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

Screening for Appropriate Assessment Report

FS006886

27th June 2022

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STATEMENT OF AUTHORITY

This Screening for Appropriate Assessment Report has been undertaken by [redacted], an experienced marine ecologist with a wide range of experience from conservation, developing a 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. Following which she undertook Post-Doctoral research on shallow water hydrothermal vent ecosystems at 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, as part of the statutory process, drafted Departmental responses to these. She has considerable experience in the Habitats Directive, 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 on the 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.

1 INTRODUCTION

1.1 PROJECT OVERVIEW

Clarus Offshore Wind Farm Ltd. is seeking a Foreshore Licence to conduct site investigation activities off the coasts of Counties Clare and Kerry. This work is to assist in determining the cable route to landfall from the Clarus Offshore Wind Farm. The overall area which is the subject of this application is 936km^2.

1.2 LEGISLATIVE BACKGROUND AND AA PROCESS

Under Article 6.3 of the Habitats Directive (92/43/EEC) Member States are required to consider the potential effects of any project or plan which is not directly connected with, or necessary to, the management of a European site but is likely to have a significant effect on the site before a decision can be made to allow the plan or project to proceed. In order to ascertain if the plan or project, either alone or in-combination with other plans or projects, is likely to have significant effects on a European site an Appropriate Assessment of the implications of the plan or project on the site's conservation objectives is required. The first step in the process is screening to determine if an Appropriate Assessment is required.

Under the Foreshore Act, as amended, a lease or licence must be obtained from the Minister for Housing, Local Government & Heritage before carrying out activities within the Foreshore area. This area is defined as the High Water Mark (HWM) to the 12 nautical mile limit. As the Consenting Authority, the Department must carry out a screening for an Appropriate Assessment on any Foreshore application which may have significant effects on the conservation objectives of a European site. To enable the consenting authority to carry out its statutory obligations the applicant provides the Department with sufficient information to allow it to carry out a screening for an appropriate assessment.

This report presents the results of the screening for Appropriate Assessment of the proposed project. It determines whether the proposed project, either alone or in-combination with other plans or projects, is likely to have significant effects on a European site. It will establish if a stage 2 Appropriate Assessment is required, thus meeting the Department's statutory obligations under the European Communities (Birds and Natural Habitats) Regulations 2011 to 2021 (the "Habitats Regulations") to ensure compliance with the Habitats Directive (92/43/EEC).

1.3 METHODOLOGY

This report has been prepared with reference to the following guidelines and legislation:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. Official Journal of the European Communities.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).

- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011.
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission 2019. Office for Official Publications of the European Communities, Luxembourg.
- Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities. DEHLG, 2009. Revision 2010.
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht, 2014
- Appropriate Assessment Screening for Development Management OPR Practice Note PN01 March 2021
- Relevant case law

The following documents were submitted by the applicant, Clarus Offshore Wind Farm Ltd., on 19th November 2021 along with a cover letter:

i. Application to conduct site investigation activities off the west coast of Ireland 19/11/2021
ii. Map of Foreshore Licence Application Area 30/09/3032
iii. Supporting Information for Screening for AA (SISAA) and Natura Impact Statement April 2022
iv. Risk Assessment for Annex IV species April 2022
v. Schedule of Works November 2021
vi. Environmental Supporting Information April 2022

2 PROJECT DESCRIPTION

Clarus Offshore Wind Farm, off the coast of counties Clare and Kerry, has been identified as potentially suitable for offshore wind development. One of the first stage of this project is a site investigation of the area to determine potential export cable corridors and landfall areas, and to assess the associated seabed. The proposed project is for such a site investigation and will include geotechnical, geophysical, metocean, environmental and ecological surveys.

2.1 LOCATION

The Foreshore Licence Application Area is off the coast of Counties Clare and Kerry. Possible sites were the cable will make landfall are between Donegal Point and Magrath's Point, Ross Point, and Aylevarroo Bay and Money Point. These three sites are in Co. Clare. A further site, Tarbert Island to Ballylongford Bay, is in Co. Kerry. The seaward boundary of the Foreshore Licence Area Application extends from 26km (14nm) southwest of Loop Head to 31km (17nm) west of Crean Head in the north. The overall area of this Foreshore Licence application is 936km^2.

Water depths in the area range from the intertidal to approximately 90m. EMODnet seabed habitats shows the area to be largely that of rock and sand with coarse sediments in the southwest of the area. The seabed within the Shannon Estuary is that of sand to mixed sediment with a cobble reef (NPWS, 2012).

2.2 PROPOSED SITE INVESTIGATIONS

The proposed survey work will be undertaken over the course of a 5-year licence period. This will include geophysical, geotechnical, metocean and environmental/ecological surveys.

2.3 DESCRIPTION OF THE PROPOSED SURVEY WORKS

2.3.1 Geophysical survey

This survey will include Multi beam echosounder (MBES), Side scan sonar (SSS), Sub-bottom profiler (SBP) and Magnetometer and is expected to take approximately three months. The underwater noise generated by this equipment is presented in table 1.

Table 1 Summary of noise sources from geophysical surveys

Noise Source	Typical Frequency	Typical Sound Pressure Level (dB re 1µPa @ 1m)
MBES	200 to 500 kHz	210-245 dB
SSS	300 to 900 kHz	200 -240 dB
SBP	0.5 to 40 kHz	196 – 225 dB

2.3.2 Geotechnical survey

This survey will include Vibro-coring, Cone Penetration Testing (CPT), and Boreholes and is expected to take approximately three months. The underwater noise generated by this equipment is presented in table 2.

Table 2 Summary of noise sources from geotechnical surveys

Noise Source	Typical Frequency	Typical Sound Pressure Level (dB re 1μPa @ 1m)	Source
Vibrocorer	<1 kHz	180-190 dB	BOEM (2017), Reiser (2017)
CPT	No emitted sound	No emitted sound	BOEM (2017)
Borehole Drilling	0.002 - 50	142 - 190 dB	DEIS (2020), DAHG (2014)

2.3.3 Wind Resource and Metocean survey

This work will include up to two Lidar buoy, up to five Acoustic Doppler Current Profiler (ADCP) and up to tow Waverider buoys.

2.3.4 Environmental/Ecological surveys

Three possible cable routes will be surveyed. Environmental stations will be located every 2km along the preferred cable route or where there is a change in habitat type. They can occur anywhere within the Foreshore Licence Application Area. This will include subtidal benthic grabs, drop-down camera and video transects, and intertidal transects, quadrats and cores. Bird, marine mammal and reptile surveys will also be undertaken.

3 SCREENING FOR APPROPRIATE ASSESSMENT

3.1 MANAGEMENT OF NATURA 2000 SITE/S

Plans or projects that are directly connected with or necessary to the management of a Natura 2000 site do not require AA. As the proposed project is not directly connected with or necessary for the management of a Natura 2000 site, it is subject to screening for Appropriate Assessment to determine if it alone, or in-combination with other plans or projects, is likely to cause significant effects to a European site.

3.2 IDENTIFICATION OF POSSIBLE EFFECTS

A European site is only at risk of likely significant effects where the Source-Pathway-Receptor link exists between the proposed development and the European site (OPR 2021).

3.2.1 Annex I habitats

The potential environmental impacts on Annex I Habitats as a result of the site investigation surveys are physical disturbance and habitat loss, and smothering as a result of an increase in suspended material in the water column.

Physical disturbance and habitat loss as a result of the proposed survey activity will be confined to the footprint of the equipment used. The seafloor in this area is that of sand to mixed sediment and coarse sands which will infill from surrounding sediments almost immediately. Smothering as a result of an increase in suspended material in the water column from the sampling process is unlikely. In the outer reaches of the site the sediment is largely sands and coarse or mixed sediment and therefore will settle out quickly.

3.2.2 Annex II species

Potential impacts on Annex II migratory fish species include underwater noise and increased suspended sediment concentrations. Fish species are either hearing specialists or hearing generalists with only the former being susceptible to underwater noise. As alluded to above the nature of sediment here means that the increased levels of suspended sediment, where it occurs, will be localised and temporary.

Marine mammals may be impacted by disturbance from under water noise and from injury due to collision. Use of geophysical survey and positioning equipment has the potential to disturb and/or injure marine mammals if the frequency/frequencies of the sound emitted fall within their hearing range. In the marine in Ireland the European otter, grey seal, harbour seal, harbour porpoise and bottlenose dolphin are Annex II species.

Three groups of Cetaceans species are currently recognised depending on their known auditory ability and functional frequencies (Table 3). Seals have differing auditory ability depending on if they are in air or in water. They are therefore, from a functional point of view, divided into two groups, in water and in air.

The ADCP typically produce sound at frequencies that are outside of the hearing range of even the most sensitive marine mammals and it will not be audible to them. The acoustic pressure

is also well below that which would cause disturbance to marine mammals that are sensitive to sound pressure (see Southall 2019).

Table 3 Known auditory ability and functional frequencies cetacean species and seals.

Cetaceans			Pinnipeds	
Low frequency 7 Hz-22 kHz	Mid-frequency 150 Hz-160 kHz	High frequency 200 Hz–180 kHz	in water 75 Hz–75 kHz	in air 75 Hz-30 kHz
Baleen whales	Most toothed whales, dolphins	Certain toothed whales, porpoise	All species	All species
Species- Ireland Humpback whale Blue whale Fin whale Sei whale Minke whale	Species– Ireland Sperm whale Killer whale Long-finned pilot whale Beaked whale species Dolphin species	Species– Ireland Pygmy sperm whale Harbour porpoise	Species– Ireland Grey seal Harbour seal	Species– Ireland Grey seal Harbour se

Vessel strikes are a known cause of mortality in marine mammals (Laist et al., 2001; Wilson et al., 2020). Injuries, as a result of collision, may also result in individuals becoming vulnerable to secondary infections. Slower vessels following a consistent trajectory allow animals the opportunity to avoid collisions. The risk of fatality is reduced if vessels are moving slowly.

3.2.3 Birds

Different seabird species exhibit varying sensitivities to noise. Some species, such as herring gull, lesser black-backed gull and to a lesser extent kittiwake, display habituated responses to additional anthropogenic noise. Other species groups, such as divers, are sensitive to anthropogenic disturbance (Furness *et al*., 2012, Black *et al*., 2015, Dierschke *et al*., 2017, Fleissbach *et al*., 2019). Wildfowl also display varied responses to anthropogenic noise. Responses depend on the context, magnitude and predictability of the noise within the context of their surroundings. In addition, activity (i.e. foraging or roosting), as well as the time of day and flock size can affect how birds respond to sound disturbance (Cutts *et al*., 2013). Waders show mixed responses to anthropogenic noise depending on species. Some species, such as sanderling, are highly tolerant whilst others such as knot and redshank are highly sensitive (Cutts *loc.cit*).

Underwater noise is likely to cause disturbance to some species of diving seabird. It may affect prey acquisition, cause displacement from habitat or evoking an escape flight response (Black *et al*., 2015, Dierschke *et al*., 2017). Seabirds whose predominant method of foraging is shallow diving, dip diving or surface feeding are unlikely to be impacted by underwater noise due to the brevity of exposure time and sensitivity to disturbance (Furness et al., 2012, Fleissbach *et al*., 2019).

Breeding seabirds nesting on shorelines or structures in proximity to human activities can be disturbed from their nests. Similarly other seabird aggregations or individual birds may be

disturbed by presence of a vessel or on its approach (Althouse *et al*., 2019, Furness *et al*., 2012, Dierschke *et al*., 2017, Fleissbach *et al*., 2019).

Wildfowl differentially respond to visual disturbance depending on their activity, the species concerned and context of the stimulus (Cutts *et al*., 2013). In particular foraging or roosting aggregations of dabbling ducks or geese may be sensitive to visual disturbance. Waders respond differentially to visual disturbance depending on factors that include the species involved, flock size and context of their location (i.e. industrialised areas) (Cutts *et al*., 2013, Goss-Custard *et al*. 2019).

Disturbance and displacement of species may have consequences at individual and population levels (Joint SNCB note 2017).

The survey works may also have effects on the prey species of these birds, reducing their availability which may then adversely affect survival and productivity.

3.2.4 Accidental spillage

This is a busy shipping area in which a lot of commercial and recreational vessels operated. Given that the surveys would amount to a single extra vessel in this area the likelihood of a collision resulting in a pollution event is considered insignificant. As vessels are required by law to adhere to regulations governing accidental leakages and spillages similarly the likelihood of such an occurrence is considered very unlikely.

3.3 IDENTIFICATION OF THE RELEVANT EUROPEAN SITE/S

3.3.1 Annex I habitats

SACs were screened on the potential for connectivity between the proposed project and their Annex I habitats. Potential connectivity was considered if there was overlap with the Foreshore Licence Application Area and an SAC (direct effects) or if the SAC was within range of the effects of the proposed activity (indirect effects).

Five SACs were identified as being within the Zone of Influence of the proposed works. As the works being undertaken are in the marine environment only, using the Source-Pathway-Receptor model (OPR 2021), only the marine and coastal Annex I habitats were considered in this screening process.

The following SACs were considered in the screening process:

- Kilkee Reefs SAC [Site code IE002264]
- Carrowmore Dunes SAC [Site code IE002250]
- Carrowmore Point to Spanish Point and Islands SAC [Site code IE001021]
- Lower River Shannon SAC [Site code IE002165]
- Kerry Head Shoal [Site code IE002263]

3.3.2 Annex II species

After breeding most grey seals disperse away from their haul-out sites, therefore their usage of a particular SAC is very time and location specific. On this basis and considering available

data on grey seal movements (e.g. Cronin *et al.,* 2011; SMRU Ltd, 2011; Russell and McConnell, 2014), there is potential for interactions between grey seals and projects 200km distant from the SAC for which they are designated. For harbour seal the potential for interactions between it and projects is 60km from the SAC (DECC, 2016), for otter it is 20km along the shore.

In the absence of information on the distances covered by migrating salmon, twaite shad and allis shad, a precautionary distance of 200km is applied. However only those sites with a hydrological connectivity to the proposed project site are presented for screening

Any harbour porpoise or common bottlenose dolphin from European Sites located in the relevant Management Unit (MU) could be present in the Foreshore Licence Application Area. The MU for the bottlenose dolphin is the West Coast of Ireland; for harbour porpoise is the Celtic Sea including SW Ireland, Irish Sea and the western Channel (IAMMWG, 2015).

Using this criteria a further fifteen SACs were considered further in the screening process. These are:

- Castlemaine Harbour SAC [Site code IE 000343]
- Blasket Islands SAC [Site code IE002172]
- Inishkea Islands SAC [Site code IE000507]
- Duvillaun Islands SAC [Site code IE000495]
- Inishbofin and Inishshark SAC [Site code IE002998]
- West Connacht Coast SAC [Site code IE000278]
- Roaringwater Bay SAC [Site code IE000101]
- Slyne Head Islands SAC [Site code IE00000328]
- Slyne Head Peninsula SAC [Site code IE00000328]
- Galway Bay Complex SAC [Site code IE000268]
- Newport River SAC [Site code IE002144]
- Lough Corrib SAC [Site code IE000297]
- West Wales Marine / Gorllewin Cymru Forol [UK 0030397]
- North Anglesey Marine / Gogledd Môn Forol [UK 0030398]
- Northern Channel SAC [UK0030399]

3.3.3 Birds

Seabirds generally have larger foraging ranges from other species and therefore may occasionally occur in the survey area from more distant SPAs. SPAs were considered in the screening process if there was potential for connectivity between their Special Conservation Interest (SCI) and the proposed project. As the proposed site investigation works are highly localised, temporary and of a short duration, SPA and its SCIs are considered to have connectivity if it either overlap with the Foreshore Licence Application Area or are within 15km of this area. Likely significant impacts on SCIs from SPAs beyond 15km is considered unlikely and therefore were not considered further in the screening process.

Using this criteria eight SPAs were considered further in the screening process. These are:

- Mid-Clare Coast SPA [IE004182]
- Illaunonearaun SPA [IE004114]
- Loop Head SPA [IE004119]
- River Shannon and River Fergus Estuaries SPA [IE004077]
- Kerry Head SPA [IE004189]
- Cliffs of Moher SPA [IE004005]
- Tralee Bay Complex SPA [IE004188]
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA [IE004161]

Table 3.1 European Sites and their qualifying interests to be considered further in the screening process. The QIs in red are screened In for Stage 2 Appropriate Assessment.

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Lower River Shannon SAC [IE002165]	0km	Sandbanks which are slightly covered by sea water all the time [1110] Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410]	In	Habitat loss or disturbance.
		Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	Out	No connectivity pathway to habitats
		Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106] Tursiops truncatus (Common Bottlenose Dolphin) [1349] Lutra lutra (Otter) [1355]	In	Disturbance from underwater noise
Kilkee Reefs SAC [IE002264]	0km	Reefs [1170]	In	Habitat loss or disturbance
		Large shallow inlets and bays [1160] Submerged or partially submerged sea caves [8330]	Out	No overlap with the survey area

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Carrowmore Dunes SAC [IE002250]	0km	Reefs [1170] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]	In	Habitat loss or disturbance
			Out	No overlap with the survey area
Carrowmore Point to Spanish Point and Islands SAC [IE001021]	1km	Reefs [1170] Coastal lagoons [1150] Perennial vegetation of stony banks [1220] Petrifying springs with tufa formation (Cratoneurion) [7220]	Out	No overlap with the survey area
Kerry Head Shoal SAC [IE002263]	1.5km	Reefs [1170]	Out	No connectivity with habitats
Inisheer Island SAC [IE001275]	31km	Coastal lagoons [1150] Reefs [1170] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Limestone pavements [8240]	Out	No connectivity with habitats
Inishmore Island SAC [IE000213]	28km	Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170] Humid dune slacks [2190] Machairs (* in Ireland) [21A0]	Out	No connectivity with habitats

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
		European dry heaths [4030] Alpine and Boreal heaths [4060] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Vertigo angustior (Narrow-mouthed Whorl Snail) [1014]		
Inishmann Island SAC [IE000212]	29km	Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Machairs (* in Ireland) [21A0] European dry heaths [4030] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Limestone pavements [8240]	Out	No connectivity with habitats
Black Head-Poulsallagh Complex SAC [IE000020]	36km	Reefs [1170] Perennial vegetation of stony banks [1220] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Alpine and Boreal heaths [4060] Juniperus communis formations on heaths or calcareous grasslands [5130]	Out	No connectivity with habitats

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
		Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Petrifying springs with tufa formation (Cratoneurion) [7220] Limestone pavements [8240] Submerged or partially submerged sea caves [8330] Petalophyllum ralfsii (Petalwort) [1395]		
Blasket Islands SAC [IE002172]	55km	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] Phocoena phocoena (Harbour Porpoise) [1351] Halichoerus grypus (Grey Seal) [1364]	Out	No connectivity with habitats
			In	Disturbance from underwater noise
Kilkieran Bay and Islands SAC [IE002111]	40km	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal Lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Machairs (* in Ireland) [21A0] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) [6510] Najas flexilis (Slender Naiad) [1833] Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]	Out	No connectivity with habitats
			In	Disturbance from underwater noise

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Galway Bay Complex SAC [IE000268]	56km	Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Turloughs [3180] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210] Calcareous fens with Cladium mariscus and species of the Caricion davallianae [7210] Alkaline fens [7230] Limestone pavements [8240] Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365]	Out	No connectivity with habitats
			In	Disturbance from underwater noise

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Slyne Head Peninsula SAC [IE002074]	64km	Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Machairs (* in Ireland) [21A0] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] European dry heaths [4030] Juniperus communis formations on heaths or calcareous grasslands [5130] Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) [6210] Molinia meadows on calcareous,peaty or clayey-silt-laden soils (Molinion caeruleae) [6410] Lowland hay meadows (Alopecuruspratensis, Sanguisorba officinalis) [6510] Alkaline fens [7230] Petalophyllum ralfsii (Petalwort) [1395] Najas flexilis (Slender Naiad) [1833] Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Out	No connectivity with habitats
			In	Disturbance from underwater noise

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Slyne Head Islands SAC [IE000328]	65km	Reefs [1170] Tursiops truncatus (Common Bottlenose Dolphin) [1349] Halichoerus grypus (Grey Seal) [1364]	Out	No connectivity with habitats
			In	Disturbance from underwater noise
West Connacht Coast SAC [IE002998]	70km	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	In	Disturbance from underwater noise
Inishbofin and Inishshark SAC [IE000278]	86km	Coastal lagoons [1150] Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110] Northern Atlantic wet heaths with Erica tetralix [4010] European dry heaths [4030] Halichoerus grypus (Grey Seal) [1364]	Out	No connectivity with habitats
			In	Disturbance from underwater noise
Castlemaine Harbour SAC [IE000343]	96km	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170] Humid dune slacks [2190] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	Out	No connectivity with habitats Too far to affect otter

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
		Lutra lutra (Otter) [1355] Petalophyllum ralfsii (Petalwort) [1395] Petromyzon marinus (Sea Lamprey) [1095] Lampetra fluviatilis (River Lamprey) [1099] Salmo salar (Salmon) [1106]	In	Disturbance from underwater noise
Duvillaun Islands SAC [IE000495]	143km	Tursiops truncatus (Common Bottlenose Dolphin) [1349] Halichoerus grypus (Grey Seal) [1364]	In	Disturbance from underwater noise
Inishkea Islands SAC [IE000507]	143km	Machairs (* in Ireland) [21A0] Petalophyllum ralfsii (Petalwort) [1395] Halichoerus grypus (Grey Seal) [1364]	Out	No connectivity
			In	Disturbance from underwater noise
Roaringwater Bay & Islands SAC [IE000101]	172km around the coast	Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] Lutra lutra(Otter) [1355] Phocoena phocoena (Harbour Porpoise) [1351] Halichoerus grypus (Grey Seal) [1364]	Out	No connectivity
			In	Disturbance from underwater noise
Newport River SAC [IE002144]	147km	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Salmo salar (Salmon) [1106]	Out	No connectivity
			In	Disturbance from underwater noise
North Anglesey Marine / Gogledd Môn Forol SAC [UK 0030398]	SAC within MU for this species	Phocoena phocoena (Harbour Porpoise) [1351]	In	Disturbance from underwater noise.

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
West Wales Marine / Gorllewin Cymru Forol SAC [UK 0030397]	SAC within MU for this species	Phocoena phocoena (Harbour Porpoise) [1351]	In	Disturbance from underwater noise.
Northern Channel SAC [UK003099]	SAC within MU for this species	Phocoena phocoena (Harbour Porpoise) [1351]	In	Disturbance from underwater noise.
Mid-Clare Coast SPA [IE004182]	0km	**Breeding** Cormorant (Phalacrocorax carbo) [A017] **Wintering** Barnacle Goose (Branta leucopsis) [A045] Purple Sandpiper (Calidris maritima) [A148] Ringed Plover (Charadrius hiaticula) [A137] Dunlin (Calidris alpina) [A149] Sanderling (Calidris alba) [A144] Turnstone (Arenaria interpres) [A169] Wetland and Waterbirds [A999]	In	Diving species also subject to disturbance from under water noise
			Out	The proposed site investigations will be conducted outside of the over wintering period (October-April)
River Shannon & River Fergus Estuaries SPA [IE004077]	0km	**Breeding** Cormorant (Phalacrocorax carbo) [A017]	In	Diving species also subject to disturbance from under water noise

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
		Wintering Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Pintail (Anas acuta) [A054] Shoveler (Anas clypeata) [A056] Scaup (Aythya marila) [A062] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Knot (Calidris canutus) [A143] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Greenshank (Tringa nebularia) [A164] Black-headed Gull (Chroicocephalus ridibundus) [A179] Wetland and Waterbirds [A999]	Out	The proposed site investigations will be conducted outside of the over wintering period (October-April)
Loop Head SPA [IE004119]	0.1km	**Breeding** Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199]	In	Disturbance from above water noise and visual impact.
Cliffs of Moher [IE004005]	6km	**Breeding** Fulmar (Fulmarus glacialis) [A009] Kittiwake (Rissa tridactyla) [A188] Guillemot (Uria aalge) [A199] Razorbill (Alca torda) [A200]	In	Disturbance from above water noise and visual impact.

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
		Puffin (Fratercula arctica) [A204] Chough (Pyrrhocorax pyrrhocorax) [A346]	Out	Species does not forage in marine environment. No pathway for interaction between the species and the proposed project.
Illaunonearaun SPA [IE004114]	6km	**Wintering** Barnacle Goose (Branta leucopsis) [A045]	Out	The proposed site investigations will be conducted outside of the over wintering period (October-April)
Kerry Head SPA [IE004189]	6km	**Breeding** Northern fulmar (Fulmarus glacialis) [A009]	In	Disturbance from above water noise and visual impact.
		Chough (Pyrrhocorax pyrrhocorax) [A346]	Out	Species does not forage in marine environment. No pathway for interaction between the species and the proposed project.
Stack's to Mullaghareirk Mountains, West Limerick Hills & Mount Eagle SPA [IE004161]	7km	Hen Harrier (Circus cyaneus) [A082]	Out	Species does not forage in marine environment. No pathway for interaction between the species and the proposed project.
Illaunonearaun SPA [IE004114]	9km	**Wintering** Barnacle Goose (Branta leucopsis) [A045]	Out	The proposed site investigations will be conducted outside of the over wintering period (October-April)

Site and Code	Distance from Survey Area	Qualifying Interests	Screened In/Out	Potential source of impact
Tralee Bay Complex SPA [IE004188]	15km	**Wintering** Whooper Swan (Cygnus cygnus) [A038] Light-bellied Brent Goose (Branta bernicla hrota) [A046] Shelduck (Tadorna tadorna) [A048] Wigeon (Anas penelope) [A050] Teal (Anas crecca) [A052] Mallard (Anas platyrhynchos) [A053] Pintail (Anas acuta) [A054] Scaup (Aythya marila) [A062] Oystercatcher (Haematopus ostralegus) [A130] Ringed Plover (Charadrius hiaticula) [A137] Golden Plover (Pluvialis apricaria) [A140] Grey Plover (Pluvialis squatarola) [A141] Lapwing (Vanellus vanellus) [A142] Sanderling (Calidris alba) [A144] Dunlin (Calidris alpina) [A149] Black-tailed Godwit (Limosa limosa) [A156] Bar-tailed Godwit (Limosa lapponica) [A157] Curlew (Numenius arquata) [A160] Redshank (Tringa totanus) [A162] Turnstone (Arenaria interpres) [A169] Black-headed Gull (Chroicocephalus ridibundus) [A179] Common Gull (Larus canus) [A182] Wetland and Waterbirds [A999]	Out	The proposed site investigations will be conducted outside of the over wintering period (October-April)

3.4 Assessment of Likely Significant Effects

3.4.1 Annex I Habitats

There are direct effects on Annex I Habitats and Wetlands and waterbirds were there is overlap with the survey area. There is spatial overlap between the proposed project and three SACs. These are:

- Kilkee Reef SAC
- Carrowmore Dunes SAC
- Lower River Shannon SAC

For Kilkee Reef SAC and Carrowmore Dunes SAC the spatial overlap is with the Annex I habitat Reefs. However in the Lower River Shannon SAC there is spatial overlap with five marine and two coastal Annex I habitats (see table 3.1).

Therefore the possibility of likely significant effects at these sites as a result of the proposed project cannot be excluded.

3.4.2 Annex II species

The direct effects as a result of underwater noise on marine mammals and migratory fish species within the Zone of Influence of the proposed project cannot be excluded. Using the criteria outlined above fifteen SACs were identified as within the Zone of Influence of the proposed project (see table 3.1). Twelve of these were Irish SACs and three were British SACs.

3.4.3 Birds

Sites for which the Species of Conservation Interest (SCI) were overwintering species were screened out, along with their wetlands area as the proposed works will take place outside of the overwintering period of October to April (see table 3.1).

For Mid-Clare Coast SPA and River Shannon & River Fergus Estuaries SPA which include diving species among their SCIs disturbance from underwater noise could not be excluded. Over water noise and visual impact could not be excluded for three SPAs namely Loop Head SPA, Cliffs of Moher SPA and Kerry Head SPA.

3.4.4 In-combination effects

In a search of the Department's Foreshore applications web site and the Clare, Limerick and Kerry County Council web sites on the 27th of June 2022, a number of projects were identified which may have potential to have in-combination effects with the proposed project. These projects include:

- FS007375 Mainstream Renewable Power Ltd. Site investigation Clare to Kerry coasts into Shannon Estuary at Money Point. Applied 2021.
- FS007141 Benthic grab sampling Ballymacrinan Bay, ESB Moneypoint Power Determined. 10 year licence. Determined 2020
- FS007181DesignPro Cahiracon Townland, Clare. DesignPro Limited Testing of tidal power generating devices. Consultation 2020
- FS007083 Cross Shannon electricity cable Consultation 2020

- FS006975 Maintenance Dredging Foynes Port. Applied 2019 – to be carried out every two to three years.
- FS006837 Jetty construction Foynes Port Shannon. Determined May 2022
- FS006469 Ferry operations 2015Consultation.

Likely significant in-combination effects between the proposed project and the above listed projects on the conservation objectives of Natura 2000 sites considered in this report cannot be excluded at this stage.

4 CONCLUSION

4.1 APPROPRIATE ASSESSMENT SCREENING CONCLUSION

The qualifying interests of European sites which may experience likely significant effects as a result of the proposed project were identified using the Source-Pathway-Receptor approach.

Likely significant effects as a result of habitat loss or disturbance could not be discounted for the Annex I habitat Reefs at the following SACs:

- Lower River Shannon SAC
- Kilkee Reefs SAC
- Lower River Shannon SAC
- Carrowmore Dunes SAC
- Kerry Head Shoal SAC

Disturbance from underwater noise causing likely significant effects could not be discounted for the following European sites:

- Kilkieran Bay and Islands SAC
- Galway Bay Complex SAC
- Slyne Head Peninsula SAC
- Slyne Head Islands SAC
- West Connacht Coast SAC
- Inishbofin and Inishshark SAC
- Castlemaine Harbour SAC
- Duvillaun Islands SAC
- Inishkea Islands SAC
- Newport River SAC
- North Anglesey Marine / Gogledd Môn Forol SAC
- West Wales Marine / Gorllewin Cymru Forol SAC
- Northern Channel SAC
- Mid-Clare Coast SPA
- River Shannon and River Fergus Estuaries SPA
- Mid-Clare Coast SPA

Disturbance from above water noise and visual impact causing likely significant effects could not be discounted for the following SPAs:

- Loop Head SPA
- Kerry Head SPA
- Cliffs of Moher SPA

It is concluded that likely significant effects as a result of this project, alone or in-combination with other plans and projects, on the conservation objectives of European sites cannot be excluded and therefore an Appropriate Assessment is required.

5 REFERENCES

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6 SITE SPECIFIC CONSERVATION OBJECTIVES

Those denoted with * indicate generic conservation objectives. All others are Version 1 of the site specific conservation objectives which were on NPWS's website at the time of writing.

Lower River Shannon SAC Site code IE002165
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf

Kilkee Reefs SAC Site code IE002264
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002264.pdf

Carrowmore Dunes SAC Site code IE002250
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002250.pdf

Carrowmore Point to Spanish Point and Islands SAC Site code IE001021
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001021.pdf

Kerry Head Shoal SAC Site code IE002263
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002263.pdf

Inisheer Island SAC Site code IE001275
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001275.pdf

Inishmore Island SAC Site code IE000213
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000213.pdf

Inishmann Island SAC Site code IE000212
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000212.pdf

Black Head-Poulsallagh Complex SAC Site code IE000020
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000020.pdf

Blasket Islands SAC Site code IE002172
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002172.pdf

Kilkieran Bay and Islands SAC Site code IE002111
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002111.pdf

Galway Bay Complex SAC Site code IE000268
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000268.pdf

Slyne Head Peninsula SAC Site code IE002074
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002074.pdf

Slyne Head Islands SAC Site code IE000328
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000328.pdf

West Connacht Coast SAC Site code IE002998
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002998.pdf
Inishbofin and Inishshark SAC Site code EIE000278
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000278.pdf

Castlemaine Harbour SAC Site code IE000343
https://www.npws.ie/protected-sites/sac/000343

Duvillaun Islands SAC Site code IE000343
https://www.npws.ie/protected-sites/sac/000343

Inishkea Islands SAC Site code IE000507
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000507.pdf

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

Newport River SAC Site code IE002144
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002144.pdf

Mid-Clare Coast SPA Site code IE004182
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004182.pdf

River Shannon and River Fergus Estuaries SPA Site Code IE004077
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004077.pdf

Tralee Bay Complex SPA Site Code IE004188
https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004188.pdf

Loop Head SPA Site Code IE004119*
Cliffs of Moher Site Code IE004005*
Illaunonearaun SPA Site Code IE004114*
Kerry Head SPA Site Code IE004189*
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA Site Code IE004161*
Illaunonearaun SPA Site Code IE004114*

North Anglesey Marine / Gogledd Môn Forol UK 0030398
https://sac.jncc.gov.uk/site/UK0030398

North Channel UK 0030399
https://data.jncc.gov.uk/data/be0492aa-f1d6-4197-be22-e9a695227bdb/NorthChannel-conservation-advice.pdf

West Wales Marine / Gorllewin Cymru Forol UK 0030397
https://data.jncc.gov.uk/data/029e40f3-5f67-4168-b10d-8730f2c40e0a/WWM-conservation-advice.pdf

Cardigan Bay/ Bae Ceredigion SAC UK 0012712
Site specific conservation objectives were not available for Cardigan Bay/ Bae Ceredigion [UK 0012712] at time of writing.