An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

APPROPRIATE ASSESSMENT REPORT FOR THE FORESHORE LICENCE APPLICATION FOR SITE INVESTIGATIONS FOR ORIEL WIND FARM, OFF CO. LOUTH

Application No. FS007383

2 September 2022

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Statement of Authority

Yvonne Leahy is an experienced marine ecologist with a wide range of experience from conservation, developing quality index tool for Water Framework Directive, habitat mapping, aquaculture to deep water reef ecology. She completed a Ph.D. in the polychaete taxonomy and ecology in NUIG. Undertook a Post-Doctoral on shallow water hydrothermal vent ecosystems in the Institute of Marine Biology of Crete. For the last 14 years she has worked with the National Parks and Wildlife Service as a marine ecologist where she developed the Site Specific Conservation objectives for all marine Special Areas of Conservation. In this position she also reviewed Appropriate Assessments for the Aquaculture Licences and drafted Departmental responses as part of the statutory consultations for this process. She has considerable experience in the Habitats Directive and Article 6 Assessments and the case law pertaining to them.

With NPWS she developed and delivered Article 17 monitoring programmes for Annex I habitats and Annex V species. She is on the Natura 2000 Marine Expert Working Group, the OSPAR Benthic Habitats Expert Group and MSFD Integrated Monitoring Programme working group. She has been on a number of research steering groups including the NPWS/EPA co-funded CLEAR project on restoration of coastal lagoons, EcoSystem Services VIBES project and the Ecostructure project [https://www.ecostructureproject.eu]. She has been Ireland's representative on the Marine and Coastal Biodiversity expert working group for the UN Convention on Biodiversity.

Section 1 Introduction

1.1 Background

Oriel Windfarm Limited (Oriel) has applied under the Foreshore Act 1933 (as amended) for a licence to undertake site investigations off the coast of Dundalk, County Louth. In May 2019 Oriel obtained a Foreshore Licence (reference no. FS006840) for initial surveys in the offshore wind farm area and offshore cable corridor. Oriel now intends to undertake further site investigations of the offshore wind farm area and the offshore cable corridor to investigate the stability of the seabed sediments for the design of foundations and the detailed routeing of the inter array and export cables.

1.2 Application documents submitted

The following application documents were reviewed as part of this assessment:

- Investigative Foreshore Licence Application dated 18/11/2021
- Non-Statutory Environmental Report dated 17/11/2021
- Foreshore Licence Application for Marine Survey: Supporting Information dated 18/11/2021
- Supporting information for the Stage 1 Screening for Appropriate Assessment dated November 2021. Reference: J.PARK.473 – Report No. 1.1
- Supporting information for the Stage 2 Appropriate Assessment dated November 2021. Reference: J.PARK.473 – Report No. 1.2
- Foreshore Licence Application for Marine Survey: Supporting Information dated 18/11/2021

These documents including the appropriate assessment report can be accessed on: https://www.gov.ie/en/foreshore-notice/b8eb7-oriel-windfarm-limited-site-investigations-for-the-proposed-offshore-oriel-wind-farm/

1.3 Relevant consultation responses

First consultation was held between the 15 December 2021 and 27 January 2022. The second consultation was held between the 14 June 2022 and 14 July 2022. Consultation responses from the Prescribed Bodies and the public along with Oriel's responses are listed in Appendix 1. Note that the responses listed are only those concerning the Habitats Directive.

1.4 Legislative context

Under the Foreshore Act 1933 (as amended) a lease or licence must be obtained from the Minister for Housing, Local Government and Heritage for the carrying out of works or placing of structures or material on, or for the occupation of or removal of material from State-owned foreshore. Foreshore is defined as from the High Water Mark to the 12nm limit.

The EU Habitats Directive (Council Directive 92/43/EC) and Birds Directive (2009/147/EC) are transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) and by Part XAB of the Planning and Development Act 2000 (as amended). The 2011 Regulations outline the requirements for Screening for Appropriate Assessment and for Appropriate Assessment under Regulation 42:

42. (1) A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site.

(2) A public authority shall carry out a screening for Appropriate Assessment under paragraph (1) before consent for a plan or project is given, or a decision to undertake or adopt a plan or project is taken.

(6) The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site.

(9) Where a public authority is required to conduct an Appropriate Assessment pursuant to paragraph (6) in relation to a plan or project that it proposes to undertake or adopt, it shall:

(a) prepare a Natura Impact Statement,

(b) compile any other evidence including, but not limited to, scientific evidence that is required for the purposes of the Appropriate Assessment, and

(c) submit a Natura Impact Statement together with evidence compiled under subparagraph (b) to the Minister not later than six weeks before it proposes to adopt or undertake the plan or project to which the Natura Impact Statement and evidence relates.

(11) An Appropriate Assessment carried out under this Regulation shall include a determination by the public authority under this Regulation pursuant to Article 6(3) of the Habitats Directive as to whether or not a plan or project would adversely affect the integrity of a European site and the assessment shall be carried out by the public authority before a decision is taken to approve, undertake or adopt a plan or project, as the case may be.

(12) In carrying out an Appropriate Assessment under paragraph (11) the public authority shall take into account each of the following matters —

(a) the Natura Impact Statement,

(b) any other plans or projects that may, in combination with the plan or project under consideration, adversely affect the integrity of a European Site,
(c) any supplemental information furnished in relation to any such report or statement,
(d) if appropriate, any additional information sought by the authority and furnished by the applicant in relation to a Natura Impact Statement,
(e) any information or advice obtained by the public authority,
(f) if appropriate, any written submissions or observations made to the public authority in relation to the application for consent for proposed plan or project,
(g) any other relevant information.

Section 2 Description of proposed works

2.1 Introduction

Oriel Windfarm Limited (Oriel) is an Irish renewable energy company proposing to develop, subject to the relevant permissions, the Oriel offshore wind farm (the proposed project) located in the north-west Irish Sea, 22km off the coast of Dundalk, County Louth. The proposed project will include wind turbines mounted onto foundations installed into the seabed, an offshore substation and interlinking cabling between the turbines and the substation, and an export cable between the substation and the shore.

The proposed surveys are for the further site investigation of the offshore wind farm area and the offshore cable corridor, to investigate the stability of the seabed sediments for the design of foundations and the detailed routeing of the inter array and export cables.

2.2 Location

The Foreshore Licence Application Area consists of the Oriel offshore wind farm area and the offshore cable corridor. The offshore wind farm area is located off the coast of County Louth to the east of Dundalk Bay, approximately 22km east of Dundalk, 18km east of Blackrock, 5km south of the Cooley Peninsula and 10km north-east of Dunany Point. This area covers approximately 27.8km^2 and is broadly hexagonal in shape with a length of approximately 5.3km west to east and 6.7 km north to south.

The offshore cable corridor is approximately 11km in length and covers an area of approximately 25km^2. The corridor is approximately 4km at its widest point southwest of the offshore wind farm area. It narrows to approximately 1km at its narrowest point just before landfall 700m south of Dunany Point.

2.3 Summary of proposed works

The Site Investigations will consist of the following surveys:

- Geophysical surveys
- Geotechnical and sediment sampling
- Environmental/ecological surveys and sampling
- Oceanographic and meteorological surveys

The survey works will commence on approval of the Foreshore Licence application and appointment of a suitable contractor, and on the availability of vessels and suitable weather conditions. Approval of a Foreshore Licence for a three year period is being sought.

2.3.1 Geophysical survey

The purpose of the geophysical survey is to determine the sediment conditions within the survey area in order to update the information gathered by previous surveys. This additional data will be used to better understand the sub-surface structure, in particular the sub-surface stratigraphy and to confirm the bedrock elevation. The information will be used to assess the stability of the sub-surface soil for the design of foundations and the detailed routeing of the inter array and export cables.

The geophysical survey will include bathymetric, side scan sonar, magnetometry and seismic sounding of the proposed site. The geophysical data acquisition will involve the following acoustic-based techniques:

- Multibeam Echosounder (MBES) system for detailed bathymetric mapping. The equipment will operate within a frequency range of 70-100kHz with sound pressure levels in the range of 225-231dB re1µPa at 1 metre range.
- Side Scan Sonar (SSS) for detailed seabed morphology and seafloor mapping. The equipment will operate within a frequency range of 100-500kHZ with source levels at 235dB re 1µPa at 1 metre range.
- Magnetometer for detecting geomorphological anomalies and ferrous obstructions. The process is non-intrusive, and the device will not make any physical contact with the seabed at any point.
- Sub-bottom Profiling (SBP) to identify and characterise the layers of sediment/rock underneath the seafloor along the cable route corridor. The process is non-intrusive and the device will not make any physical contact with the seabed at any point.
- Ultra-high-resolution multi-channel seismic (UHRS) to identify and characterise the layers of sediment/rock underneath the seafloor within the windfarm site.
- An ultra-short baseline acoustic positioning (USBL) system may be used to assist in the positioning of towed equipment relative to the vessel. It will be used within the offshore wind farm area only, commonly used variants of this technology are known as sparkers and boomers. It will have the following characteristics as a minimum:
    - repeatable source
    - frequency range of between 1kHz and 3.5kHz
    - broadband width in excess of 2.5kHz at -10db
    - vertical resolution better than 0.5 metres
    - penetration 50 metres
    - variable energy levels 100-1000 Joules
    - record length suitable for the maximum depth required (250ms)
    - sampling rate 0.25ms
- An Ultra-Short-Based Line (USBL) beacon may be used to precisely locate towed equipment (e.g. sidescan sonar fish) relative to the vessel. Examples of equipment include Sonardyne Wideband Sub-Mini 6 Plus (WSM6+), Sonardyne Type 8300 Compatt 6 and Kongsberg HiPAP which have a typical operating frequency of 20-40kHz.

The geophysical survey will comprise transects with a total length of ca. 84km and a distance of 1km between each transect.

2.3.2 Geotechnical survey

The purpose of the geotechnical survey is to investigate the stability of the soil to inform the design of foundations and the detailed routeing of the inter array and export cables. This survey will employ the following techniques:

- Boreholes - eighty one geotechnical boreholes will be drilled in the offshore wind farm area. Approximately twenty seven will be carried out at potential locations of wind turbines and the offshore substation locations. Each deep investigation location will require up to three drilled boreholes with a target depth of 50m below the seabed.
- Up to six deep investigations will be carried out in the intertidal area. At each location a drilled borehole with a target depth of up to 50m will be executed.
- An estimated forty one shallow investigations will be required along the proposed inter-array and export cable routes. Each investigation will require one vibrocore or

gravity core at each location with a target depth of 3m below the seabed. Vibrocoring will be performed where cohesionless soil is expected. A Gravity core will be used where cohesive soil is expected. Up to twelve shallow investigation locations will be carried out in the intertidal area. Each location would be an excavated trial pit or borehole with a target depth of 3m below the sediment surface. Excavated locations will be backfilled immediately on completion of the investigation.

2.3.3 Ecological survey

The purpose of the ecological surveys is to update the baseline environmental data collected from previous ecological surveys. The ecological scope of work will include the following:

- Six FPOD or CPOD devices for Static Acoustic Monitoring (SAM) of cetaceans will be deploy. This will allow for the recording of species difficult to detect visually such as harbour porpoise, provide data on other factors such as diel and tidal presence at the site. Each CPOD will require robust, heavy weight mooring blocks of *ca*. 250kg, clump chain and rope. They will have either an acoustic release mechanism and benthic buoy or a robust mooring with a surface marker buoy.
- Six Sondes will be deployed for monitoring of water quality through the water column. A range of parameters will be measured including turbidity, salinity, temperature, pH, dissolved oxygen and electrical conductivity. Sondes will be either suspended from a surface marker buoy or a benthic buoy with acoustic release. Each buoy would have a robust mooring system on the seabed similar to that of the CPOD mooring.
- Intertidal benthic samples will be collect by manual digging. Subtidally survey techniques will include drop down video (DDV) and deployment of a mini Hamon grab or van Veen grab to obtain samples of 1-5kg in mass each. All samples will be analysed to determine the benthic faunal community present and sediment geochemistry.
- Up to six Sondes will be deployed for the tracking of fish and shellfish within the windfarm and export cable corridor. These Sondes are attached to a robust mooring system with either a benthic buoy and acoustic release and/or a surface marker buoy.

2.3.4 Metocean survey

The purpose of the metocean survey is to obtain site specific atmospheric, wave and wind data over a period of up to 24 months.

- All metocean survey works will occur at one location within the marine survey area which will be determined following the appointment of a suitable contractor.
- This equipment will be mounted on specifically designed floating buoys which are moored to the seabed using an anchor chain and clump weights.
- All equipment including the moorings will be removed following completion of the survey.
- The wave rider will be used to collect wave height and current data across the site while the LiDAR system will be used to measure the wind characteristics within the sites.

2.3.5 Survey vessels

The survey vessel to be used for geotechnical works in deep water will be either a jack-up barge or a vessel with a Dynamic Positioning system (DP). Smaller vessels will be used for the geophysical, metocean and ecological surveys in these areas. A rigid-hulled inflatable boat

(RHIB) type vessel will be used for geophysical works in shallow waters. In the intertidal zone land based drilling and excavators will be used for the investigations and surveys.

2.4 In-combination Impacts

There are a number of Foreshore Licence Applications for site investigation of wind farm areas and associated cable corridors with the Foreshore Unit of the Department of Housing, Local Government and Heritage at the moment. These are all at different stages of the consenting process, however the likelihood of there being temporal overlap cannot be overlooked. The possibility of in-combination impacts as a result of underwater noise is of particular concern.

Shipping activity in the area includes cargo vessels in transit to Dundalk, Warrenpoint and Drogheda, with lower densities of recreational, passenger and other vessels also present in the area. There is also significant activity from fishing vessels transiting to the Nephrops grounds in the West Irish Sea Mudbelt. The presence of another vessel in such a busy area will not result in significant in-combination effects.

Section 3 Screening Process

As the Consenting Authority for Foreshore Licensing and in line with Regulation 42.1 of the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) the Department carried out a screening for Appropriate Assessment for the Site Investigation surveys proposed by Oriel Windfarm Ltd. off the coast of Dundalk, County Louth[1].

3.1 Summary of the Screening process

The source-pathway-receptor method was used to assess the potential for likely significant effects (OPR 2021). The source was identified as elements of the proposed project that may effects ecological receptors. The ecological receptors were the Qualifying Interests or Special Conservation Interests in European sites within the Zone of Influence. The Zone of Influence is dependent on the species or habitat under consideration.

3.2 Identification of European sites likely to be affected

The Screening for Appropriate Assessment Report (10th March 2022) identified 15 SACs and 19 SPAs which were considered to be within the Zone of Influence of the proposed project. These Europeans sites, the Qualifying Interests or Special Conservation Interest, and the possible impact as result of the proposed project on these are given in Tables 1 and 2.

European Site	Qualifying Interest at risk	Possible Impacts
Dundalk Bay SAC IE000455	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]	Accidental hydrocarbon spillage
Carlingford Shore SAC IE002306	Annual vegetation of drift lines [1210]	Accidental hydrocarbon spillage
Lambay Island SAC IE000020	Halichoerus grypus (Grey Seal) [1364] Phoca vitulina (Harbour Seal) [1365]	Disturbance from underwater noise.
Roaringwater Bay & Islands SAC IE000101	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Blasket Islands SAC IE0002172	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Rockabill to Dalkey Island SAC IE0003000	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Strangford Lough SAC UK0016618	Phoca vitulina (Harbour Seal) [1365]	Disturbance from underwater noise.
Murlough SAC UK0016612	Phoca vitulina (Harbour Seal) [1365]	Disturbance from underwater noise.
Bristol Channel Approaches SAC UK003039	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.

[1] https://www.gov.ie/en/foreshore-notice/b8eb7-oriel-windfarm-limited-site-investigations-for-the-proposed-offshore-oriel-wind-farm/

North Anglesey Marine SAC UK0030398	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
West Wales Marine SAC UK0030397	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
North Channel SAC UK0030399	Phocoena phocoena (Harbour Porpoise) [1351]	Disturbance from underwater noise.
Cardigan Bay SAC UK0012712	Bottlenose dolphin [1349]	Disturbance from underwater noise.
Lleyn Peninsula and the Sarnau SAC UK0013117	Bottlenose dolphin [1349]	Disturbance from underwater noise.

Table 1 Possible impacts of the proposed project on the Qualifying Interests of Special Areas of Conservation within its Zone of Influence.

Site Name	Relevant qualifying interests	Pollution
Dundalk Bay SPA IE0004026	Common scoter	✓
	Red-breasted merganser	✓
	Great crested grebe	✓
Carlingford Lough SPA IE0004078	Light-bellied Brent Goose	✓
Carlingford Lough SPA UK9020161	Light-bellied Brent Goose	✓
	Sandwich Tern	✓
	Common Tern	✓

Table 2 Possible impacts of the proposed project on the Special Conservation Interest of Special Protection areas within its Zone of Influence.

3.5 Conservation Objectives of Europeans sites likely to be affected

Conservation objectives are intended to define as precisely as possible the desired state or degree of conservation to be reached in a particular site. The measures taken under the Habitats Directive are to ensure that the species and habitats listed in the Annexes achieve Favourable Conservation Status**.** The objective of the Birds Directive is formulated slightly differently but the ambition is the same.

Favourable Conservation Status of an Annex I habitat is achieved when its natural range, and area 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.

The Favourable Conservation Status of an Annex II species is achieved when the 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 bases. The conservation objectives for the SACs and qualifying interests which were screened in are presented in table 3.

Site Name and Qualifying Interest	Conservation Objective
Dundalk Bay SAC IE000455	
1130 Estuaries	To maintain the favourable conservation condition of Estuaries in Dundalk Bay SAC
1140 Mudflats & sandflats not covered by seawater at low tide	To maintain the favourable conservation condition of Mudflats & sandflats not covered by seawater at low tide in Dundalk Bay SAC
Carlingford Shore SAC IE002306	
1210 Annual vegetation of drift lines	To maintain the favourable conservation condition of Annual vegetation of drift lines in Carlingford Shore SAC
Lambay Island SAC IE000020	
1364 Grey Seal *Halichoerus grypus*	To restore the favourable conservation condition of Grey Seal *Halichoerus grypus* in Lambay Island SAC
1365 Harbour seal *Phoca vitulina*	To restore the favourable conservation condition of Harbour seal Phoca vitulina in Lambay Island SAC
Roaringwater Bay & Islands SAC IE000101, Blasket Islands SAC IE0002172, Rockabill to Dalkey Island SAC IE0003000	
1351 Harbour Porpoise *Phocoena phocoena*	To maintain the favourable conservation condition of Harbour Porpoise
River Boyne and River Blackwater SAC IE002299	
1106 Salmon *Salmo salar*	To restore the favourable conservation condition of Atlantic Salmon (Salmo salar) in River Boyne and River Blackwater SAC
Strangford Lough SAC UK0016618	
1365 Harbour seal *Phoca vitulina*	To maintain (or restore where appropriate the Harbour (Common) Seal to favourable conservation status
Murlough SAC UK0016612	
1365 Harbour seal *Phoca vitulina*	To maintain (or restore where appropriate the Harbour (Common) Seal to favourable conservation status
Bristol Channel Approaches SAC UK003039 North Anglesey Marine SAC UK0030398 West Wales Marine SAC UK0030397, North Channel SAC UK0030399	
1351 Harbour Porpoise *Phocoena phocoena*	To ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Harbour Porpoise in UK waters
Cardigan Bay SAC UK0012712, Lleyn Peninsula and the Sarnau SAC UK0013117	
1349 Bottlenose dolphin *Tursiops truncatus*	The conservation objectives seek to maintain (or restore) the habitat and species features, as a whole, at (or to) favourable conservation status (FCS) within the site. For the bottlenose dolphin populations should be increasing.

Table 3 The SACs and the conservation objectives of qualifying interests identified in the screening process. [For site specific conservation objectives see links in Section 7]

The conservation objectives for the SPAs and species of conservation interest which were screened in are presented in table 4.

Site Name	Special Conservation interest	SSCO
Dundalk Bay SPA IE0004026	Common scoter	To maintain the favourable conservation condition of Common Scoter in Dundalk Bay SPA
	Red-breasted merganser	To maintain the favourable conservation condition of Red-breasted Merganser in Dundalk Bay SPA
	Great crested grebe	To maintain the favourable conservation condition of Great Crested Grebe in Dundalk Bay SPA
Carlingford Lough SPA IE0004078	Light-bellied Brent Goose	To maintain the favourable conservation condition of Light-bellied Brent Goose in Carlingford Lough SPA
Carlingford Lough SPA UK9020161**	Light-bellied Brent Goose	To maintain each feature in favourable condition
	Sandwich Tern	
	Common Tern	

Table 4 The SPAs and the conservation objectives of qualifying interests identified in the screening process. **indicates draft conservation objectives

3.4 Pressures and threats to the Annex I habitats and Annex II species

The 2019 Article 17 report assessed the current Conservation Status of Annex I habitats and Annex II species. It also identified the main pressures and threats in reaching Favourable Conservation Status for these habitats (Table 5) and species (Table 6).

Annex I Habitat	Pressures	Threats	Conservation Status
1130 Estuaries	**F20** Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) **A28** Agricultural activities generation marine pollution (H) **G16** Marine aquaculture generating marine pollution (H) **I02** Other invasive alien species (other than species of Union concern) (H) **XU** Unknown pressure (M)	**F20** Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) **A28** Agricultural activities generation marine pollution (H) **G16** Marine aquaculture generating marine pollution (H) **I02** Other invasive alien species (other than species of Union concern) (H)	Inadequate Deteriorating
1140 Mudflats & sandflats not covered by seawater at low tide	**F20** Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) **A28** Agricultural activities generation marine pollution (H) **G16** Marine aquaculture generating marine pollution (H)	**F20** Residential or recreational activities and structures generating marine pollution (excl. marine macro- and micro- particular pollution (H) **A28** Agricultural activities generation marine pollution (H) **G16** Marine aquaculture generating marine pollution (H)	Inadequate Deteriorating
1210 Annual vegetation of drift lines	**F08** Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures (H) **C01** Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (M) **F01** Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (M) **F06** Development and maintenance of beach areas for tourism and recreation incl. beach nourishment and beach cleaning (M) F07 Sports, tourism and leisure activities (M)	**F08** Modification of coastline, estuary and coastal conditions for development, use and protection of residential, commercial, industrial and recreational infrastructure and areas (including sea defence or coast protection works and infrastructures (H) **C01** Extraction of minerals (e.g. rock, metal ores, gravel, sand, shell) (M) **F01** Conversion from other land uses to housing, settlement or recreational areas (excluding drainage and modification of coastline, estuary and coastal conditions) (M) **F06** Development and maintenance of beach areas for tourism and recreation incl. beach nourishment and beach cleaning (M) F07 Sports, tourism and leisure activities (M)	Inadequate Deteriorating

Table 5 Pressures and Threats and Conservation status of Annex I habitats as assessed for the 2019 Article 17 report.

Annex II Species			
1364 Grey Seal *Halichoerus grypus*	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	Favourable Improving
1365 Harbour seal *Phoca vitulina*	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	Favourable Stable
1351 Harbour Porpoise *Phocoena phocoena*	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	Favourable Stable
1349 Bottlenose dolphin *Tursiops truncatus*	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	**C09** Geotechnical surveying (M) **G01** Marine fish and shellfish harvesting (professional, recreational) causing reduction of species/prey populations and disturbance of species (M)	Favourable Stable

Table 6 Pressures and Threats and Conservation status of Annex II species as assessed for the 2019 Article 17 report.

Section 4 Stage 2 Appropriate Assessment

4.1 Assessment of Likely Significant Effects on European Sites

Following screening likely significant effects as a result of the proposed survey could not be ruled out as a result of underwater noise from geophysical surveys to Annex II marine mammals and from accidental hydrocarbon spillage on some seabirds and wintering birds and on Annex I habitats close to the Foreshore Licence Application Area (Table 7).

4.2 In-combination effects

There is the potential for in-combination effects with other site investigation surveys for offshore windfarms in this region, particularly in relation to underwater noise as a result of geophysical surveys.

4.3 Mitigation measures

The surveys will result in a marginal increase in levels of marine traffic and therefore could theoretically increase the risk of accidents and potentially spillage of marine diesel fuel. All vessels engaged in the surveys will operate in compliance with the regulations of the International Convention for the Prevention of Pollution from Ships (MARPOL). With the implementation in full of the measures outlined in section 3.4 of the Supporting information for the Stage 2 Appropriate Assessment the probability of a collision with another vessel is considered to be extremely low, such that diesel spillage and potential effects are not considered to be likely. No further mitigation is required.

Operators will be required to liaise with other stakeholders engaged in similar surveys, in particular geophysical surveys, to insure that there is no temporal overlap. Strict adherence to the DAHG (2014) guidance on manmade noise in the marine environment is recognised as good providence when conducting geophysical surveys. Adherence to this guidance and the appropriate scheduling of surveys ensures that no disturbance to Annex II marine mammal species will not occur.

4.4 Transboundary effects

No transboundary effects will result from this proposed project.

4.5 Appropriate Assessment conclusion

The applicant provided a Natura Impact Statement (NIS) which detailed the potential impact of the proposed project on relevant European sites and whether these impacts would adversely affect the integrity of the sites in light of their conservation objectives.

The screening process determined that likely significant impacts as a result of underwater noise from geophysical surveys on Annex II species of marine mammals from twelve SACs could not be rule out without mitigation. The possibility of significant impacts from accidental hydrocarbon spillage to two Annex I marine habitats at one SAC and a single coastal habitat at another was also recognised.

Mitigation measures were identified to ensure that any impacts on the Annex II species or the Annex I habitats would not occur. Therefore with adherence to these measures and in view of best scientific knowledge and of the sites' conservation objectives, the project, individually

or in combination with other plans or projects, will not have a significant effect on European sites.

Site name	Qualifying Interest	Consideration of potential impacts	Are mitigation measures required?	Residual Impacts?
Dundalk Bay SAC	Estuaries Mudflats & sandflats not covered by seawater at low tide	Deterioration of habitat quality due to accidental hydrocarbon spillage	No Relevant controls under MARPOL are in place	No
Carlingford Shore SAC	Annual vegetation of drift lines	Deterioration of habitat quality due to accidental hydrocarbon spillage	No Relevant controls under MARPOL are in place	No
Lambay Island SAC	Halichoerus grypus (Grey Seal) Phoca vitulina (Harbour Seal)	Disturbance from underwater noise.	Yes Strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Roaringwater Bay & Islands SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Blasket Islands SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Rockabill to Dalkey Island SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Strangford Lough SAC	Phoca vitulina (Harbour Seal)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Murlough SAC	Phoca vitulina (Harbour Seal)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Bristol Channel Approaches SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No

North Anglesey Marine SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
West Wales Marine SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
North Channel SAC	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Cardigan Bay SAC	Bottlenose dolphin	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Lleyn Peninsula and the Sarnau SAC	Bottlenose dolphin	Disturbance from underwater noise.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Dundalk Bay SPA	Common scoter, Red-breasted merganser, Great crested grebe	Disturbance from underwater noise and accidental hydrocarbon spillage.	Yes strict adherence to the DAHG 2014 Guidance to Manage the risk to marine mammals from man-made sound sources in Irish waters.	No
Carlingford Lough SPA	Light-bellied Brent Goose	Accidental hydrocarbon spillage	Relevant controls under MARPOL are in place	No
Carlingford Lough SPA	Light-bellied Brent Goose, Sandwich Tern, Common Tern	Accidental hydrocarbon spillage	Relevant controls under MARPOL are in place	No

Table 7 Potential impacts on sites screened in for Appropriate Assessment and relevant mitigation measures.

Prescribed Bodies' Observations	Oriel's Response
Marine Survey Office (MSO) have nil observations	Oriel notes the response of the Marine Survey Office
Inland Fisheries Ireland ***General*** Inland Fisheries Ireland's (IFI) brief includes conservation of relevant fish species. Of relevance in the present case are resident and migratory species traversing the coastline and entering into the Dundalk Bay area - including Atlantic salmon, sea trout, sea and river lamprey and European eel. Also, the Dundalk Bay area is within the spawning and nursery grounds of Atlantic Cod, Haddock, and within the nursery grounds of Herring, Mackerel and Horse Mackerel. The area is also within the distribution range of several marine mammal species including Bottlenose, Atlantic White-sided and Risso's Dolphins. ***Pollution and Oil Spill Mitigation*** The Dundalk Bay SAC and RAMSAR fall very close Zone of Influence (ZoI), as noted in the Stage 1 Appropriate Assessment (AA) screening report. This report concluded that most activities associated with the proposed survey would not result in any likely significant effects, however, in the case of pollution from oil Spillage, likely significant effects could not be definitively ruled out as such likelihood is uncertain. It was concluded that a Stage 2 Appropriate Assessment was required to further assess the risks and to identify mitigation measures. The Stage 2 Appropriate Assessment noted that if suggested mitigation measured were adhered to that these concerned would be ameliorated (Section 3.4 of Stage 2 AA Report). **Mitigation for Noise Impacts on Fish** IFI would point out that the mitigation measures and guidance of NPWS in regard to marine mammals are not transferrable to fish species. The fish remain invisible to any shore- or boat-based observer. Mitigation measures should aim to reduce the sound generated, in intensity and duration. The use of soft-start and ramp-up procedures for any sound-generating surveys	**Pollution and Oil Spill Mitigation** Oriel confirms that the mitigation measures described in section 3.4 of the report Supporting information for the Stage 2 Appropriate Assessment, will be implemented in full. Oriel notes that all vessels engaged in the surveys must operate in compliance with the regulations of the International Convention for the Prevention of Pollution from Ships (MARPOL). In this respect Annexes I, IV and V of the MARPOL convention, which contain the regulations for the prevention of pollution by oil, the prevention of pollution by sewage from ships and the prevention of pollution by garbage from ships, must be implemented by the vessel operators. **Mitigation for Noise Impacts on Fish** The potential impacts of the surveys on fish were addressed in Section 3.3 of the report Supporting information for the Stage 1 Screening for Appropriate Assessment and in Section 8.2.3 of the Non-statutory Environmental Report, which concluded that, following implementation of the mitigation measures proposed, no likely significant effects on fish and shellfish are expected. Oriel confirms that soft-start and ramp-up procedures will be followed for any sound-generating surveys undertaken – both on a day-to-day basis and on re-start after any stoppages within any day. **Potential Impacts on Resident and Migratory Fish** The potential impacts of the surveys on fish were addressed in Section 3.3 of the report Supporting information for the Stage 1 Screening for Appropriate Assessment and in Section 8.2.3 of the Non-statutory Environmental Report, which concluded that, following implementation of the mitigation measures proposed, no likely significant effects on fish and shellfish are expected. Oriel confirms that the mitigation measures described in section 3.4 of the report

undertaken – both on a day-to-day basis and on re-start after any stoppages within any day should be undertaken. This measure should be a condition of the foreshore licence. The comments of IFI in this regard relate to fish species of conservation significance and of leisure angling significance all of which constitute part of IFI's brief. ***Potential Impacts on Resident and Migratory Fish*** Special consideration may need to be paid to resident and migratory fish species which could be passing through the area and potentially effected by sound and vibration effects introduced into the water column due to works. Also, the introduction of noise and vibration effects due to surveying and the release of suspended solids, chemicals, oils and other pollutants into the water column due to surveying would have to be mitigated against. This was the reasoning for a Stage 2 AA Report to be carried out, as the Stage 1 report could not state that the potential for oil spillage and pollution effects were mitigated against. However, should the suggested mitigation measures in Section 3.4 of the Stage 2 AA Report be adhered to within the timeframe of the proposed surveys, these issues should have a far less likely possibility of occurrence. ***Impacts on Fish Spawning*** The fish species listed in Table 1 should be considered. The downstream (seaward) spawning migrations of the European Eel for example, occur in the autumn to spring months (starting as early as August in some catchments) and may intersect with the proposed work timeline. This could interfere with the natural migration of the eel. In a marine context, the timing of the proposed surveying should be examined in regard to the spawning time and spawning area of commercially important fish species. Input from the Sea Fisheries Protection Authority (SFPA) should be sought here. Species of note would be sharks, such as tope and smoothhound. The ecological survey includes the use of sondes for fish and shellfish. It is not clear what kind of information will be gathered with this	Supporting information for the Stage 2 Appropriate Assessment, will be implemented in full. **Impacts on Fish Spawning** The purpose of the ecological surveys, which will be included in the site investigation, is to obtain up-to- date environmental data to enable the preparation of an Environmental Impact Assessment Report and a Natura Impact Statement for the wind farm development consent application. The potential impacts of the surveys on fish were addressed in Section 3.3 of the report Supporting information for the Stage 1 Screening for Appropriate Assessment and in Section 8.2.3 of the Non-statutory Environmental Report, which concluded that, following implementation of the mitigation measures proposed, no likely significant effects on fish and shellfish are expected. **Guidelines on Protection of Fisheries during Construction Work in and Adjacent to Waters (IFI 2006)** Oriel confirms that the site investigation will be undertaken in compliance with all relevant measures in the IFI guidance.

method. Important that any method tries to capture the use of this area by migratory fish species including but not limited to salmon, lamprey and eels.

Fish Species	EU Status	Life Stage	Timing in Harbour
Atlantic Salmon	Habitats – Annex II	Adult upstream migration	All times of year: "spring" fish; grilse run in June - July
		Smolt downstream run	March - June
River Lamprey	Habitats – Annex II	Upstream Adult spawning migration	Autumn - Winter
		Seaward migration of young adults	Autumn - Winter
European Eel	EU Eel Action Plan	Upstream migration of elvers	Winter - Spring
		Downstream of adult fish	Autumn - Spring

Guidelines on Protection of Fisheries during Construction Work in and Adjacent to Waters

Finally, IFI refers to its guidance in relation to construction works adjacent to water (IFI, 2006) and would require that all relevant measures specified therein should be adhered to. The document covers a range of issues including management of materials hazardous to the aquatic environment such as cements, grouting, oils, fuels and other chemicals, along with management of suspended solids and excavated materials. IFI proposes that compliance with this document should be a condition of foreshore permission.

IFI (2006) Guidelines on protection of fisheries during construction work in and adjacent to waters. Inland Fisheries Ireland. https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf	
National Parks & Wildlife Service Applying the precautionary principle and noting that "there is potential for some behavioural disturbance of cetaceans in response to survey vessel noise" and that the area of potential disturbance will be highly localised i.e. within a few hundred metres radius. NPWS would suggest that application of "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters" for works that would occur in applicable geographical areas is appropriate and consistent with other licensing of this nature in the Foreshore.	Oriel notes the observations of National Parks and Wildlife Service. As outlined in Section 7.2.2 of the Non-Statutory Environmental Report, which accompanied the application, Oriel confirms that the best practice guidelines, "Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters" (DAHG 2014), will be implemented for the geophysical surveys and a qualified and experienced marine mammal observer (MMO) will be employed aboard the survey vessels during all multibeam, single beam, side-scan sonar and sub-bottom profiling.
Louth County Council In relation to above, the Planning Section, Louth County Council, has no specific comments in respect of the foreshore licence application, which is to facilitate detailed geotechnical and geophysical investigations, ecological surveys and metocean surveys, 22km off the coast of Dundalk. The planning authority will rely on the Department to consider potential effects on European Sites at this location and their in-combination effects on the European Sites in view of their conservation objectives and also any protected species as provided for in the Habitats Directive. The Department should also note that the Louth County Development Plan 2021-2027 is now in effect and Chapter 11 deals with the Environment, Natural Resources and The Coast.	Oriel notes the observation of Louth County Council. A Natura Impact Statement (NIS), "Foreshore Licence Application for Site Investigations for Oriel Wind Farm, off Co. Louth Supporting Information for the Stage 2 Appropriate Assessment", was submitted with the licence application. The conclusion of the Natura Impact Statement was as follows: *"This NIS has examined and analysed, using the best scientific knowledge, the potential impact sources and pathways, how these could impact on the sites' Qualifying Interests and whether the predicted impacts would adversely affect the integrity of the European sites. Mitigation measures are identified (see Section 3.4) to ensure that any impacts on the conservation objectives of the European sites will be avoided during the proposed site investigations such that there will be no risk of adverse effects to them."*
Marine Institute Oriel Windfarm Ltd submitted a foreshore application for site investigation works to be carried out in a defined area off the Co. Louth coast and along cable route corridors towards the coastline south of Dunany Point, Co. Louth. In addition to the application form and a number of charts and maps the applicants submitted a number other documents including, inter alia:	Oriel notes the Marine Institute's observations. Oriel refers to Section 3.3 of the NIS, which addressed potential in-combination effects. The effects considered included other potential geophysical/geotechnical surveys which might be carried out in the area. The conclusion of the in-combination effects assessment, in relation to other geophysical/geotechnical surveys, was as follows:

FS007383 Foreshore Licence Application for Marine Survey: Supporting Information FS007383 Foreshore Licence Application: Non-Statutory Environmental Report FS007383 Foreshore Licence Application: Supporting information for the Stage 1 Screening for Appropriate Assessment FS007383 Foreshore Licence Application: Supporting information for the Stage 2 Appropriate Assessment The overall aim of the site investigations is to collect the necessary data and information required to inform the engineering and detailed design of the cable route and proposed windfarm areas as well as identifying the wider ecological characteristics of the foreshore licence area. It is noted the installation of a windfarm and associated infrastructure in the area in the future would be the subject of a separate Foreshore Lease / Licence application and is not the subject of this current application. • A number of geophysical methodologies are proposed, including following acoustic-based techniques: • Multibeam Echosounder (MBES) system for detailed bathymetric mapping; Side Scan Sonar for detailed seabed morphology and seafloor mapping; Magnetometer for detecting geomorphological anomalies and ferrous obstructions; • Sub-bottom Profiling (SBP), both single and multi-sourcings, to identify and characterise the layers of sediment/rock underneath the seafloor along the cable route corridor; • Ultra-high-resolution multi-channel seismic (UHRS) to identify and characterise the layers of sediment/rock underneath the seafloor within the windfarm site. • Intertidal geophysical surveys including seismic, electrical resistivity and electromagnetic methods. Up to 10 static acoustic monitoring devices (SAM)	*"There is the potential for works associated with site investigations at Cooley Point, Braymore Point, Clogher Head and the North Irish Sea Array to take place within the schedule of works for this application, for example, as the licences granted provide a five year period within which to complete the works. In view of the similarity of the nature of the works between these applications, and the potential for in-combination effects, particular in relation to underwater noise, Oriel will maintain awareness of the scheduling associated with these other licences, and engage with the licence holders, as required.* ***However, in view of the low sound power levels of the acoustic equipment used in such surveys, which are spatially discrete, and of short duration, it is concluded that such surveys will not result in likely significant in-combination effects."*** (emphasis added)

In addition, a number of geotechnical and ecological surveys are also proposed comprising the following methodologies: • Metocean Survey • Boreholes • Vibrocoring/Gravity Coring • Static Acoustic Monitoring of Cetaceans (CPODs) • Water Quality Sondes • Benthic and intertidal video, grabs and cores • Fish and shellfish GPS Tracking The proposed site investigation methods are relatively standard and have been used in similar investigations in Irish waters and internationally. It is intended that the proposed survey works would be phased over a period of 3 years following award of licence and specific survey scope will range from 4 weeks to 2 years in duration. There are no licenced aquaculture sites within the proposed site investigation area on the Foreshore and therefore impacts on aquaculture are not considered likely. There is commercial fishing activity within the proposed site investigation area on the Foreshore and therefore, some interaction with fishing activity may occur. Notwithstanding this, it is noted that the applicant has appointed a Fisheries Liaison Officer who will engage with the fishing community and fisheries organisation in the area during investigations. The AA Screening and the subsequent NIS identifies a number of risks to conservation features (e.g., Natura sites) likely to result from the proposed activity. As mitigation, a number of actions are suggested that should reduce the risk. Among these is the use of marine mammal observers (MMO) during operations including a 'soft start' protocol, notwithstanding the conclusion that impact on marine mammals was not considered sufficient to warrant consideration under Stage 2 (AA). The MI is satisfied that such measures will mitigate any risk to marine mammals in the immediate area during the site	

investigations. However, it is advised that DHLGH identify any similar geophysical/geotechnical surveys that might be carried out along the eastern seaboard and ensure that they not coincide with this survey in order to avoid potential cumulative displacement effects.	
Department of Agriculture, Food and the Marine Please include the following condition in any site investigation licence that issues:- Should a pollution incident occur, the applicant must contact SFPA Howth immediately so protective measure can be put in place to avoid potentially contaminated shellfish being placed on the market or food chain. The contact details are sfpahowth@sfpa.ie and direct contact is be made to both shellfish managers for the area, Declan Mac Gabhann 0879294673 and Philip West 085870 8312. ***Aquaculture and Fisheries*** Please note the comments of this Department's Engineering Division and also BIM :- • It is noted by the Department's Engineering Division, that there are increasing numbers of proposals for the Irish Sea and that as with those applications, appropriate monitoring and measures and best practice must be followed during the to ensure that the proposed survey works do not cause any direct or cumulative negative impacts on environmental sites, aquaculture and fishery harbour operations. • Aquaculture clients of BIM are considering new offshore licences near Cooley Point which is closer to the Wind Farm investigation zone and this application could affect these going forward. • From an inshore fisheries perspective there is substantial fishing effort for lobster, crab and razor clams in the area outlined for site investigation in this application. The potential impact of the survey methods on these species must be taken account by Oriel Windfarm Ltd. BIM if aware of engagement by the applicant with a newly formed potting group, representing 13 vessels but we would suggest that the applicant engage and keep all fishers, aquaculture establishments, the	Oriel notes the condition proposed by the Department and confirms that it will ensure that it and its contractors will comply with this requirement. Oriel notes that mitigation measures to ensure that there are no direct or cumulative impacts on Natura 2000 sites are described in Section 3.4 of the NIS, which accompanied the licence application. The assessment of in-combination effects on Natura 2000 environmental sites, in Section 3.3 of the NIS, concluded that the other proposed surveys and shipping in the area were not likely to result in significant in-combination effects. The Non-statutory Environmental Report, which accompanied the licence application, in Section 5.6.1.4 noted that there are no aquaculture sites in the survey area. The nearest licensed aquaculture sites are in Carlingford Lough. However, Oriel will check the register of licensed aquaculture sites, on the government website Aquaculture Sites - Datasets - data.gov.ie before the site investigations commence. If new sites are licensed in the area of the site investigation, Oriel will liaise with the operator. The Non-statutory Environmental Report addressed the potential impacts of the proposed site investigation on commercial fishing, in Section 6.1.1. The mitigation measures proposed to minimise impacts on commercial fishing were described in Section 7.1.1. These include: • Oriel has appointed a fisheries liaison officer, who engages with all relevant fishing organisations and holds meetings with the local fishing community to provide details of planned surveys, gather information on existing fishing activity in the area and determine the potential for interaction. Appropriate actions will be taken to avoid or minimise interactions with ongoing fishing activities in the area during the course of the surveys.

NE Regional Inshore Fisheries Forum (RIFF) and the Carlingford Lough Co-ordinated Local Aquaculture Management Systems Group (CLAMS) informed of their activities on an on-going basis.	• The Sea Fisheries Protection Authority (SFPA) will be notified in advance of works so that small local fishing vessels can be informed of the works. • Information regarding survey works will be communicated via Marine Notices, Radio Navigational Warnings, NAVTEX, and/or broadcast warnings in advance of and during survey works. • Information will also be circulated to local ports, harbours and marinas in the area. The notices will include a description of the work being carried out. The conclusion of the assessment of the impact on commercial fishing, in Section 8.1.1, was: *"Following implementation of the mitigation measures proposed and given the scale and duration of the proposed survey works, as well as presence of extensive alternative fishing grounds available in the wider area, the effect on commercial fisheries will be confined to a small portion of the survey area at any one time and is expected to be negative, temporary, in the case of the survey vessels, short term in the case of the static equipment, and not significant."*
Department of Housing, Local Government & Heritage – Marine Advisor ***Project overview*** Oriel Windfarm Ltd have made a Foreshore Licence application to undertake detailed geotechnical, geophysical, ecological and metocean surveys, to enable detailed design of foundations and the detailed routing of the inter array and export cables associated with a proposed Offshore Windfarm. The Investigation works will also characterise the layers of sediment/rock underneath the seafloor, and to achieve a detailed seabed morphology and seafloor mapping. Oriel has applied for a licence with a duration of 36 month. It should be noted	Oriel notes the observation of the Marine Advisor. Oriel notes the conditions proposed by the Marine Advisor and confirms that it will ensure that it and its contractors will comply with the requirements.

that this application if for the Site Investigation only and not the proposed Offshore Windfarm. ***Brief description of works*** The Foreshore licence application area comprises the Oriel offshore wind farm area and the offshore cable corridor. The offshore wind farm area is located off the coast of County Louth to the east of Dundalk Bay, approximately 22km east of Dundalk, 18km east of Blackrock, 5km south of the Cooley Peninsula and 10km north-east of Dunany Point. The offshore wind farm area covers approximately 27.8km2 and is broadly hexagonal in shape with a length of approximately 5.3km west to east and 6.7 km north to south. The offshore cable corridor is approximately 11km in length and covers an area of approximately 25km2. The corridor is approximately 4km at its widest point, southwest of the offshore wind farm area, and narrows to approximately 1km at its narrowest point, just before landfall 700m south of Dunany Point. The site investigations will include: • Geophysical survey • Geotechnical and sediment sampling • Environmental/ecological surveys and sampling • Oceanographic and meteorological survey • Further information on techniques and equipment of the SI are included in the Application Form and supporting documentation. The duration is anticipated to be in the order of 36 month, subject to an appropriate weather window. No interaction with other foreshore users is anticipated. Ove Arup & Partners Ireland Ltd are responsible for designing the works in accordance with the relevant standards and codes. ***Coastal Processes*** The proposed site investigation works will have no impact on the existing coastal processes. All foreshore is presumed state owned unless proven otherwise. In this case there are no known established claims of private ownership of the foreshore at this location. Subject to no claims of private	

ownership arising out of the application and public consultation process, the foreshore the subject of this application is state owned. Section 3 of the Foreshore Act applies for the proposed site investigation. The licence area for the proposed works is shown outlined on the following map submitted by the applicant: • Map No: FL001 Rev F1 Date 2021-11-07 and entitled 'Foreshore Licence Map' The proposed area of foreshore associated with the works is 53.002km². The site investigation will have no permanent impact on other legitimate users or existing access arrangements. The applicant shall use that part of the foreshore, the subject matter of the application for the purposes as outlined in the application and for no other purposes whatsoever. Where relevant the foreshore and adjacent seashore area shall be restored to its natural state on completion of the works to the satisfaction of the Department of Housing, Local Government and Heritage. ***Public Interest*** Section 2 and 3 of the 1933 Foreshore Act, as amended, states that a lease or licence of state foreshore may be granted "If, in the opinion of the Minister, it is in the public interest". As foreshore is a finite and valuable national resource and public amenity, it is important that each plan and project is fully assessed to ensure, that if consented to, it is a sustainable and proper use of that finite and valuable resource. Having considered and assessed the relevant issues associated with the proposed site investigation, while taking note that the state owned foreshore is finite resource which must be utilised sustainably, I am satisfied that the proposed works are in the Public Interest. ***National Marine Planning Framework (NMPF)*** The National Marine Planning Framework (NMPF) is a national plan for Ireland's marine area including the Foreshore. It sets out, over a 20-year horizon, how we want to use, protect and enjoy our marine area. The NMPF sits at the top of the hierarchy of plans and sectoral policies for the marine area and provides a coherent framework in which those sectoral policies and objectives can be realised. All decisions on individual applications determined under the	

Foreshore Act, must secure and be consistent with the objectives of the plan, similar to the way that terrestrial plans form part of the decision-making tool-kit in the on-land planning process. NMPF objectives are supported by specific policies that articulate factors that can form part of objective consideration. Having reviewed and assessed the information on file for this application to conduct an ORE Site Investigation against the objectives of the NMPF, I am satisfied the proposed works do not act significantly against any objective within the NMPF. Furthermore, the project is aligned and secures key sectoral/activity objectives including Energy – Offshore Renewable. Of particular relevance is ORE Policy 2 as this application relates to a 'Relevant Project' as designated under the Transition Protocol. Accordingly, I am satisfied that the ORE Site Investigation is aligned with and secures the objectives set out in the NMPF. ***Conclusion/Recommendation*** I have no objection to the granting of a Foreshore Licence subject to the following conditions: 1. The Licensee shall use that part of the foreshore, the subject matter of this licence for the purposes as outlined in the application and for no other purposes whatsoever. 2. The works shall be located as outlined on Map No: Map No: FL001 Rev F1 Date 2021-11-07 and entitled 'Foreshore Licence Map'. 3. The Licensee shall notify the Department of Housing, Local Government and Heritage at least 14 days in advance of the commencement of any works on the foreshore. 4. During the course of the works the Licensee shall ensure that existing public access arrangements are maintained, where possible, and all necessary precautions are put in place to protect the public in accordance with relevant Health and Safety Legislation.	

5. At the end of each phase and/or calendar year, the Licensee shall inform the Department of the work completed to date and the works planned for the coming year. 6. The Licensee shall submit, to the Department, the 'as deployed' location for all monitoring devices. 7. On completion of the site investigation the Licensee shall ensure that all equipment and materials are removed and the foreshore is reinstated to its natural condition to the satisfaction of the Department of Housing, Local Government and Heritage. 8. The Licensee shall ensure that contractors, and their subcontractors, are made aware of all conditions and project specific requirements and they are required to have briefings on these to ensure all parties are fully aware of these requirements.	
Department of Housing, Local Government & Heritage – Marine Advisor - Environment ***General*** The offshore wind farm area is located off the coast of County Louth to the east of Dundalk Bay, approximately 22km east of Dundalk. While the site is not within a European site a number of them are within the Zone of Influence of the site investigation works. Two, Dundalk Bay SAC [IE000455] and Dundalk Bay SPA [IE004026] are in close proximity to the works. These sites are of importance for their coastal habitats and extensive sandflats and mudflats. This latter habitat hosts wintering waterfowl while the outer Dundalk Bay provides excellent shallow-water feeding ground for divers, grebes and sea duck. ***Assessment Process*** The Minister for Housing, Local Government and Heritage, is responsible for carrying out environmental screening and any environmental assessments determined as being required following screening, in accordance with the requirements set out in Directive 92/43/EEC (Habitats Directive), Directive	Oriel notes the observation of the Marine Advisor – Environmental.

2009/147/EC (Birds Directive) and Directive 2011/92/EU, as amended by Directive 2014/52/EU (EIA Directive), in respect of applications under the Foreshore Act 1933, as amended. Outside of the Directives, the Minister is also required to consider environmental issues in respect of applications under the Foreshore Act 1933, as amended. ***Habitats Directive*** The Appropriate Assessment process (AA) is an assessment of the potential for adverse or negative effects of a plan or project, in combination with other plans or projects, on the conservation objectives of a European Site (Natura 2000 site). The focus of AA is targeted specifically on Natura 2000 sites and their conservation objectives. Article 6(3) and 6(4) of the Habitats Directive place strict legal obligations on Member States to regulate the conditions under which development that has the potential to impact on European Sites can be proceed. It requires that an Appropriate Assessment be carried out of plans or projects, not directly connected with or necessary to the management of a site as a European Site, but which are likely to have a significant effect thereon, either individually or in combination with other plans or projects. An AA Screening assessment is carried out to determine whether a plan or project is likely to have a significant effect on a European Site. • *Article 6.3 states that: "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."* • *Article 6.4 states: "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 a 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 the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."* In giving effect to the above as a matter of Irish law, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011, as amended) (**Birds and Natural Habitats Regulations**) provide as follows:- Regulation 42(1) of the Birds and Natural Habitats Regulations states that: *"A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site".* Regulation 42(2) provides that: *"A public authority shall carry out screening for Appropriate Assessment under paragraph (1) before consenting for a plan or project is given, or a decision to undertake or adopt a plan or project is taken".* The Birds and Natural Habitats Regulations further provide as follows at Regulation 42 (6) and 42 (7):- 6. *The public authority shall determine that an Appropriate Assessment of a plan or project is required where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it cannot be excluded, on the basis of objective scientific*	

information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site. 7. *The public authority shall determine that an Appropriate Assessment of a plan or project is not required where the plan or project is not directly connected with or necessary to the management of the site as a European Site and if it can be excluded on the basis of objective scientific information following screening under this Regulation, that the plan or project, individually or in combination with other plans or projects, will have a significant effect on a European site.* Furthermore, under section 42A (13) of S.I. No. 293 of 2021 an Appropriate Assessment, including the specified public consultation, must be carried out before the public authority makes a decision to undertake or adopt the proposed plan or project. ***Risk Assessment for Annex IV Species*** Outside of designated Natura 2000 sites, the waters around Ireland's coast are a suitable habitat for a number of species listed under Annex IV of the Habitats Directive (92/43/EEC). Article 12 of the Habitats Directive affords strict protection to those species listed in Annex IV of the Directive wherever they occur. Where necessary a Risk Assessment for adverse effects of the proposed works on Annex IV species must be undertaken and a report produced. This assessment is separate to that undertaken under Article 6.3. The purpose of the Risk Assessment is to examine the possibility that the proposed project, either individually or in combination with other plans and projects, may result in the deliberate disturbance or destruction of any of the species listed in Annex IV which may be present in the works area. The Risk Assessment should take into account the status (e.g. as indicated in the latest Article 17 reporting for Ireland, NPWS 2019) and sensitivities of relevant Annex IV species to potential impacts associated with the proposed project. The **Risk Assessment for Annex IV Species** should be precise, with definite findings, mitigation and conclusions removing all reasonable scientific doubt as to the effects of the proposed project on any Annex IV species.	

EIA Directive In Ireland, in accordance with Directive 2011/92/EU, as amended by Directive 2014/52/EU (hereafter, the EIA Directive), projects that are likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location must be subject to an EIA. Article 4 of the EIA Directive requires that projects listed under Annex I must always have an EIA while projects listed under Annex II shall be subject to an EIA if (i) determined on a case-by-case basis or (ii) they exceed certain thresholds set by each Member State. Thresholds have been set for Annex II projects in Irish legislation. Projects which do not meet the threshold may still require an EIA if the project is likely to have significant effects on the environment. Annex I and Annex II projects have been transposed into Section 5 (Parts 1 and 2) of the Planning and Development Regulations 2001, as amended. Section 13A(1)(b)(i) of The Foreshore Act 1933, as amended, requires that an EIA be carried out for all developments of a class specified in Part 1 or Part 2 of Schedule 5 of the Planning and Development Regulations where the development exceeds the relevant quantity, area or other limit specified in that Part, or where no quantity, area or other limit is specified. Section 13A(1)(b)(ii) of the Foreshore Act states that an EIA shall be carried out when a development is of a class specified in Part 2 of Schedule 5, but does not exceed the relevant threshold (i.e. sub-threshold) and the Minister determines that the proposed development would be likely to have significant effects on the environment. Therefore, it is necessary to examine such projects on a case-by case basis. In the case of Annex II projects that are determined on a case-by-case basis, or sub-threshold, an EIA screening is required to determine if the project will have significant effects on the environment. Under Article 4(4) the developer (applicant) is required to submit information on the characteristics of the project and its likely significant effects on the environment. The developer may also provide a description of any features of the project and/or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment. Subsequently, in accordance with Article	

4(5), the Minister is required to make a determination, which shall be made public, that: 1. Where it is decided that an EIA is required, states the main reasons for requiring such assessment with reference to the relevant criteria listed in Annex III (Schedule 7 of the Planning & Development Regulations 2001) of the EIA Directive; or 2. Where it is decided that an EIA is not required, states the main reasons for not requiring such assessment with reference to the relevant criteria listed in Annex III of the EIA Directive, and, where proposed by the developer, states any features of the project and/or measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment. ***Non-statutory Environmental Report*** Where projects do not fall under a class that require an EIA or an EIA Screening, and in-keeping with good governance, a Non-statutory Environmental Report assessing the environmental effects of the proposed works on the receiving environment is required. This report will document the current state of the environment in the vicinity of the proposed activity in order to quantify the effects, if any on the environment, and if applicable to highlight how mitigation will be implemented to minimise impacts on the environment. The EPA Guidelines on the *Information to be contained in Environmental Impact Assessment Reports* (2017) indicates the relevant topics to be covered in this report. ***Independent Environmental Consultants (IEC)*** Owing to the scale and complexity of the environmental assessment required, and taking account of the available resources within the Department, I recommend that Foreshore Section of DHLGH engage a suitable qualified IEC. The IEC must conduct an independent assessment of the information provided by the Applicant, having regard to the Habitats Directive, the Birds Directive, the Birds and Natural Habitats Regulations, the EIA Directive, Non-statutory Environmental Reports and relevant jurisprudence of the EU and Irish courts.	

The IEC shall ensure that the Minister has all the environmental assessments required to allow them to make decisions on applications under The Foreshore Act 1933, as amended in accordance with the requirements set out in Directive 92/43/EEC (**Habitats Directive**), Directive 2009/147/EC (**Birds Directive**) and Directive 2011/92/EU, as amended by Directive 2014/52/EU (**EIA Directive**). ***Conclusion/Recommendation*** In principle I have no objections to this application. On completion of the Second Consultation and the work of the IEC, I will furnish my final report with determinations, which may include any case specific conditions will follow having regard to the information obtained during public participation.	
Public Submissions	**Oriel's Response**
Irish Whale and Dolphin Group ***General*** The Irish Whale and Dolphin Group (IWDG) was established in December 1990 and is an All-Ireland group "dedicated to the conservation and better understanding of cetaceans (whales, dolphins and porpoises) in Irish waters through study, education and interpretation". While the IWDG is primarily concerned with cetaceans we have broadened our comments to include all marine mammals. IWDG welcomes the opportunity to comment on this foreshore licence. ***Ultra High Resolution Seismic (UHRS)*** Page 9- UHRS does not consider the use of airguns with lower frequency output. Furthermore the parameters given for boomers and sparkers do not cover the Applied Acoustics Squid 500/2000 and the Applied Acoustics S-Boom with a source level of 222dB. Nor does it cover the Huntec boomer with frequencies of 0.5 to 8 kHz. The exact impact of higher frequency sources remains largely unknown. ***Ultra Short Baseline (USBL) and Multibeam Systems*** Page 9- USBL. Most Kongsberg systems use frequencies between 21 and 31 kHz (see https://www.kongsberg.com/maritime/products/Acoustics-Positioning-and- Communication/acoustic-positioning-systems/hipap-models/). The	Oriel notes the submission of the Irish Whale and Dolphin Group. ***Ultra High Resolution Seismic (UHRS)*** Oriel confirms that an Airgun will not be used. Currently, the preferred geophysical survey contractor has proposed to use a GSO 180 Sparker with dominant frequencies listed as between 400 - 1800 Hz and 200-1000 joules energy. Specification sheets can be shared. Sparker sub-bottom profilers (SBPs) generate sounds of similar characteristics to airguns, and therefore the evidence of effects relating to airguns can be applied to these sources with more confidence than others. While larger sparker SBPs operated at high energy may result in comparable source levels to a mini airgun, sparker SBPs generate energy at lower amplitudes than even small airgun arrays and consequently potential effects on marine species can be expected to be proportionally lower. Work to quantify the emitted sound fields from sparker SBPs is ongoing, but initial results support the assumption of a reduced potential of effects on marine mammals (Halvorsen & Heaney 2018, cited in the AA Screening document.). ***Ultra Short Baseline (USBL) and Multibeam Systems*** Oriel confirms that the typical frequencies of the USBL will be 19 to 34 kHz. This revision in frequency range is not considered to affect the conclusions of the assessment made in respect of effect on marine fauna. For the Sonardyne Type 8370-1111 beacon the source level under battery power is given as 184dB re.

Sonardyne Wideband Sub-Mini 6 Plus (WSM6+) and Sonardyne Type 8300 Compatt 6 operate and from 19 to 34 kHz (see:https://www.sonardyne.com/wpcontent/uploads/2021/06/Sonardyne_8370_WSM6-1.pdf and https://www.strsubsea.com/uploads/Sonardyne-8300-3111-Compatt-6.pdf) Therefore the stated frequencies of typical frequencies of 20 to 40 kHz should reflect the real numbers and the examples given of 19 to 34 kHz. Page 35 Table 4.4. USBL source level should be considered to have a maximum source level of 206 dB re 1µPa@1m and not 200dB. See page 53 Kongsberg (2016) Product Description. Boomer or sparker comments as for page 9. Multi-beam systems lower than 70 kHz should not be allowed on surveys as these use higher source levels and may need appropriate review before used. ***High Resolution Geophysical Surveys*** Page 18. Suggests that disturbance of from HRGS (High Resolution Geophysical Surveys) would be limited to a few hundred metres from source for marine mammals. This is not what is suggested by a review document published by the JNCC (2020) which suggests a zone of disturbance of 5km. ***Low Frequency Baleen Whales*** Page 38 Table 4.3. Low Frequency baleen whales (Southall et al, 2019) should be included inconsideration of functional hearing groups as minke or humpback whales may be present in the site area. ***Mitigation Measures*** The document does not mention mitigation measures that will be employed during geophysical and geotechnical surveys. This is not compliant with requirements by the NPWS and DAHG (2014) guidelines. As the assessment does not mention any mitigation measures that will be applied it should not proceed currently. The assessment should recognize the requirement for mitigation measures in the surveys suggested and must be included in the assessment.	1µPa@1m which is less than the source level given and assessed in the AA Screening (~200dB re 1µPa@1m (peak)). Oriel confirms that the currently proposed multibeam system uses 400-700kHz, not the frequency range quoted in application (70-100kHz). Lower frequency "high power" MBES systems typically have source levels approximately 10dB higher than systems operating at >100kHz (Hildebrand, 2005). Hildebrand, J. A. (2005). Impacts of anthropogenic sound. In: Reynolds JE, Perrin WF, Reeves RR, Montgomery S, Ragen TJ (eds) *Marine mammal research: conservation beyond crisis*. Baltimore: Johns Hopkins University Press pp 101-124. ***High Resolution Geophysical Surveys*** Various JNCC reports (e.g. 2020, 2021) repeat recommended effective deterrence ranges (EDRs) for harbour porpoises from noise from a range of activities. These are considered very conservative and do not necessarily reflect the latest evidence; for example, piling has a 26km EDR which was questioned by Graham et al. (2109) and Benhemma-Le Gall et al. (2021). For HRGS, the JNCC reports recommend a 5km EDR in relation to the porpoise features of Special Areas of Conservation; this too does not correspond to the evidence presented by Halvorsen & Heaney (2018), cited and reflected in the AA Screening document. Benhemma-Le Gall, A., Graham, I. M., Merchant, N. D. and Thompson, P. M. (2021). Broad-Scale Responses of Harbor Porpoises to Pile-Driving and Vessel Activities During Offshore Windfarm Construction. Front. Mar. Sci. 8: 664724 doi: 10.3389/fmars.2021.664724 Graham, I. M., Merchant, N. D., Farcas, A., Barton, T. R., Cheney, B., Bono, S., and Thompson, P. M. (2019). Harbour porpoise responses to pile-driving diminish over time. R. Soc. open sci. 6, 190335. http://dx.doi.org/10.1098/rsos.190335 JNCC (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). JNCC Report No. 654, Joint Nature Conservation Committee, Peterborough, ISSN 0963-8091. https://data.jncc.gov.uk/data/2e60a9a0-4366-4971-9327-2bc409e09784/JNCC-Report-654-FINAL-WEB.pdf

	JNCC (2021). Impulsive noise in the Southern North Sea SAC (2015 to 2020). Joint Nature Conservation Committee final report to Defra. http://sciencesearch.defra.gov.uk/Document.aspx?Document=15220_JNCC2021_NoiseHpSACs_JNCC-Final.pdf ***Low Frequency Baleen Whales*** Table 4.3 provides details of the relevant marine mammals (i.e., those which are qualifying interests of relevant sites) and auditory injury criteria to impulsive and non-impulsive noise by functional hearing group. No sites for baleen whales are within the zone of influence for the survey and thus they were not included in this table. However, baleen whales are considered in the assessment and their auditory injury criteria are included in Table 6.2. ***Mitigation Measures*** The mitigation measures to be implemented for marine mammals are described in Section 7.2.2 of the Non-statutory Environmental Report. Oriel confirms that the best practice guidelines "*Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters"* (DAHG 2014) will be implemented in full for the geophysical surveys and a qualified and experienced marine mammal observer employed aboard for the geophysical surveys and a qualified and experienced marine mammal observer (MMO) will be employed aboard the survey vessels during all multibeam, single beam, side-scan sonar and sub-bottom profiling. The European Court of Justice has ruled, "in order to determine whether it is necessary to carryout, subsequently, an appropriate assessment 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" (Case C-323/17). Consequently, mitigation measures must not be included in Appropriate Assessment screening. This is the reason why there is no reference to compliance with the DAHG 2014 guidance in the report Supporting information for the Stage 1 Screening for Appropriate Assessment, which was submitted with the licence application.

6 References

European Commission 2021 Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Available at:
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021XC1028(02)&from=EN

European Commission (2019) Managing Natura 2000 sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC European Commission, 2019. Commission notice 'Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC' (2019/C 33/01), available at:
https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1555085968125&uri=CELEX:52019XC0125(07)

IAMMWG (2015). Management units for cetaceans in UK waters (January 2015). JNCC Report No. 547, JNCC Peterborough. Available from:
https://data.jncc.gov.uk/data/f07fe770-e9a3-418d-af2c-44002a3f2872/JNCC-Report-547-FINAL-WEB.pdf

7 Conservation Objectives

Dundalk Bay SAC and Dundalk Bay SPA
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000455.pdf

Carlingford Shore SAC IE002306
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002306.pdf

Lambay Island SAC IE000020
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000204.pdf

Roaringwater Bay & Islands SAC IE000101
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000101.pdf

Blasket Islands SAC IE0002172
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002172.pdf

Rockabill to Dalkey Island SAC IE0003000
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO003000.pdf

River Boyne and River Blackwater SAC IE002299
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002299.pdf

Strangford Lough SAC UK0016618
https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Strangford%20Lough%20SAC%20Conservation%20Objectives%202018_.pdf

Murlough SAC UK0016612
https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Murlough%20SAC%20Conservation%20Objectives%202018%20%28002%29.pdf

Bristol Channel Approaches SAC UK003039
https://data.jncc.gov.uk/data/505b3bab-a974-41e5-991c-c29ef3e01c0a/BCA-ConsAdvice.pdf

North Anglesey Marine SAC UK0030398
https://data.jncc.gov.uk/data/f4c19257-2341-46b3-8e29-49665cd8f3d2/NorthAnglesey-Conservation-Advice.pdf

West Wales Marine SAC UK0030397
https://naturalresources.wales/media/681439/w-wales-marine-objectives-advice.pdf

North Channel SAC UK0030399
https://data.jncc.gov.uk/data/be0492aa-f1d6-4197-be22-e9a695227bdb/NorthChannel-conservation-advice.pdf

Cardigan Bay SAC UK0012712
https://cdn.cyfoethnaturiol.cymru/media/687993/eng-cardigan-bay-reg-37-report-2018.pdf

Lleyn Peninsula and the Sarnau SAC UK0013117
https://naturalresources.wales/media/673816/Pen%20Llyn%20ar%20Sarnau%20%20R33%20Feb%202009.pdf

Aberdaron Coast and Bardsey Island UK9013121
https://naturalresources.wales/media/672092/Glannau%20Aberdaron%20Plan%20English.pdf

Saltee Islands IE0004002
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004002.pdf

Puffin Island IE0004003
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004003.pdf

Skelligs IE0004007
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004007.pdf

Blasket Islands IE0004008
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004008.pdf

Dundalk Bay IE0004026
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004026.pdf

Carlingford Lough IE0004078
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004078.pdf

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https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004078.pdf

Cruagh Island IE0004170
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https://niopa.qub.ac.uk/bitstream/NIOPA/2024/1/carlingford-lough-spa-draft-conservation-objectives-2015-including-marine-area.pdf

Copeland Islands UK9020291
https://www.daera-ni.gov.uk/sites/default/files/publications/doe/copeland-islands-SPA-conservation-objectives-2015.pdf

Irish Sea Front UK9020328
https://data.jncc.gov.uk/data/0032da71-db02-44b5-b4e1-022d77ef7ee3/irish-sea-front-sas-conservation-objectives.pdf

Ailsa Craig UK9003091
https://sitelink.nature.scot/site/8463

Rum UK9001341
https://sitelink.nature.scot/site/8574

St Kilda UK9001031
https://sitelink.nature.scot/site/8580

Aberdaron Coast and Bardsey Island UK9013121
https://naturalresources.wales/media/672092/Glannau%20Aberdaron%20Plan%20English.pdf

Grassholm UK9014041
https://naturalresources.wales/media/674134/Grassholm%20SPA%20Management%20Plan%2021%5B1%5D.4.08%20(English).pdf

Skomer, Skokholm and the Seas off Pembrokeshire UK9014051
https://naturalresources.wales/media/675733/skomer-skokholm-and-seas-off-pembs-pspa-draft-conservation-objectives-final.pdf