm petrel Puffin Fulmar Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Isles of Scilly SPA [UK9020288] (352.89km to array, 358.87km to ECC)	Lesser black-backed gull	Breeding seabirds	Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for lesser black-backed gull and great black-backed gull as Dublin Array is beyond MMFR+1SD for lesser black-backed gull (127±109 km) and great black-backed gull (73 km; Woodward *et al*., 2019).	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Great black-backed gull			However, this site hosts >1% of the regional non-breeding population for these species, therefore this site has been screened in for the non-breeding season only	
	European storm petrel European shag	Breeding seabirds	Collision risk Disturbance and displacement Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for European storm petrel and European shag , as Dublin Array is beyond the MMFR+1SD for European storm petrel (336 km) and European shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Lesser black-backed gull Great black-backed gull	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Blasket Islands SPA [IE004008] (329.30 km to array and 321.53 km to ECC)	Shag Lesser black-backed gull Herring gull Kittiwake Arctic tern Razorbill Puffin	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for puffin, shag, lesser black-backed gull, herring gull, arctic tern, razorbill and kittiwake, as Dublin Array is beyond the MMFR+1SD for puffin (137.1±128.3 km), shag (13.2±10.5 km), lesser black backed gull (127±109 km), herring gull (58.8±26.8 km), arctic tern (25.7±14.8 km), razorbill (88.7±75.9 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Fulmar Storm petrel	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar (542.3±657.9 km) at this site (Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out. This SPA is located on the west coast of Republic of Ireland. The distance around land rather than in a straight line from this SPA to Dublin Array is beyond the mean maximum +1SD foraging ranges for storm petrel (336 km; Woodward *et al*., 2019; >400 km around land). Therefore, there is no breeding season connectivity. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on foraging data of Manx shearwater on Irish west coast colonies, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea (e.g., Wischnewski *et al*., 2019, Critchley *et al*., 2020). Therefore, this feature will have no LSE and has been screened out for collision risk and disturbance and displacement during operation and maintenance based on no connectivity.	Screened out
	Chough	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Glas Eileanan SPA [UK9003211] (355.1 km to array and 362.2 km to ECC)	Common tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern, as Dublin Array is beyond the MMFR+1SD for common tern at this site (18.0±8.9 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Mingulay and Berneray SPA [UK9001121] (397.9 km to array and 401.9 km to ECC)	Puffin Shag Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for puffin, shag, and kittiwake, as Dublin Array is beyond the MMFR+1SD for puffin (137.1±128.3 km), shag (13.2±10.5 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Guillemot Razorbill	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot and razorbill, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km) and razorbill (88.7±75.9 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for these features, therefore they are screened in for the non-breeding season only.	Screened in
	Fulmar	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out .	Screened out
	Puffin Shag Guillemot Razorbill Kittiwake Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Rum SPA [UK9001341] (400.1 km to array and 406.4 km to ECC	Kittiwake Guillemot	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake and guillemot, as Dublin Array is beyond the MMFR+1SD for kittiwake (156.1±144.5 km) and guillemot at this site (73.2±80.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater, as Dublin Array is within MMFR+1SD for Manx shearwater at this site (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, this species has low sensitivity to collision risk. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabirds	Disturbance and displacement	Based on available tracking data, this SPA may have connectivity with Dublin Array during the breeding season for Manx shearwater (Dean *et al.*, 2015). This species has low vulnerability to disturbance associated with vessel activity (Furness *et al*., 2013; Fliessbach *et al*., 2019), however, based on comments raised in the NPWS Phase 1 Methogology response (ABPmer, 2023), Manx shearwater have been considered for disturbance/displacement on a precautionary basis, and have therefore been screened in for disturbance and displacement during operation and maintenance.	Screened in
	Golden eagle	Onshore terrestrial birds	-	There is no pathway for effects on onshore bird species as they do not forage offshore. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Red-throated diver	Breeding waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. ,,The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. The Dublin Array windfarm will therefore not have a LSE on the species in question and has been screened out.	Screened out
	Kittiwake Guillemot Manx shearwater	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
South Uist Machair and Lochs SPA [UK9001082] (438 km to array and 442.5 km to ECC)	Little tern	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin array is beyond the MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Dunlin Ringed plover Oystercatcher Sanderling Corncrake Redshank	Breeding and wintering waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright *et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Monach Islands SPA [UK9001071] (479.1 km to array and 483.6 km to ECC)	Little tern	Breeding seabirds	Disturbance and displacement Effects on prey Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for little tern, as Dublin Array is beyond the MMFR+1SD for little tern at this site (5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Collision risk Effects on prey	This non-breeding feature is unlikely to have non-breeding season connectivity with Dublin Array due to the migratory path or proximity to the array (Woodward *et al*.,2023). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out. proposed development	Screened out
Shiant Isles SPA [UK9001041] (507.4 km to array and 513.7 km to ECC)	Shag Guillemot Puffin Kittiwake	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for shag, guillemot, puffin, and kittiwake, as Dublin Array is beyond the MMFR+1SD for shag (13.2±10.5 km), guillemot (73.2±80.5 km), puffin (137.1±128.3 km), and kittiwake at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Razorbill	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, as Dublin Array is beyond the MMFR+1SD (88.7±75.9 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population, therefore razorbill is screened in for the non-breeding season only.	Screened in
	Fulmar	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Collision risk	This non-breeding feature is unlikely to have non-breeding season connectivity with Dublin Array due to the migratory path or proximity to the array (Woodward *et al*.,2023). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Shag Guillemot Puffin Razorbill Kittiwake Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
Priest Island (Summer Isles) SPA (UK) UK9001261 (517.9 km to array and 525.2 km to ECC)	Storm petrel	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for storm petrel, as Dublin Array is beyond the MMFR+1SD for storm petrel at this site (336 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
St Kilda SPA [UK9001031] (519.3 km to array and 522.8 km to ECC)	Puffin Kittiwake Storm petrel Razorbill	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for puffin, kittiwake, storm petrel, and razorbill, as Dublin Array is beyond the MMFR+1SD for puffin (137.1±128.3 km), kittiwake (156.1±144.5 km), storm petrel (336 km), and razorbill (88.7±75.9 km; Woodward *et al*., 2019) at this site). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gannet	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is beyond the MMFR+1SD (315.2±194.2 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for gannet, and therefore it is screened in for the non-breeding season only.	Screened in
	Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, as Dublin Array is beyond the MMFR+1SD (73.2±80.5 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for guillemot, and therefore it is screened in for the non-breeding season only.	Screened in
	Fulmar Great skua Leach's storm petrel	Breeding seabirds	Disturbance and displacement Collison risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, great skua, and Leach's storm petrel, as Dublin Array is within the MMFR+1SD for fulmar (542.3±657.9 km), and great skua (443.3±487.9 km) and is beyond the mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). However, these species have low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Manx shearwater	Breeding seabird	Disturbance and displacement Collision risk	This SPA may have theoretical connectivity with Dublin Array during the breeding season for Manx shearwater as Dublin Array is within MMFR+1SD (1,346.8±1,018.7 km; Woodward *et al*., 2019). However, based on the location of this colony, it is expected than individuals from with colony will forage out to the continental shelf rather than the Irish Sea. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gannet Puffin Kittiwake Storm petrel Razorbill Guillemot Manx shearwater Fulmar Great skua Leach's storm petrel	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Flannan Isle SPA [UK9001021] (559.3 km to array and 564.3 km to ECC)	Razorbill Kittiwake Guillemot Puffin	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, kittiwake, guillemot, and puffin, as Dublin Array is beyond the MMFR+1SD for razorbill (88.7±75.9 km), kittiwake (156.1±144.5 km), guillemot (73.2±80.5 km), and puffin at this site (137.1±128.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, as Dublin Array is beyond the MMFR+1SD (73.2±80.5 km; Woodward *et al*., 2019). However, the	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				SPA hosts >1% of the regional non-breeding population and therefore this feature is screened in for the non-breeding season only.	
	Fulmar Leach's storm petrel	Breeding seabirds	Disturbance and displacement Collison risk	Dublin Array falls within the mean maximum +1SD foraging range for these qualifying interests; This SPA may have connectivity with Dublin Array during the breeding season for fulmar and Leach's storm petrel, as Dublin Array is within MMFR+1SD for Fulmar (542.3±657.9 km) and within mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). However, these species have low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out	Screened out
	Razorbill Kittiwake Guillemot Puffin Fulmar Leach's storm petrel	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Handa SPA [UK9001241] (563.3 km to array and 570.8 km to ECC)	Kittiwake	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake, as Dublin Array is beyond the MMFR+1SD at this site (156.1±144.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Razorbill Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for razorbill and guillemot, as Dublin Array is beyond MMFR+1SD for razorbill (88.7±75.9 km) and guillemot (73.2±80.5 km; Woodward *et al*., 2019) at this site. However, this site hosts >1% of the regional non-breeding season population of these features, therefore they have been screened in for the non-breeding season only	Screened in
	Great skua Fulmar	Breeding seabirds	Disturbance and displacement Collison risk	This SPA may have connectivity with Dublin Array during the breeding season for great skua and fulmar, as Dublin Array is within MMFR+1SD for great skua (443.3±487.9 km) and fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, these species have low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for these species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Razorbill Guillemot Kittiwake Great skua Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Cape Wrath SPA [UK9001231] (587.5 km to array and 595.2 km to ECC))	Puffin	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for puffin, and as Dublin Array is beyond the MMFR+1SD (137.1±128.3 km). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Razorbill Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for razorbill, and guillemot, as Dublin Array is beyond the MMFR+1SD for razorbill (88.7±75.9 km), and guillemot	Screened in

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				at this site (73.2±80.5 km; Woodward *et al*., 2019). However, this SPA hosts >1% of the regional population of these species in the non-breeding season. Therefore these species are screened in for the non-breeding season only.	
	Kittiwake	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for kittiwake as Dublin Array is beyond the MMFR+1SD 156.1±144.5 km. However, this SPA hosts >1% of the regional population of these species in the non-breeding season. Therefore this species is screened in for the non-breeding season only.	Screened in
	Fulmar	Breeding seabirds	Disturbance and displacement Collison risk	This SPA may have connectivity with Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD for fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has very low sensitivity to both collision risk and displacement. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Kittiwake Razorbill Puffin Guillemot Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Sule Skerry and Sule Stack SPA [UK9002181] (640 km to array and 648.1 km to ECC)	Puffin Storm petrel Shag	Breeding seabirds	Disturbance and displacement Collision risk	This SPA has no connectivity with Dublin Array during the breeding season for puffin, storm petrel, and shag, as Dublin Array is beyond the MMFR+1SD for puffin (137.1±128.3 km), storm petrel (336 km), and shag at this site (13.2±10.5 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gannet	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for gannet, as Dublin Array is beyond the MMFR+1SD (315.2±194.2 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for gannet, and therefore it is screened in for the non-breeding season only.	Screened in
	Guillemot	Breeding seabirds	Disturbance and displacement	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, as Dublin Array is beyond the MMFR+1SD (73.2±80.5 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for guillemot, and therefore it is screened in for the non-breeding season only.	Screened in
	Leach's storm petrel	Breeding seabirds	Disturbance and displacement Collision risk	This SPA may have connectivity with Dublin Array during the breeding season for Leach's storm petrel, as Dublin Array is within the mean foraging range for Leach's storm petrel at this site (657 km; Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Gannet Puffin Storm petrel Guillemot Shag Leach's storm petrel	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
North Rona and Sula Sgeir SPA [UK9001011] (641.5 km to array and 648 km to ECC)	Guillemot Kittiwake Razorbill Great black-backed gull Puffin Storm petrel Leach's petrel	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for guillemot, kittiwake, razorbill, great black-backed gull, puffin, storm petrel, and Leach's petrel, as Dublin Array is beyond the MMFR+1SD for guillemot (73.2±80.5 km), kittiwake (156.1±144.5 km), razorbill (88.7±75.9 km) great black-backed gull (73 km), puffin (137.1±128.3 km), and storm petrel (336 km), and is beyond the mean foraging range for Leach's petrel at this site (657 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Gannet	Breeding seabirds	Disturbance and displacement Collison risk	This SPA has no connectivity with Dublin Array during the breeding season for gannet as Dublin Array is beyond the MMFR+1SD (315.2±194.2 km; Woodward *et al*., 2019). However, this site hosts >1% of the regional non-breeding population for gannet, therefore this feature is screened in for the non-breeding season only.	Screened in
	Fulmar	Breeding seabirds	Disturbance and displacement Collison risk	This SPA may have connectivity wit Dublin Array during the breeding season for fulmar, as Dublin Array is within MMFR+1SD fulmar at this site (542.3±657.9 km; Woodward *et al*., 2019). However, this species has low or very low sensitivity to both collision risk and displacement, and the level of impact on SPA populations is predicted to decrease exponentially with distance to the array as impacts have been apportioned to all SPAs within foraging range. Therefore, for this species from this SPA, the likelihood and or severity of the effect experienced at the proposed development will be negligible. The Dublin Array windfarm will, therefore, not have a LSE from collision risk or disturbance and displacement on the species in question and can be screened out.	Screened out
	Guillemot Kittiwake Gannet Razorbill Great black-backed gull Puffin Storm petrel Leach's petrel Fulmar	Breeding seabirds	Effects on prey	Seabirds are highly mobile and are able to move to a different area for foraging at a low energetic cost. Due to this highly mobile behaviour, the pathway to effects due to insufficient prey resource is weak as there would be sufficient alternative resource available to support the species population due to large proportions of their foraging range not overlapping with the proposed development. In addition, the site is outside the ZOI of 17 km from the proposed development. Dublin Array windfarm will, therefore, not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
Lough Neagh and Lough Beg SPA [UK9020091] (133.9 km to array and 138.8 km to ECC)	Common tern Cormorant*	Breeding and non-breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity with Dublin Array during the breeding season for common tern and cormorant, as Dublin Array is beyond the MMMFR+1SD for common tern (18.0±8.9 km) and cormorant (25.6±8.3 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Great crested grebe Whooper swan Bewick's swan Golden plover Pochard Tufted duck Scaup Goldeneye Little grebe* Greylag goose* Shelduck* Wigeon* Gadwall* Teal*	Wintering and passage waterbirds	Disturbance and displacement Effects on prey	Migratory birds may pass windfarms during their migrations. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Spea kman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible. The Dublin Array windfarm will therefore not have a LSE from disturbance and displacement on the species in question and can be screened out. No effects are predicted on migratory waterbird populations as a result of changes in prey availability and behaviour due to birds passing through (or over) the proposed development site on migration. The Dublin Array windfarm will therefore not have a LSE from indirect effects on prey on the species in question and can be screened out.	Screened out
			Collision risk	WWT Consulting undertook a detailed evaluation of the impact of all Scottish offshore windfarms on migratory bird species (WWT, 2014). Using migratory routes identified in Wright	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
	Mallard* Shoveler* Coot* Lapwing*			*et al*. (2012), proportions of the populations likely to pass the windfarm sites were estimated and used to determine collision risk using the Band model (Band, 2012). The Band model estimates the number of individuals likely to collide with turbine blades by combining bird metrics e.g., flight height, flight speed, avoidance rate, with wind farm data e.g., number of turbines, turbine height, as well as information on day length. The study concluded that non-seabird species have very low collision estimates in relation to their populations. As cautious metrics were used (over-estimated), the collision risk is likely to be even lower than suggested. In response to the impact of the proposed windfarm, the above study accounted for all Scottish offshore windfarms. Therefore, the impact of the singular windfarm proposed will have even less of an impact on the population. Moreover, an assessment of the proportion of flight pathways that may pass through the array area was undertaken. It was estimated that <10% of these species migratory pathways cross through the array area (see Section 3.4). The Dublin Array windfarm will therefore not have a LSE on the species in question and can be screened out.	
Treshnish Isles SPA [UK9003041] (351.2 km to array and 357 km to ECC)	Storm petrel	Breeding seabirds	Disturbance and displacement Collision risk Effects on prey	This SPA has no connectivity to Dublin Array during the breeding season for storm petrel, as Dublin Array is beyond the MMFR+1SD for storm petrel at this site (336 km; Woodward *et al*., 2019). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
	Greenland barnacle goose	Wintering waterbirds	Disturbance and displacement Collision risk Effects on prey	This non-breeding feature is unlikely to have non-breeding season connectivity with Dublin Array due to the migratory path or proximity to the array (Woodward *et al*.,2023). Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Lewis Peatlands SPA [UK9001571] (526.7 km to array and 532.4 km to ECC)	Red-throated diver Merlin Golden eagle Golden plover Greenshank Black-throated diver Dunlin	Breeding waterbirds	Disturbance and displacement Collision risk	Located 532.4 km from the ECC and 526.7 km from the array, the site lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated diver, and 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks, and outside the 0.5 km buffer from the proposed development for assessing disturbance on intertidal birds (SNCB 2022, Cutts *et al.,* 2013). Therefore, there is no pathway for effect for disturbance / displacement during the breeding season. These breeding features are unlikely to have non-breeding season connectivity with the Dublin Array windfarm due to their migratory path or proximity to the array (Woodward *et al*.,2023). The impact from negligible numbers that could migrate through the array would only do so on two occasions per year. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible and can be screened out. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out
Mointeach Scadabhaigh SPA [UK9001501] (480.4 km to array and 485.5 km to ECC)	Red-throated diver Black-throated diver	Breeding waterbirds	Disturbance and displacement Collision risk	Located 480.4 km from the array and 485.5 km from the array, the site lies outside of the 10 km buffer from the proposed development for assessing disturbance on red-throated diver, and 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks (SNCB 2022). Therefore, there is no pathway for effect for disturbance / displacement during the breeding season.	Screened out

Designated Site	Designated features		Relevant Effect	Source-Pathway-Effect	Screened in/out
				These breeding features are unlikely to have non-breeding season connectivity with the Dublin Array windfarm due to their migratory path or proximity to the array (Woodward *et al*.,2023). The impact from negligible numbers that could migrate through the array would only do so on two occasions per year. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible and can be screened out. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	
West Inverness-shire Lochs SPA [UK9020298] (412.8 km to array and 420.7 km to ECC)	Common scoter Black-throated diver	Breeding waterbirds	Disturbance and displacement Collision risk	Located 412.8 km from the array and 420.7 km from the ECC, the site lies outside of the 4 km buffer from the proposed development for assessing disturbance on divers and sea ducks (SNCB 2022). Therefore, there is no pathway for effect for disturbance / displacement during the breeding season. These breeding features are unlikely to have non-breeding season connectivity with the Dublin Array windfarm due to their migratory path or proximity to the array (Woodward *et al*.,2023). The impact from negligible numbers that could migrate through the array would only do so on two occasions per year. The costs of one-off avoidances during migration are trivial (compared with species which avoid the array area regularly), accounting for less than 2% of available fat reserves (Masden *et al*., 2009 – common eider; Speakman *et al*., 2009 – red-throated diver, whooper swan, common scoter). The impacts on birds that only migrate through the Dublin Array windfarm are therefore considered to be negligible and can be screened out. Dublin Array windfarm will, therefore, not have a LSE on the species in question and can be screened out.	Screened out

7 Likely Significant Effects – In combination

7.1 Introduction

7.1.1 As defined in Section 2, Article 6(3) of the Habitats Directives requires the Competent Authority to subject any plan or project not directly connected with or necessary to the management of a European Site but likely to have a significant effect thereon, either alone or in-combination with other plans or projects to an appropriate assessment of its implications for the site.

7.1.2 "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. "

7.2 Methodology and approach

7.2.1 In line with guidance outlined in Section 2.1, plans or projects which are completed, approved but uncompleted, or proposed have been considered. EC (2019) specifically advises that "*as regards other proposed plans or projects, on grounds of legal certainty it would seem appropriate to restrict the in-combination provision to those which have been actually proposed, i.e. for which an application for approval or consent has been introduced*".

7.2.2 Due consideration has been given to establishing the maximum suite of projects with potential for connectivity to QI and European sites resulting in an in- combination effect to arise. The long list of projects has been established based upon extensive areas of search, appropriate for each receptor and which take into account species range and mobility as well as the pathways for effects. Within the search areas defined for the receptors all plans and projects that can reasonably be foreseen were screened. The guidance requires that the in-combination effects assessment must examine plans or projects that are:

- Projects completed,
- Projects approved but not started or uncompleted,
- Projects proposed, i.e. for which an application for approval or consent has been made, including refusals subject to appeal and not yet determined,
- Proposals in adopted plans, and
- Proposals in finalised draft plans formally published or submitted for consultation or adoption.

7.2.3 The approach to defining this comprehensive list was undertaken in three stages, as illustrated in Figure 9.

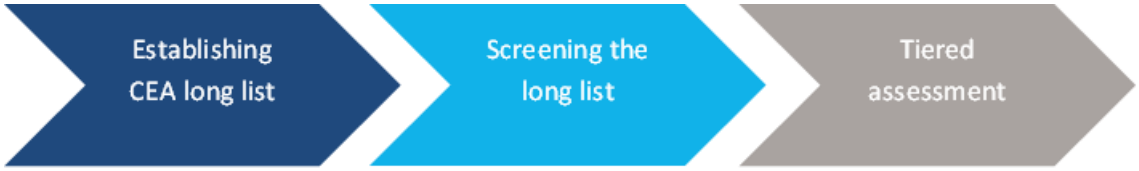


Figure 9 Approach to establishing the short list of projects

7.2.4 Stages 1 and 2 are concerned with the creation and screening of the long list which collates the details of operational, in construction, consented and proposed projects, plans and activities, and includes those within both Ireland and adjoining international jurisdictions. The screening process informs the creation of topic-specific CEA short lists of projects, plans and activities taken forward and ultimately assessed within the cumulative assessments of EIAR chapters. The process for compiling the CEA long list and for screening the projects into or out of the cumulative assessments for chapters of the EIAR is set out in the sections below.

7.2.5 Stage 3 recognises the degrees of uncertainty associated with other plans and projects and adopts a tiered approach to the assessment. For example, projects not yet approved or submitted are less certain and have fewer details available, therefore the projects/plans are categorised into "Tiers" based on their current stage in the planning and development process.

Establishing the long list

7.2.6 The "long list" of projects refers to an initial compilation of all relevant existing, planned, or reasonably foreseeable future projects within a defined area that could interact with Dublin Array to create cumulative impacts. The long list is established by firstly defining topic-specific Zones of Influence (ZoI) and then using these ZoIs to inform larger search areas withing which to collect information on projects, plans and activities. This allows GIS and EIA specialists using desk-based resources to develop a comprehensive, but proportionate, list of plans, projects and activities for the purpose of informing the cumulative impact assessment.

7.2.7 Within the long list, projects, plans and activities are split into the following types or sectors:

- Offshore Wind;
- Other Offshore Energy;
- Aggregates;
- O&G Infrastructure,
- O&G Pipelines;
- Subsea Cables;
- Disposal;
- Dumping at Sea;
- Carbon Capture and Storage;

- Shipping and Ports;
- Aquaculture;
- Coastal Assets;
- Survey; and
- Future Leasing Round or Plans.

7.2.8 The proposed ZoIs have been derived based on the potential for significant cumulative effects based on expert judgement and from precedents set by jurisdictions and countries with established offshore renewable energy sectors where comprehensive guidance has been developed (e.g. PINS Advice Note 17). In addition, consideration of potential impact pathways, receptor sensitivities and magnitude of potential effects (as informed by modelling and scientific evidence) must be factored in when establishing an appropriate ZoI. In the absence of relevant Irish guidance and as recommended by the DCCAE guidelines (2017), the process is aligned with The Guiding Principles for Cumulative Impact Assessments in Offshore Wind Farms (Renewable UK, 2013) and is considered to be a robust and precautionary approach for generating the long list. For the majority of technical topics, the ZoI for screening projects in for assessment in the EIAR is notably reduced following consideration of:

- The nature of the project;
- The nature of the impacts, e.g. the population under consideration;
- The sensitivity of the receptors;
- The use of available data;
- Receptor interactions;
- Natural boundaries: and
- Potential source–pathway–receptor interactions.

7.2.9 The ZoIs informed larger search areas within which to collect information on projects, plans and activities. These search areas relate to established and documented ecosystem boundaries, covering these ZoIs for all topics (not just those that are biodiversity-led) so as to ensure a precautionary and inclusive approach to the CEA. The cumulative ZoIs defined for each offshore topic of the EIAR are provided in Table 1. This includes topics assessing impacts from the offshore infrastructure on offshore receptors, and also offshore infrastructure on onshore receptors, such as Bats, Noise and Vibration.

7.2.10 Three ecosystem boundaries were used as the basis of the search areas. These search areas are listed below (in ascending order of size) and illustrated in Figure 2:

- International Council for the Exploration of the Sea (ICES) Ecoregion subsection 7a;
- ICES Ecoregion section Celtic Sea (which incorporates 7a); and

- Joint Nature Conservation Committee (JNCC) Celtic Seas Marine Mammal Management Unit (MMMU).

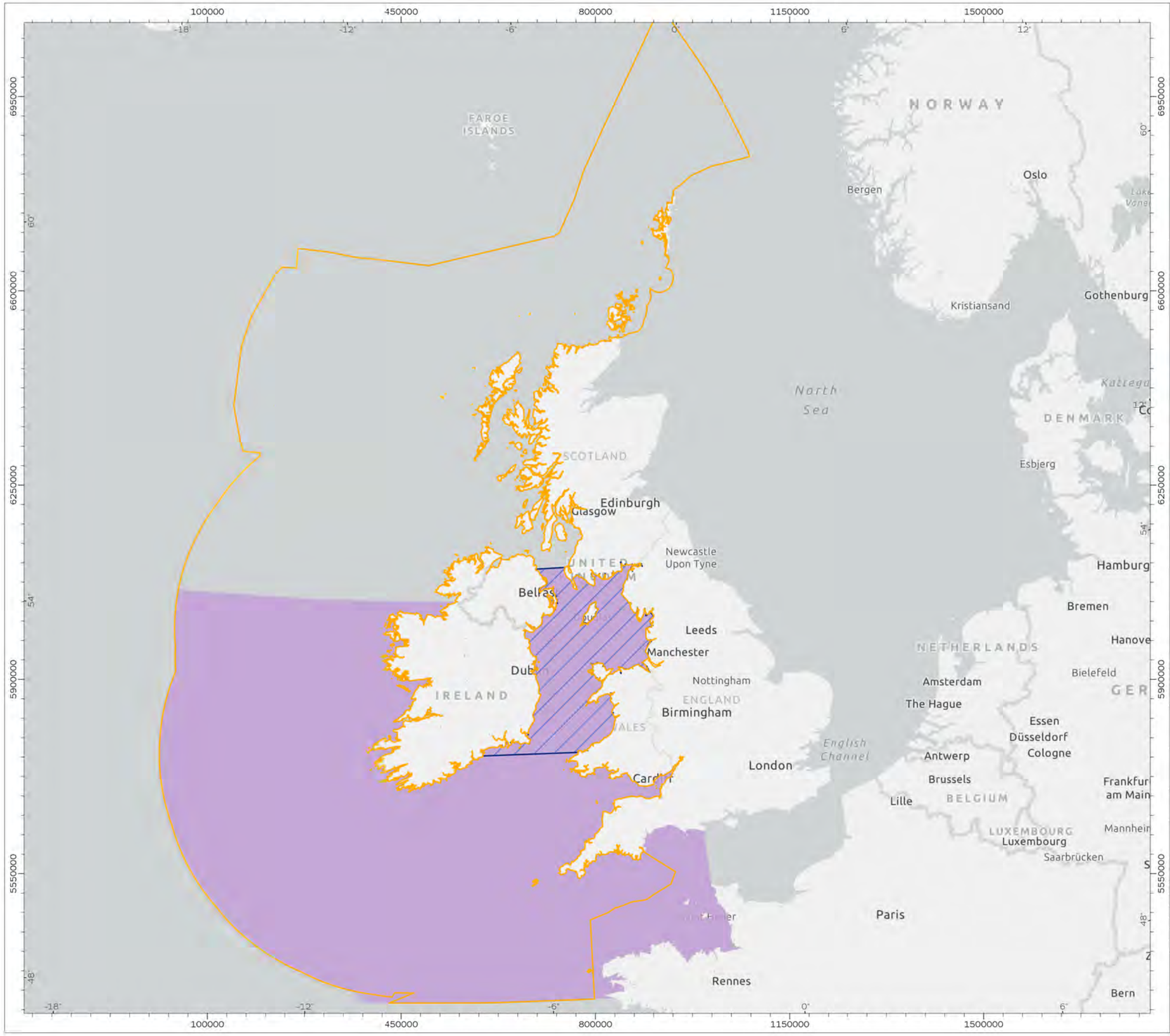
7.2.11 . The long list of projects for the offshore topics is presented within Annex B.

7.2.12 When establishing a long list, a cut-off date is required to allow time for the assessment to be undertaken and finalised prior to submission. As such, any projects, plans and activities that went into planning post August 2024 have not been considered for inclusion in the long list submitted in support of this application.

Table 17 Defined search areas for the receptor long lists

Qualifying Interest	Long list search area	Justification
Benthic subtidal and intertidal ecology	Long list used: ICES Ecoregion subsection 7a. Cumulative ZoI: The Benthic ZoI for the proposed development alone was scaled to represent a single tidal ellipse plus a 1 km buffer from the offshore infrastructure boundary. Any location beyond this distance will not result in direct or indirect impact to Benthic receptors. The cumulative ZoI was conservatively projected at 17 km to encompass all projects, plans and activities that could potentially act cumulatively with the proposed development. Justification: When taking other developments into consideration, conservative estimates based upon a single tidal ellipse plus a 1 km buffer includes any potential for spatial overlap in terms of impacts to Benthic receptors. Therefore, ICES Ecoregion subsection 7a appropriately encapsulates all projects within this 17 km ZoI. .	
Onshore ecology	Long list identified projects within a 15 km search area Search area designed to capture effects within a catchment area that could impact on QIs	
Ornithology	Long list used: ICES Ecoregion section Celtic Sea. Cumulative ZoI: Considering species range, Biologically Defined Minimum Population Scales (BDMPS) regions and different species connectivity (breeding and non-breeding) the ICES Ecoregion section Celtic Sea region (incorporating the 7a subsection, the Irish coast and the western UK coast) as necessary. Justification: For offshore wind development it is necessary to take account of the mobile nature of many seabird species and also how this varies seasonally, with large scale migratory movements in the nonbreeding seasons and smaller scale foraging trips in the breeding season. Using published results from seabird tracking studies it is considered appropriate to use the Celtic Sea region (incorporating Irish coast and western UK coast). This determination takes into account variations between species in their movements and hence potential for connectivity with the proposed development.	

Qualifying Interest	Long list search area	Justification
Marine mammals	Long lists used: ▪ The Celtic and Irish Seas MU is applicable for harbour porpoise, and the Irish Sea MU is applicable for bottlenose dolphin. ▪ ICES Ecoregion subsection 7a used for all other plans, projects and activities other than offshore wind projects. Cumulative ZoI: Marine mammals are highly mobile and differ in their foraging distances and seasonal distribution based on their ecology and behaviour. Therefore, the Marine Mammal Management Unit (MU) Study Area (Inter-Agency Marine Mammal Working Group (IAMMWG), 2023) was set as it enables consideration of the scale of movement and population structure for each species. Justification: For offshore wind development, recognising potential impacts and interaction, and highly mobile nature of the species, it is necessary therefore that the largest search area is used: the CGNS MU. For all other plans, projects and activities other than offshore wind, the ICES Ecoregion subsection 7a is considered appropriate when recognising the potential spatial scale of impacts and interaction.	
Migratory fish species	Long list used: ICES Ecoregion subsection 7a. Cumulative ZoI: 100 km buffering the array area to encapsulate potential cumulative impacts from underwater noise, as informed by underwater noise modelling and information from nearby project applications. Whilst considered highly precautionary, 100 km has also been applied to encompass potential cumulative impacts relating to seabed disturbance events, including increases in SSC and sediment deposition, so as to appropriately consider the potential to simultaneously disturb spawning or nursery grounds. Justification: This area encapsulates the Irish sea and is therefore at an appropriate scale to be considered to be precautionary and likely to encapsulate the area within which potential significant cumulative effects on fish and shellfish receptors from underwater noise, increases in SSC and sediment deposition might occur	



Celtic & Irish Seas Management Unit
Irish Sea Management Unit/Ecoregion Sunsection 7a
ICES Ecoregion - Celtic Sea

DRAWING STATUS

FINAL

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PROJECT TITLE

Dublin Array

DRAWING TITLE

Cumulative Impact Assessment Longlist Search Areas

DRAWING NUMBER: **10**

PAGE NUMBER: **1 of 1**

VER	DATE	REMARKS	DRAW	CHEK	APRD
01	2024-06-21	For Issue	GB	BB	SS

0 60 120 180 240 km
0 30 60 90 120 nm

N (GRID NORTH)

SCALE 1:7,000,000 PLOT SIZE A3
DATUM WGS 1984 VERTICAL REF LAT
PRJ WGS 1984 UTM Zone 29N

GoBe APEM Group

Dublin Array Generation for generations

Kish Offshore Wind Limited - Bray Offshore Wind Limited

Establishing a short list

7.2.0 The full short list of projects for each receptor group is provided in Table 19, Table 20, Table 21 and Table 23.

7.2.1 The short lists were compiled taking into account:

- Level of detail available for project/ plans;
- Potential for an effect-pathway-receptor link;
- Potential for a spatial interaction; and
- Potential for temporal interaction.

7.2.2 The establishment of the short lists involved consideration of multiple lines of evidence that establish whether projects create a pathway for an effect to arise through a temporal and/or spatial overlap with the effects identified for the Dublin Array project. This includes projects that result in effects that have an immediate temporal overlap or those that run sequentially over a period of time that may extend beyond the construction, operation and maintenance and decommissioning phases

7.2.3 Screening on the basis of physical extent has been carried out for all topics in line with the Maximum Design Option (and hence physical extent of any impacts) that may arise from Dublin Array.

7.2.4 In addition, the consideration of spatial effects has been considered at a scale appropriate to the receptor to ensure the assessment considers fragmentation of relevant habitats across an appropriate scale but also the consideration of ex situ habitats that support QIS outside of the boundaries of SAC and SPAs. DEHLG 2009 guidance states -;" All likely sources of effects arising from the plan or project under consideration should be considered together with other sources of effects in the existing environment and any other effects likely to arise from proposed or permitted plans or projects. These include ex situ as well as in situ plans or projects."

Tiered assessment

7.2.5 As is typical for an in-combination assessment, for many plans and projects there is a degree of uncertainty regarding project design and timeframe but also quantified environmental impacts. To take account of the level of detail available projects were tiered reflecting their current stage within the planning and development process at the point that the in-combination assessment was completed. The tier structure is intended to ensure that there is a clear understanding of the level of confidence in the in-combination assessment. Tiers are defined as per Table 18 with each project tiering identified in the tables.

Table 18 Description of tiers of other developments cons

Tier	Developments considered
Tier 1	Project under construction. Those projects that are only partially constructed at the time that baseline characterisation is undertaken.
	Projects that were only recently completed, during the development of the baseline characterisation, the full extent of the impacts arising from the development(s) may not be reflected in the baseline.
	Plans and projects which may have consent or licences to undertake further work, such as maintenance dredging or notable maintenance works which may arise in additional effects.
Tier 2	Permitted application(s), but not yet implemented.
Tier 3	Submitted consent application(s), but not yet determined. This will include the Phase 1 projects awarded a MAC with applications submitted
	Identified in the relevant development plan (and emerging development plans - with appropriate weight given as they move closer to adoption) recognising that much information on any relevant proposals will be limited.
	Identified in other plans and programmes (as appropriate) which set the framework for future development consents/ approvals, where such development is reasonably likely to come forward.
	Reasonably foreseeable projects in the pre-planning phase, whereby a Planning Application has not yet been made but there is sufficient information in the public domain about the project and its likely significant effects in order to include it in this assessment

Table 19 Plans and projects screened in for consideration within the subtidal and intertidal benthic ecology in-combination assessment

Plan or Project	Project details	Distance		Accidental Pollution	Suspended Sediment and Deposition	Physical Habitat Loss	Habitat Disturbance	Invasive Species	EMF	Conclusion In-Combination
		Array area	ECC							
Dublin Port Company MP2 Project - Jetty construction and dredging	Tier 1 – Consented Licence: FS006893, Permit S0024-02 (2022-2032), Permit S0024-03 (2022-2029)	5.5	8.1	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned MP2 project construction and dredging activities with Dublin Array (the MP2 dredge disposal activities are planned to occur 5.5 km west of the Array area and 8.1 km north of the ECC). Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned MP2 project construction and dredging activities with Dublin Array (the MP2 dredge disposal activities are planned to occur 5.5 km west of the Array area and 8.1 km north of the ECC). Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and due to the distance between Dublin Array and the MP2 project, there is no potential for an in-combination effect with Dublin Array.	EMF no source or pathway for effects to occur due to nature of the project.	Included for assessments relating to accidental pollution and suspended sediment and deposition.
Dublin Port Company Maintenance Dredging	Tier 1 – Consented Licence: FS007132, dredging at various locations in Dublin Port from 2022-2029	16.8	16.8	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned Dublin Port dredging activities with Dublin Array (the Dublin Port dredging activities are planned to occur within Dublin Port, located 16.8 north of the Dublin Array ECC). Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned Dublin Port dredging activities with Dublin Array (the Dublin Port dredging activities are planned to occur within Dublin Port, located to the north of the Dublin Array ECC). Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and due to the distance between Dublin Array and the Dublin Port dredging activities there is no potential for an in-combination effect with Dublin Array.	EMF no source or pathway for effects to occur due to nature of the project.	Included for assessments relating to accidental pollution and suspended sediment and deposition.
EXA Atlantic subsea cable	Tier 1 - Operational subsea cable	1.7	8.7	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and there is no potential for an in-combination effect with Dublin Array.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to accidental pollution, suspended sediment and deposition and EMF.

Plan or Project	Project details	Distance		Accidental Pollution	Suspended Sediment and Deposition	Physical Habitat Loss	Habitat Disturbance	Invasive Species	EMF	Conclusion In-Combination
		Array area	ECC							
Aqua Comms CeltixConnect 1 (CC-1) subsea cable	Tier 1 - Operational subsea cable	8.1	11.3	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and there is no potential for an in-combination effect with Dublin Array.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to accidental pollution, suspended sediment and deposition and EMF.
ESB ZAYO Emerald Bridge Fibres subsea cable	Tier 1 - Operational subsea cable	16.5	20.5	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The dates of O&M activities may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap and no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and there is no potential for an in-combination effect with Dublin Array.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to accidental pollution, suspended sediment and deposition and EMF.
Codling Wind Park OWF	Tier 3 - Pre-consent, commencement in 2027 with construction lasting 2-3 years.	2.5	9.6	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to occur within the immediate vicinity of the works at Dublin Array. As cable corridors cross there is potential for an in-combination effect with Dublin Array.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The introduction of invasive species may occur through the introduction of hard substrates in the form of foundation installation. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to relating to all impacts.
Mares Connect subsea cable	Tier 3 – Pre-application	0	0	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The introduction of invasive species may occur through the introduction of hard substrates in the form of foundation installation. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to all impacts.

Plan or Project	Project details	Distance		Accidental Pollution	Suspended Sediment and Deposition	Physical Habitat Loss	Habitat Disturbance	Invasive Species	EMF	Conclusion In-Combination
		Array area	ECC							
								assessment for this effect.		
Codling Wind Park OWF	Tier 3 - Pre-consent, commencement in 2027 with construction lasting 2-3 years.	2.5	9.6	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to occur within the immediate vicinity of the works at Dublin Array. As cable corridors cross there is potential for an in-combination effect with Dublin Array.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The introduction of invasive species may occur through the introduction of hard substrates in the form of foundation installation. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to relating to all impacts.
Dublin Port Company 3FM Project Capital dredging	Tier 3 – Pre-consent, to commence in 2026 (planned programme 2026-2040)	17.6	13.2	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	Physical habitat loss is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned Dublin Port dredging activities with Dublin Array (the Dublin Port dredging activities are planned to occur within Dublin Port, located 16.8 north of the Dublin Array ECC). Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	Habitat disturbance is anticipated to only occur within the immediate vicinity of the works at Dublin Array. There is no direct overlap from the planned Dublin Port dredging activities with Dublin. Therefore, due to the lack of direct overlap, there is no potential for an in-combination effect with Dublin Array.	The introduction of invasive species are not predicted to occur and due to the distance between Dublin Array and the Dublin Port dredging activities there is no potential for an in-combination effect with Dublin Array.	EMF no source or pathway for effects to occur due to nature of the project.	Included for assessments relating to suspended sediment and deposition.

Table 20 Plans and projects screened in for consideration within the in-combination assessment of migratory fish

Plan or Project	Project details	Distance to Dublin Array (km)	Distance to ECC (km)	Underwater Noise	Suspended Sediment and Deposition	Accidental Pollution	EMF	Screening conclusion In-Combination
Dublin Port Company MP2 Project	Tier 1 Consented Licence FS006893 Construction activities including dredging in Dublin Harbour scheduled to take place 2022-2032	6.4	6.4	The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development.	The proposed dates of the works may overlap with that of the proposed development.	Due to the nature of these projects, effects from EMF are not anticipated.	Included for assessments relating to Underwater Noise, Suspended Sediment and Deposition, and Accidental Pollution.
Dublin Port Company	Tier 1 Consented Licence FS007132 Ongoing maintenance dredging at various locations in Dublin Port from 2022-2029.	16.8	16.8					
Dublin Port Company	Tier 1 Consented Permit S0004-03 and S0024-02 Release of dredged material from vessels west of Burford Bank in outer Dublin Bay 2022-2035	5.5	8.1					
EXA Atlantic	Tier 1 Operational	1.7	8.7	The dates of O&M activities may overlap with that of the proposed development.	The dates of O&M activities may overlap with that of the proposed development.	The dates of O&M activities may overlap with that of the proposed development.	The installation of power cables at the proposed development will result in additional anthropogenic EMFs, which could affect electro- and magneto-sensitive receptors in-combination with existing cables.	Included for assessments relating to Underwater Noise, Suspended Sediment and Deposition, Accidental Pollution, and EMF.
Aqua Comms CeltixConnect - Sea Fibre Networks	Tier 1 Operational	8.1	11.3					
Hibernia Atlantic HIBERNIA ‘C’	Tier 1 Operational	14.3	16.8					
ZAYO Emerald Bridge One	Tier 1 Operational	16.5	20.5					
Codling Wind Park	Tier 3 Pre-consent Construction anticipated to commence in 2027 with offshore construction lasting 2-3 years. Piling anticipated in 2027.	2.5	9.6	The proposed dates of the works may overlap with that of the proposed development. In addition, consideration has been given to the potential for effects from sequential piling over prolonged periods of time.	The proposed dates of the works may overlap with that of the proposed development. Therefore, combined with the proximity to Dublin Array, the project it is included in the in-combination assessment for these impacts.		Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to Underwater Noise, Suspended Sediment and Deposition, Accidental Pollution, and EMF.

Plan or Project	Project details	Distance to Dublin Array (km)	Distance to ECC (km)	Underwater Noise	Suspended Sediment and Deposition	Accidental Pollution	EMF	Screening conclusion In-Combination
North Irish Sea Array (NISA) Offshore Wind Farm	Tier 3 Pre-consent Offshore construction anticipated for 2027-2029 with piling anticipated in 2028.	21.6	28.9		The proposed dates of the works may overlap with that of Dublin Array. While the project is outside the sedimentary ZoI for Dublin Array, it has been screened into the assessment because of its proximity to the River Boyne and River Blackwater SAC.		While the project is outside the EMF ZoI for Dublin Array, it has been screened into the assessment because of its proximity to the River Boyne and River Blackwater SAC.	Included for assessments relating to Underwater Noise, Suspended Sediment and Deposition, Accidental Pollution, and EMF.
Arklow Bank Phase 2	Tier 3 Pre-consent Construction anticipated to take place 2026-2030 with piling anticipated in 2028	25.8	32.9		The proposed dates of the works may overlap with that of Dublin Array. However, due to the distance of the projects from Dublin Array, there is no potential for in-combination effects with Dublin Array.		Due to the distance of the projects from Dublin Array, there is no potential for in-combination effects with Dublin Array.	Included for assessments relating to Underwater Noise.
Oriel Offshore Wind Farm	Tier 3 Pre-consent Construction anticipated to take place between 2026-2028 with piling anticipated in 2027.	64.7	70.8					
Mares Connect	Tier 3 Pre-consent Subsea power cable; construction anticipated to take place 2026-2029.	0	0	The proposed dates of the works may overlap with the construction period of the proposed development.	The proposed dates of the works may overlap with the construction period of the proposed development.	The proposed dates of the works may overlap with the construction period of the proposed development.	Due to the nature of this project, effects from EMF are anticipated.	Included for assessments relating to Underwater Noise, Suspended Sediment and Deposition, Accidental Pollution, and EMF.
Dublin Port Company 3FM Project Capital dredging	Tier 3 – Pre-consent, to commence in 2026 (planned programme 2026-2040)	17.6	13.2	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.	The proposed dates of the works may overlap with that of Dublin Array. Therefore, combined with the proximity to Dublin Array, it is included in the in-combination assessment for this effect.		Due to the nature of these projects, effects from EMF are not anticipated.	Included for assessments relating to Suspended Sediment and Deposition

Table 21 Plans and Projects screen in for consideration within the marine mammals in-combination assessment short list.

Project	Project Detail	Tier	Distance to array (km)	Distance to ECC (km)	Impacts considered	In-combination conclusion
Awel y Môr	OWF Construction 2026-2030	2	136.6	140.3	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of Dublin Array. Therefore, all identified impacts are considered in-combination assessment.
Erebus Floating Wind Demo	OWF Construction 2026-2027	2	185.2	192.5	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Mona	OWF Construction 2028-2029	3	127.7	132.8	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Morgan	OWF Construction 2028-2029	3	136.0	143.2	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Morecambe	OWF Construction 2026-2028	3	153.3	158.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
White Cross	OWF Construction 2025-2027	3	225.4	232.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Dublin Port Company MP2 Project	Coastal Construction 2022-2023	1	6.4	10.5	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Dublin Port Maintenance Dredging	Coastal Assets Construction 2024-2029	1	6.0	2.8	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Dublin Port Company 3FM Project Capital dredging	Coastal asset planned programme 2026-2040	3	17.6	13.2	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
South of South Quay Arklow – ABWP2-OMF	Coastal Construction 2029-2032	2	42.2	46.8	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.

Project	Project Detail	Tier	Distance to array (km)	Distance to ECC (km)	Impacts considered	In-combination conclusion
River Boyne, Dogheda Maintenance Dredging	Coastal Construction 2024-2029	1	81.6	87.4	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
TwinHub	OWF Construction 2024-2025	3	308.5	315.8	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Holyhead Deep	Tidal Construction 2026-2029	2	72.2	75.6	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in-combination assessment.
West Anglesey Demonstration Zone	Tidal Construction 2024	1	74.7	78.1	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Greenlink Interconnector	Cable Construction 2021-2024	3	124.4	127.1	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Cardiff Bay Tidal Lagoon	Tidal Construction 2024-2026	2	271.6	278.2	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Mersey Tidal Power	Tidal Construction 2028-2034	3	195.0	198.0	▪ Underwater noise; Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Codling Wind Park	OWF Construction 2027-2028	3	2.5	9.6	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
North Sea Irish Sea Array (NISA)	OWF Construction 2025-2028	3	21.6	28.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Arklow Bank	OWF Construction 2025-2029	3	25.8	32.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Oriel	OWF Construction 2025-2026	3	64.7	70.8	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey;	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.

Project	Project Detail	Tier	Distance to array (km)	Distance to ECC (km)	Impacts considered	In-combination conclusion
					▪ Accidental pollution	
Isle of Man	OWF Construction 2026-2028	3	147.3	155.1	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
North Channel Wind 2	OWF Construction 2029-2030	3	161.0	170.0	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
North Channel Wind 1	OWF Construction 2029-2030	3	184.4	192.3	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Llyr 1	OWF Construction 2024-2026	3	199.2	206.6	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Llyr 2	OWF Construction 2024-2026	3	202.0	209.5	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Sceirde Rocks	OWF Construction 2026-2030	3	260.2	249.4	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the works may overlap with that of the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Atlantic Marine Energy Test Site	OWF Construction 2024-2025	3	294.5	287.1	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in-combination assessment.
Mares Connect	Cable Construction 2024-2027	3	0.0	0.0	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
Rosslare	Coastal Assets Construction 2024-2026	3	103.8	109.5	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment.
White Cross	OWF Construction 2027-2029	3	225.4	232.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment

Project	Project Detail	Tier	Distance to array (km)	Distance to ECC (km)	Impacts considered	In-combination conclusion
Greater Dublin Drainage Outfall	Coastal Assets Construction 2024-2026	2	16.7	9.4	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment
Erebus	OWF Construction 2026-2027	2	170.4	178.1	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment
Dún Laoghaire Harbour Company	Coastal Assets Construction 2024-2034	2	12.2	0.9	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment
Bremore Port Project	Costal Assets Construction 2028-2030	3	6.2	3.0	▪ Underwater noise; ▪ Vessel disturbance; ▪ Vessel collision; ▪ Changes to prey; ▪ Accidental pollution	The proposed dates of the work are after the collection of the baseline data for the proposed development. Therefore, all identified impacts are considered in the in-combination assessment

Table 22 Plans and Projects screen in for consideration within the offshore and intertidal ornithology in-combination assessment short list

Project/Plan	Status (In Planning, Consented, Construction or Operational)	No. of Turbines	Overlap with Dublin Array
Tier 1			
Burbo Bank Extension	Operational	32	Operational
Walney 1 + 2	Operational	102	Operational
Walney Extension 3 + 4	Operational	87	Operational
West of Duddon Sands	Operational	108	Operational
Ormonde	Operational	30	Operational
Robin Rigg	Operational	60	Operational
Tier 2			
Awel-y-Mor	Consented	Maximum 50	Operational
Erebus	Consented	Seven	Operational
Twinhub	Consented	Four	Operational
Morgan	Submitted	Maximum 68	Operational
Morecambe	Submitted	40	Operational
Mona	Submitted	Maximum 68	Operational
White Cross	Consented	Seven	Operational
Morlais Tidal Energy	Consented	N/A	Operational
Tier 3			
Oriel	Submitted	Maximum 25	Potential overlap in Construction; Operation
NISA	Submitted	Maximum 49	Potential overlap in Construction; Operation
Codling	Submitted	Maximum 75	Potential overlap in Construction; Operation
Arklow Bank	Submitted	Maximum 56	Potential overlap in Construction; Operation

Table 23 Plans and projects screened in for consideration within the onshore ecology in-combination assessment

Case No.	Details
Pre-application stage developments:	
The East Coast Railway Infrastructure Protection Project (ECRIPP): The Dalkey Tunnel to Shanganagh Wastewater Treatment Plant; The Deansgrange Flood Relief Scheme at Glenavon Park; Dublin Replacement Underground Cable Programme CP1146 Carrickmines to Poolbeg; National Watersports Campus.	
317742	BusConnects Bray to City Centre Core Bus Corridor Scheme
D02A/0698/E	Alterations and modifications to the Racecourse
303945	Glenamuck District Roads Scheme
D07A/0936	Mixed use development.
303978	30 no. houses and 173 no. apartments.
301522	Mixed use development
313322	443 no. residential units (41 no. houses, 402 no. apartments), creche.
309026	482 no. apartments, creche and associated site works.
308753	Beckett Road Re-alignment and Ancillary Amendments.
Cherrywood SDZ	Mixed use development
Cherrywood SDZ	Mixed use development
DZ17A/0862	Mixed use development
2021068	482 no. residential units, 3 to 5 storeys.
2023166	162 no. residential units in Cherrywood SDZ.
Cherrywood SDZ	184 no. residential units
Cherrywood SDZ	Mixed-use Village Centre and residential development
D07A/0161/E	158 no. dwellings; 25 no. detached houses.
304396	Retail/Commercial Development
307994	Demolition and construction Primary Care Centre and GP Surgery.
308418	193 no. Build to rent apartments
247812	Demolition and refurbishment and provision of 61 no. residential units
317775	43 no. residential units
315449/D21A/1082	32 apartments
D17A/0381	42 no. residential units
308612/D20A/0582	Residential development consisting of 14 residential units.
313321	Demolition and construction of 101 no. residential units, creche.
302954/D17A/1003	Demolition of existing dwelling house and construction of 67 no. apartments.

Case No.	Details
312990/D21A/0595	Demolition and construction of a residential development comprising 33 no. apartments.
313443	Demolition of dwellings and construction of 137 no. apartments.
305142/D18A/1047	Construction of 12 no. detached houses with access.
313344/D21A/0923	Demolition and construction of a five storey apartment building.
311669	112 no. Build to Rent apartments and associated site works
305940/DAC063/2020	Demolition and provision of a Build-to-Rent residential development.
303467	706 no. bed space student accommodation and all associated site services.
301661/D17A/1060	Demolition of commercial building and construction of an office development.
308227	249 no. apartments, childcare facilities.
302580	Demolition and construction of 243 no. apartments, 98 no. houses, childcare facility.
307415/LRD23A/0718	200 no. apartments, creche.
304843/D18A/1171	Construction of a new Post-Primary School (RN68241F).
303695/D18A/0074	Residential development
313430/D21A/0439	Construction of a shared pedestrian/cycle path
312214	130 no. residential units.
309846	203 no. residential units, creche.
307043/ABP30704320	116 no. residential units, childcare facility.
306160	Demolition and construction of 197 no. residential units
303491	Demolition of dwelling and construction of 20 residential units.
318418/D22A/1028	Amendments PL.06.D.24650 (retention of stable and agricultural structures).
311428/D20A/0884	Demolition of buildings and construction of 2 retail units and 20 apartments.
312132	419 no. residential units, creche.
304719/D18A/0763	34 residential units
305859	Demolition and construction of 234 no. apartments, creche.
303675/D18A/0551	Permission for 72 Dwellings.
305629/D19A/0181	Pedestrian footbridge, office accommodation, demolition, construction of Build-to-Rent housing.
307332	Demolition of existing buildings, construction of 151 no. apartments.
316279/D22A/0142	Retention permission and permission to amend hours of operation D01A/0920.
311329	299 no. apartments, creche.
D20A/0541	Demolition and the construction of a 124 No. bedroom nursing home.
D14A/0515	Amendments to existing permission D10A/0440 (ABP Ref. PL06D.239332).

Case No.	Details
D15A/0677	Permission for development at the permitted and constructed School.
312782/D18A/0419	Retention permission change of use from retail warehouse to ancillary 'pick store'.
304405	428 no. apartments, creche, 4 no. local/neighbourhood retail units.
301428	460 no. apartments and associated site works.
D15A/0201	Access road and vehicular and pedestrian link road.
D98A/0886/E2	Mixed-use development.
D15A/0328	Permission for a reorganisation and upgrade of existing facilities on site.
249420/D16A/0542	Amendments to a permitted primary school
246601/D15A/0247	Residential development of 410 no. residential units and a childcare facility.
246537/D16A/0090	Mixed-use development
246501/D15A/0453	Centre of excellence for equine breeding and training.
301044	Demolition of buildings and construction of 115 residential units.
300194/D15A/0385	Development of a residential and connection with the N11.
300107/D17A/0580	Development at existing manufacturing facility.
247023/D16A/0343	Residential development of 48 no. dwellings.
306746	Removal/Deletion of condition number 2 o. D18A/0078 and redesign.
311210	Demolition of building and construction of 3-5 storey apartment building.
245603	Demolition of vacant factory building and construction of 14 no. apartments.
318088	Coastal Mobility Scheme development

8 Conclusion - Screening statement

8.1.1 Fifty three SACS and eight nine SPAs were considered for the potential for LSE to arise via the identified source-receptor-pathways. With reference to the Qualifying Interest, sensitivities and the Conservation Objectives for the sites, this Screening assessment has found that the possibility of LSE on the conservation objectives with respect to 45 SACs and 38 SPAs respectively cannot be excluded and are required to be subject t Appropriate Assessment (Stage 2). These SACs and SPAs are listed below in Table 24. These sites will be subject to further assessment and further information will be provided within a Natura Impact Statement (NIS).

8.1.2 In respect of the SACs and SPAs screened out within Table 13, Table 14, Table 15, Table 16 having considered the information as referenced in this report, their conservation objectives and objective scientific information, the appropriate assessment screening has determined that the proposed project is not likely to have significant effects of any such European Sites , either alone or in combination with other plans or projects .

Table 24 Sites screened for assessment at Stage 2

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Rockabill to Dalkey Island SAC [IE003000]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat disturbance	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat Loss
	Reef	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Physical habitat loss ▪ Habitat disturbance ▪ Invasive species	▪ Accidental pollution) ▪ Suspended sediment and deposition ▪ Physical habitat loss ▪ Habitat disturbance ▪ Invasive species ▪ EMF
South Dublin Bay SAC [IE 000210]	Mudflats and sandflats Salicornia and other annuals	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species
North Dublin Bay SAC [IE000206]	Mudflats and sandflats Salicornia and other annuals Atlantic salt meadows Mediterranean salt meadows	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species	▪ Accidental pollution ▪ Invasive species

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Baldoyle Bay SAC [IE000199]	Mudflats and sandflats Salicornia and other annuals Atlantic salt meadows Mediterranean salt meadows	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species	▪ Accidental pollution ▪ Invasive species
The Murrough Wetlands SAC [IE002249]	Atlantic salt meadows Mediterranean salt meadows	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species	▪ Accidental pollution) ▪ Invasive species
Codling Fault Zone SAC [IE003015]	Submarine structures made by leaking gases	▪ Accidental pollution ▪ Suspended sediment and deposition ▪ Invasive species	▪ Accidental pollution ▪ Invasive species
	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat disturbance	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat Loss
Wicklow Mountains SAC [IE002122]	Otters	▪ Disturbance and displacement ▪ Accidental pollution ▪ Effects on prey ▪ Habitat loss ▪ Habitat disturbance ▪ Underwater noise	▪ Disturbance and displacement ▪ Accidental pollution
Slaney River Valley SAC [IE000781]	Twaite shad Atlantic salmon Sea lamprey Freshwater pearl mussel	▪ Underwater noise ▪ Accidental pollution ▪ Invasive species ▪ Effects on prey	▪ Underwater noise ▪ EMF ▪ Accidental pollution ▪ Invasive species ▪ Effects on prey
River Boyne and River Blackwater SAC [IE002299]	Atlantic Salmon	▪ Underwater noise ▪ Accidental pollution ▪ Invasive species ▪ Effects on prey	▪ Underwater noise ▪ EMF ▪ Accidental pollution ▪ Invasive species ▪ Effects on prey
Lambay Island SAC [IE000204]	Grey seal Harbour seal Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat disturbance	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base) ▪ Habitat Loss
Blackwater Bank SAC [IE002953]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels)	▪ Collision risk (vessels) ▪ Vessel disturbance

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
		▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Pen Llyn a'r Sarnau SAC [UK0013117]	Grey seal Bottlenose dolphin	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Cardigan Bay SAC [UK0012712]	Bottlenose dolphin	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Hook Head SAC [IE0000764]	Harbour porpoise Bottlenose dolphin	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Bunduff, Lough and Machair/ Trawalua/ Mullaghmore SAC [IE0000625]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Kilkieran Bay and Islands SAC [IE0002111]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Inishmore Island SAC [IE0000213]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
West Connacht Coast SAC [IE0002998]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
		▪ Accidental pollution (Offshore infrastructure and O&M base)	
Kenmare River SAC [IE0002158]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Carnsore Point SAC [IE0002269]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Belgica Mound Province SAC [IE0002327]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
North Anglesey Marine SAC [UK0030398]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
West Wales Marine / Gorllewin Cymru Forol SAC [UK0030397]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
North Channel SAC [UK0030399]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
The Bristol Channel Approaches SAC [UK0030396]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Roaringwater Bay and Islands SAC [IE000101]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
Blasket Island SAC [IE002172]	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)
French SAC (18 sites) Abers – Côte des Légendes SAC [FR5300017], Anse de Vauville SAC [FR2502019], Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard SAC [FR5300012], Baie de Morlaix SAC [FR5300015], Baie de Saint-Brieuc – Est SAC [FR5310050], Baie du Mont Saint-Michel SAC [FR2500077], Banc et récifs de Surtainville SAC [FR2502018], Cap d'Erquy-Cap Fréhel SAC [FR3102002], Chausey SAC [FR3102003], Chaussée de Sein SAC [FR5302007], Côte de Granit Rose-Sept Iles SAC [FR5310011], Côtes de Crozon SAC [FR5302006], Estuaire de la Rance SAC [FR5300061], Mers Celtiques – Talus du golfe de Gascogne SAC [FR5302015], Nord Bretagne DH SAC [FR2502022],	Harbour porpoise	▪ Underwater noise ▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)	▪ Collision risk (vessels) ▪ Vessel disturbance ▪ Effects on prey ▪ Accidental pollution (Offshore infrastructure and O&M base)

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Ouessant-Molène SAC [FR5300018], Récifs et landes de la Hague SAC [FR2500084], Tregor Goëlo SAC [FR5300010]			
SPAs			
North-west Irish Sea SPA [IE004236]	Guillemot Razorbill Fulmar Manx shearwater Cormorant Shag Black-headed gull Common gull Lesser black-backed gull Herring gull Great black-backed gull Kittiwake Roseate tern Common tern Arctic tern Little tern Little gull	▪ Indirect effects on prey	▪ Indirect effects on prey
	Red-throated diver Great northern diver Common scoter	▪ Disturbance and displacement ▪ Indirect effects on prey	▪ Disturbance and displacement ▪ Indirect effects on prey
South Dublin Bay and River Tolka Estuary SPA [IE004024]	Roseate tern Common tern	▪ Indirect effects on prey	▪ Indirect effects on prey ▪ Collision risk
	Arctic tern Black-headed gull	▪ Indirect effects on prey	▪ Indirect effects on prey
	Light-bellied brent goose Oystercatcher Ringed plover Grey plover Knot Dunlin Redshank	-	▪ Migratory collision risk
North Bull Island SPA [IE004006]	Black-headed gull	▪ Indirect effects on prey	▪ Indirect effects on prey
	Light bellied goose Redshank Shoveler Shelduck Turnstone Oystercatcher	-	▪ Migratory collision risk

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
	Teal Pintail Dunlin Grey plover Knot Curlew		
Dalkey Island SPA [IE004172]	Arctic tern	▪ Indirect effects on prey	▪ Indirect effects on prey
	Common tern Roseate tern	▪ Indirect effects on prey	▪ Indirect effects on prey ▪ Collision risk
Howth Head SPA [IE004113]	Kittiwake	▪ Indirect effects on prey ▪ Disturbance and displacement	▪ Indirect effects on prey ▪ Disturbance and displacement ▪ Collision risk
Ireland's Eye SPA [IE004117]	Herring gull	▪ Indirect effects on prey	▪ Indirect effects on prey ▪ Collision risk
	Razorbill Guillemot	▪ Indirect effects on prey ▪ Disturbance and displacement	▪ Indirect effects on prey ▪ Disturbance and displacement
	Kittiwake	▪ Indirect effects on prey ▪ Disturbance and displacement	▪ Indirect effects on prey ▪ Disturbance and displacement ▪ Collision risk
	Cormorant	▪ Indirect effects on prey ▪ Disturbance and displacement	▪ Indirect effects on prey
Wicklow Mountains SPA [IE002122]	Merlin	-	▪ Migratory collision risk
Baldoyle Bay SPA [IE004016]	Grey plover Light-bellied brent goose Ringed plover Shelduck	-	▪ Migratory collision risk
The Murrough SPA [IE004186]	Red-throated diver	▪ Disturbance and displacement ▪ Indirect effects on prey	▪ Disturbance and displacement ▪ Indirect effects on prey
	Herring gull Black-headed gull Little tern	▪ Indirect effects on prey	▪ Indirect effects on prey
	Light-bellied brent goose Teal Wigeon	-	▪ Migratory collision risk
Lambay Island SPA [IE004069]	Guillemot Razorbill Shag	▪ Disturbance and displacement	▪ Disturbance and displacement
	Herring gull Lesser black-backed gull	-	▪ Collision risk
	Cormorant	▪ Disturbance and displacement	-
	Kittiwake	▪ Disturbance and displacement	▪ Disturbance and displacement ▪ Collision risk
Wicklow Head SPA [IE004127]	Kittiwake	▪ Disturbance and displacement	▪ Collision risk ▪ Disturbance and displacement

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Skerries Islands SPA [IE004122]	Herring gull	-	▪ Collision risk
	Cormorant	▪ Disturbance and displacement	-
Aberdaron Coast and Bardsey Island / Glannau Aberdaron ac Ynys Enlli [UK9013121]	Manx shearwater	▪ Disturbance and displacement	▪ Disturbance and displacement
Saltee Islands SPA [IE004002]	Razorbill Guillemot	▪ Disturbance and displacement	▪ Disturbance and displacement
	Lesser black-backed gull	-	▪ Collision risk
	Kittiwake Gannet	▪ Disturbance and displacement	▪ Collision risk ▪ Disturbance and displacement
Copeland Islands SPA [UK9020291]	Manx shearwater	▪ Disturbance and displacement	▪ Disturbance and displacement
Skomer, Skokholm the Seas off Pembrokeshire SPA [UK9014051]	Kittiwake	▪ Disturbance and displacement	▪ Collision risk ▪ Disturbance and displacement
	Guillemot Razorbill	▪ Disturbance and displacement	▪ Disturbance and displacement
	Manx shearwater	▪ Disturbance and displacement	▪ Disturbance and displacement
	Lesser black-backed gull	-	▪ Collision risk
Grassholm SPA [UK9014041]	Gannet	▪ Disturbance and displacement	▪ Disturbance and displacement ▪ Collision risk
Dungarvan Harbour SPA [IE004032]	Black-tailed godwit Curlew Dunlin Great crested grebe Grey plover Knot Lapwing Light-bellied brent goose Oystercatcher Red-breasted merganser Redshank Shelduck Turnstone	-	▪ Migratory collision risk
Helvick Head and Ballyquin SPA [IE0004192]	Kittiwake	▪ Disturbance and displacement	▪ Collision risk ▪ Disturbance and displacement
Old Head of Kinsale SPA [IE0004021]	Kittiwake	▪ Disturbance and displacement	▪ Collision risk ▪ Disturbance and displacement
Blackwater Estuary SPA [IE0004028]	Black-tailed godwit Curlew Dunlin Lapwing	-	▪ Migratory collision risk

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
	Redshank Wigeon		
Ribble and Alt Estuaries SPA [UK9005103]	Lesser black-backed gull	-	▪ Collision risk
Ballymacoda Bay SPA [IE0004023]	Black-tailed godwit Curlew Dunlin Grey plover Lapwing Redshank Ringed plover Teal Turnstone Wigeon	-	▪ Migratory collision risk
Morecambe Bay and Duddon Estuary SPA [UK9020326]	Herring gull Lesser black-backed gull	-	▪ Collision risk
Ballycotton Bay SPA [IE0004022]	Black-tailed godwit Curlew Grey plover Lapwing Ringed plover Teal Turnstone	-	▪ Migratory collision risk
Rathlin Island SPA [UK9020011]	Kittiwake	-	▪ Disturbance and displacement ▪ Collision risk
	Guillemot Razorbill	-	▪ Disturbance and displacement
Ailsa Craig SPA [UK9003091]	Gannet Kittiwake	▪ Disturbance and displacement	▪ Disturbance and displacement ▪ Collision risk
	Lesser black-backed gull	-	▪ Collision risk
North Colonsay and Western Cliffs SPA [UK9003171]	Guillemot	-	▪ Disturbance and displacement
	Kittiwake	-	▪ Disturbance and displacement ▪ Collision risk
Isles of Scilly SPA [UK9020288]	Lesser black-backed gull Great black-backed gull	-	▪ Collision risk
Mingulay and Berneray SPA [UK9001121]	Guillemot Razorbill	-	▪ Disturbance and displacement
Rum SPA [UK9001341]	Manx shearwater	▪ Disturbance and displacement	▪ Disturbance and displacement
Shiant Isles SPA [UK900104]	Razorbill	-	▪ Disturbance and displacement
St Kilda SPA [UK9001031]	Gannet	-	▪ Disturbance and displacement ▪ Collision risk
	Guillemot	-	▪ Disturbance and displacement

European Site Name	Qualifying feature	Effects screened in for construction and decommissioning	Effects screened in for O&M
Flannan Isle SPA [UK9001021]	Guillemot	-	▪ Disturbance and displacement
Handa SPA [UK9001241]	Razorbill Guillemot	-	▪ Disturbance and displacement
Cape Wrath SPA [UK9001231]	Razorbill Guillemot	-	▪ Disturbance and displacement
	Kittiwake	-	▪ Disturbance and displacement ▪ Collision risk
Sule Skerry and Sule Stack SPA [UK9002181]	Gannet	-	▪ Disturbance and displacement ▪ Collision risk
	Guillemot	-	▪ Disturbance and displacement
North Rona and Sula Sgeir SPA [UK9001011]	Gannet	-	▪ Disturbance and displacement ▪ Collision risk

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