



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

SCREENING FOR APPROPRIATE ASSESSMENT REPORT

Application No. FS007588

27th January 2023

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Statement of Authority

This Screening for Appropriate Assessment Report has been undertaken by Mary Hegarty and Dr Yvonne Leahy.

Mary Hegarty is a marine environment advisor with a wide range of experience from environmental management, environmental consultancy and the implementation of marine environmental policy. Mary has completed a BSc in Environmental Science and an MSc in Environmental Engineering from Trinity College Dublin. Mary has worked as an environmental manager for an IPC licenced facility, overseen environmental compliance tests for Ringsend wastewater treatment plant, carried out environmental assessment reports for JB Barry Engineers, and for the last 15 years she has worked with a number of government Departments in the marine environment sector; primarily in foreshore and the implementation of the Marine Strategy Framework Directive (MSFD). Under the MSFD she has developed and delivered Assessments, determined Good Environmental Status and Targets and delivered Monitoring Programmes and Programmes of Measures. Mary has been responsible for the implementation of all aspects of Descriptor 2 (Non-indigenous Species) and Descriptor 11 (Underwater Noise) of the MSFD. Mary has been Ireland representative on the European Commission's TG Noise and the OSPAR ICG-Noise and until recently Mary was responsible for the reporting of Irish Marine Impulsive Noise data to the OSPAR Noise Registry <https://www.ices.dk/data/data-portals/Pages/impulsive-noise.aspx>

Dr 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. Following which she undertook Post-Doctoral research 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://ecostructureproject.aber.ac.uk/>]. 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

Wicklow Sea Wind Limited are seeking a Foreshore Licence to carry out site investigations to assess the suitability of the area for the installation of an export cable corridor connecting a proposed offshore wind farm to the County Wicklow coastline.

1.2 Application documents submitted

Wicklow Sea Wind Limited submitted a foreshore licence application for the proposed site investigation surveys in August 2022:

- i. Foreshore Application form dated 5th August 2022
- ii. Foreshore Licence Map dated 10th June 2022
- iii. Supporting Information for Screening for Appropriate Assessment 30th June 2022
- iv. Natura Impact Statement 30th June 2022
- v. Annex IV Risk Assessment 30th June 2022
- vi. Non-Statutory Environmental Report 30th June 2022
- vii. Statement of Compliance with National Marine Planning Framework (NMPF) issued 26th August 2022
- viii. Schedule of Works 30th June 2022

Updated Schedule of Works and Supporting Information for Screening for Appropriate Assessment received on the 26th January 2023 (including intertidal surveys).

1.3 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 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).

1.4 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

2 Project Description

This Foreshore Licence application is for site investigation surveys to assess the suitability of the area of search for the installation of an export cable corridor connecting the proposed Wicklow Sea Wind offshore wind farm array to the coastline.

2.1 Location

The proposed site investigation surveys are from Newcastle Co. Wicklow south to Arklow Co. Wicklow, extending to approximately 12 km off the Wicklow coastline (see figure 1). The total area of this Foreshore Licence Application area is 19,874 Ha.

The survey area overlaps with the Murrough Wetlands SAC (IE002249), the Magherabeg Dunes SAC (IE001766), the Buckronev-Brittias Dunes and Fen SAC (IE000729) and the Murrough SPA (IE004186). It is also 0.6km from the Wicklow Head SPA (IE004127).

The exact location of the cable route will be determined by the outcomes of these site investigations; a number of potential landfall locations are proposed, which will also be informed by the site investigations.

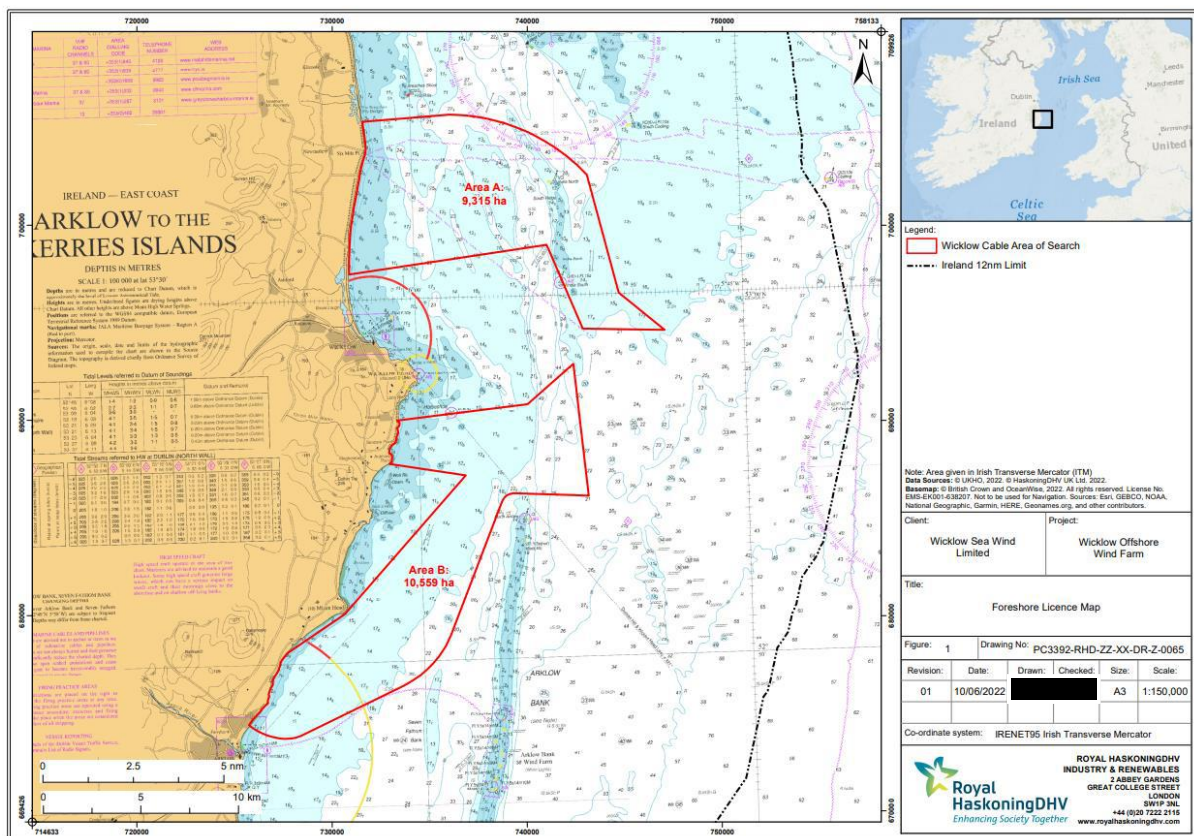


Figure 1 Foreshore licence map

2.2 Description of the receiving environment

The survey area has water depths ranging from approximately 0m to 61m. The seafloor substrate consists of predominantly coarse substrate along with areas of muddy sand and sand in coastal locations (Figure 2).

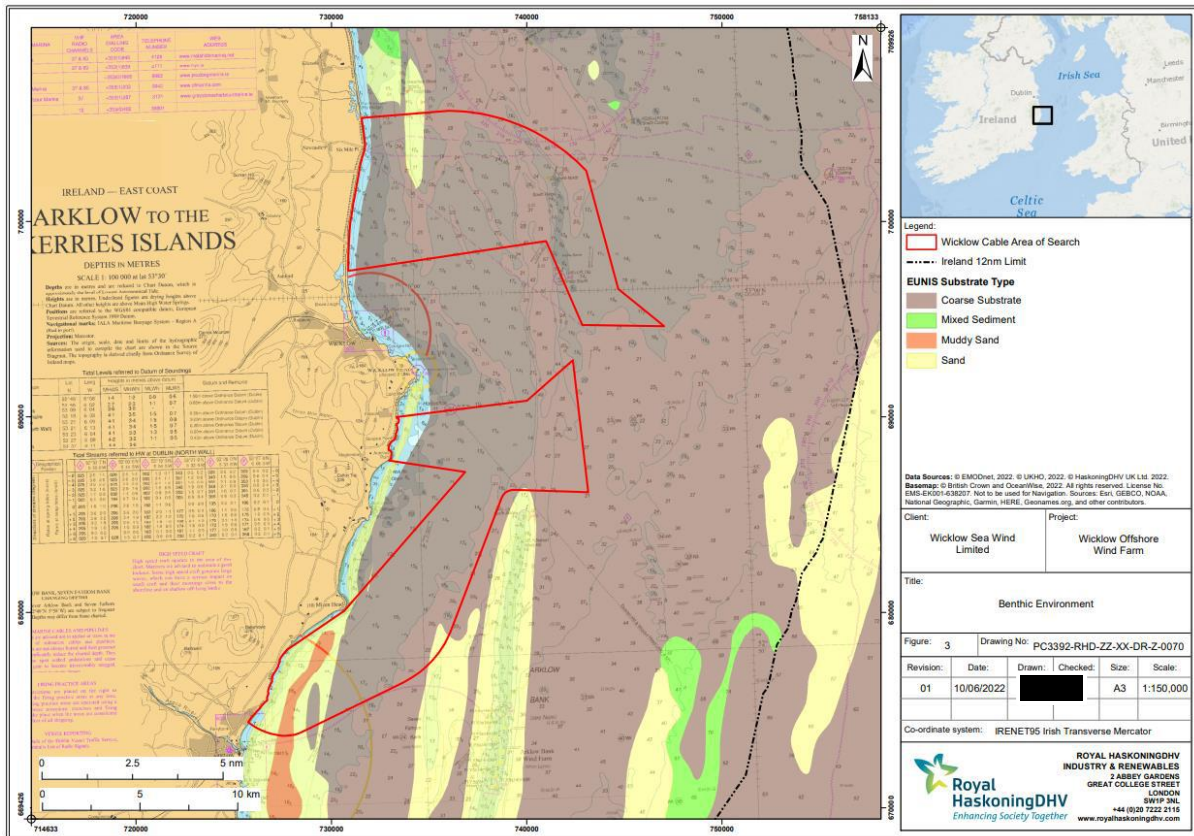


Figure 2 Seafloor substrate in the vicinity of survey area.

2.3 Description of the proposed survey works

2.3.1 Geophysical survey

Geophysical surveys will be carried out in the Foreshore Licence Application Area using a variety of equipment including;

- Multibeam echosounder (MBES),
- Sub bottom profiler (SBP),
- Side scan sonar (SSS) and
- Magnetometer.

The typical frequencies and the maximum peak sound pressure levels (SPL_{peak}) of the proposed geophysical equipment (and geotechnical equipment) is given in table 1.

A Magnetometer will be used to detect geomorphological anomalies and ferrous obstructions. This is not included in the table as it emits no sound.

Multibeam echosounder will be used to assess the bathymetry of the seabed prior to deploying the Cone Penetration Test tool. The MBES will obtain high resolution bathymetry data to map the seafloor and the seafloor features along the entire proposed export cable corridor route. The system will emit a sound source of 200 and 400 kHz with a source SPL of 210dB re 1 µPa peak.

Sub-Bottom Profiling will be used to obtain high-resolution characterisation of sediments and rock under bodies of water. A high frequency single channel sub bottom profiler will be

deployed to collect data on all geophysical survey lines. The primary objectives of this survey are:

- To identify the geological structures in the upper 50m of the seabed substratum;
- To identify geo-hazards, especially buried boulders, peat layers close to the seabed and very shallow gas; and
- The SBP will emit a sound source of between 0.2 and 20 kHz (for the pinger), 5 kHz with an amplitude of 222dB (for the boomer).

Side Scan Sonar will be used to detect potential seabed obstructions and identify additional seabed features prior to deploy the CPT. A simultaneous dual frequency SSS will be used. The SSS system can operate at greater than 600 kHz and has with a sound pressure level of 215 – 226dB re 1 μ Pa @ 1m.

The geophysical surveys are expected to take place in the Quarter 2/Quarter 3 of 2023 and last 3 approximately months.

| Noise Source | Frequency | Sound Pressure Level (dB re 1 μ Pa @ 1m) |
|--------------------|-------------------|--|
| MBES | 200 to 400 kHz | 210dB |
| SSS | 600 kHz | 215-226 dB |
| SBP – Pinger/Chirp | 0.2 kHz to 20 kHz | 222 dB |

Table 1 Summary of the noise sources from geophysical surveys

2.3.2 Archaeological Surveys

No additional dedicated archaeological surveys are likely to be required as the geophysical surveys will provide data suitable for the interpretation and assessment of features of potential archaeological significance.

2.3.3 Benthic Ecology Surveys

The macrofaunal and sediment composition of the area will be sampled to inform a potential Environmental Impact Assessment (EIA) and Appropriate Assessment (AA), and for the characterisation and monitoring of marine habitats. The quantity and location of the grabs will be determined by review of the geophysical surveys which will provide an understanding of the seabed conditions and features. However an indicative maximum of approximately 15 locations will be sampled within survey area. The programme will use 0.1m² Day Grab and/or a Hamon grab for areas of coarser sediment. Grab samples will be analysed for particle size, Total Organic Carbon and macrofauna.

In addition to collecting in-faunal grab samples data on the epi-faunal environment may be required. This will be dependent on the results of the geophysical surveys. If required a targeted a Drop-down video campaign will be undertaken. This may also include the capture of still photographs.

2.3.4 Geotechnical survey

The purpose of the geotechnical site investigations is to explore the stability of the soil to provide good quality geotechnical data to facilitate the detailed design and certification of the:

- Export cable routing and burial techniques (where possible); and
- Development and calibration of existing ground models.

The Geotechnical surveys include cone penetration testing and vibrocores.

Cone penetration testing (CPT) is a method used to determine the geotechnical engineering properties of soils/sediments and delineating soil/sediment stratigraphy. CPT does not involve the removal of any material and the hole created by the penetration of the cone (approx. 5cm diameter) will infill almost instantly upon extraction of the rods. The CPT unit has a footprint of approx. 8m² which will sit on the sea floor for the duration of the test, commonly 2-3 hours.

Vibrocores are undertaken to investigate the nature of the upper layers of the seabed. This process will be an extremely localised activity and will not result in any significant disturbance to the seabed or to mobile species from underwater noise. Vibrocores may penetrate up to 6m into the seabed and have a diameter of approx. 80 - 150mm. A maximum of approximately 15 samples will be taken from within the survey area however this number is only indicative.

| Noise Source | Typical Frequency | Typical Sound Pressure Level (dB re 1µPa @ 1m) |
|-----------------|-------------------|---|
| CPT/seismic CPT | 28 Hz | 124 - 172 dB |
| Vibrocore | 50 Hz | 194 dB |

Table 2 Summary of the noise sources from geotechnical surveys

2.3.5 Intertidal Surveys

An intertidal walkover survey (including archaeological walkover survey) will be undertaken by foot and will be of short duration (up to 1 day per survey location). There is no appreciable sound produced from walkover surveys, sediment/ecological sampling or using a metal detector. Any small areas of sediment dug-over in the intertidal area will be quickly infilled following cessation of the activity. No samples will be removed from either rocky or sediment shores.

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. The proposed project is not directly connected with or necessary for the management of a Natura 2000 site. Therefore this project 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). 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 effect).

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. Physical disturbance from equipment used to sample sediments may lead to an increase in suspended sediment concentrations (SSC). Such increases can lead to the clogging of feeding apparatus of filter feeders, smothering of sessile species, increase in scouring and rendering hard surfaces unsuitable for epibenthic settlement.

3.2.2 Annex II species

In Ireland Annex II marine mammal species include the European otter, grey seal, harbour seal, harbour porpoise and bottlenose dolphin. As a result of site investigation surveys marine mammals may be impacted by visual disturbance, injury due to collision with survey vessels, above water noise disturbance and from the effects of underwater noise.

For otters there is potential for behavioural effects due to increased noise levels and visual stimuli from the proposed activities in the intertidal and shallow subtidal. Effects may include reduced foraging opportunities, reduced resting and breeding locations, and unfavourable commuting routes.

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 also reduced if vessels are moving slowly. The introduction of underwater noise through geotechnical and geophysical surveys has the potential to disturb and/or injure marine mammals if the frequency/frequencies of the sound emitted fall within their hearing range. Marine mammals rely on sound to navigate, to communicate with one another and to sense and interpret their surroundings. This is of particular concern for cetacean species which are confined to the marine environment.

Currently three groups of cetaceans are 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.

| | Cetaceans | | Pinnipeds | | |
|------------------|-------------------------------|----------------------------------|----------------------------------|-------------------------|------------------------|
| | Low frequency 7 Hz-35 kHz | Mid-frequency 150 Hz-160 kHz | High frequency 200 Hz–180 kHz | in water 5 Hz–86 kHz | in air 75 Hz-30 kHz |
| Baleen whales | Most toothed whales, dolphins | Certain toothed whales, porpoise | All species | All species | |
| Species- Ireland | Species– Ireland | Species– Ireland | Species– Ireland | Species– Ireland | |
| Humpback whale | Sperm whale | Pygmy sperm whale *Harbour | Grey seal | Grey seal | |
| Blue whale | Killer whale | porpoise | Harbour seal | Harbour seal | |
| Fin whale | Long-finned pilot whale | | | | |
| Sei whale | Beaked whale species | | | | |
| Minke whale | *Dolphin species | | | | |

Table 3 Known auditory ability and functional frequencies cetacean species and seals (from Southall *et al.*, 2007). *Southall *et al.*, 2019 updated the marine mammal hearing groups, adding a Very High-frequency cetacean group which includes Harbour porpoise and now including Bottlenose dolphin in the High frequency group.

Southall *et al.* (2007) identified thresholds of peak sound pressure (SPL) and sound exposure (SEL) from discrete sound events (single or multiple, within a 24-hr period) that would be expected to elicit Temporary Threshold Shift (TTS) and/or Permanent Threshold Shift (PTS) in receiving marine mammals. Southall *et al.*, (2019) revised noise exposure criteria to predict the onset of auditory effects in marine mammals (Table 4).

| Marine Mammal hearing group | TTS onset: SEL weighted | TTS onset: Peak SPL unweighted | PTS onset: SEL weighted | PTS onset: Peak SPL unweighted |
|-------------------------------|-------------------------------|--------------------------------------|-------------------------------|--------------------------------------|
| Low frequency Cetaceans | 168 | 213 | 183 | 219 |
| High frequency Cetaceans | 170 | 224 | 185 | 230 |
| Very High frequency Cetaceans | 140 | 196 | 155 | 202 |
| Seals in water | 188 | 226 | 203 | 218 |
| Seals on land | 146 | 161 | 161 | 144 |

Table 4 TTS- and PTS- onset thresholds for marine mammals exposed to impulsive noise SEL thresholds in dB re $1\mu\text{Pa}^2\text{s}$ under water and dB re $20\mu\text{Pa}^2\text{s}$ in air (for seals only) from Southall *et al.*, 2019.

Migratory fish

Many fish which possess swim bladders do not have anatomical connections with the ear and therefore do not have a high degree of hearing sensitivity compared to those with such connections. Atlantic Salmon have poor hearing sensitivity and are only capable of detecting low frequency tones (below 380Hz) and particle motion rather than sound pressure (NOAA, 2016). Shipping noise may be audible to salmon, however they are not sensitive to sound pressure levels. Water quality as a result of suspended sediment concentrations in the water column may act as a chemical barrier and prevent the successful passage of migratory fish.

3.2.3. Birds

The distance or stimulus for disturbance can depend on several factors (Cabot & Nisbet, 2013). Gulls display varied behaviour to disturbance depending on the stimuli but often gulls can tolerate a degree of disturbance and re-settle easily depending on the duration (Morrison & Allcorn, 2006)

Foraging common terns are considered to be of low sensitivity to disturbance from vessel traffic and associated activities (Garthe & Hüppop, 2004; Bradbury et al., 2014). Birds which forage underwater are vulnerable to underwater noise effects in addition to above water noise and visual effects.

Waders and wildfowl show different responses to disturbance depending on the species, the type of disturbance, the duration and context of their surrounding habitat, and activity they are undertaking (Cutts et al. 2013, Goss-Custard et al., 2019). Species like wigeon may be highly sensitive to some disturbance (Mathers et al., 2000) whilst exhibit low sensitivity to audio and visual disturbances (Cutts loc. cit., 2013). Redshank exhibit high disturbance responses to noise but low or tolerated responses to visual disturbance while lapwing are moderately sensitive to both visual and noise disturbance (Cutts loc. cit., 2013). Red-breasted mergansers in particular are notably sensitive to the disturbance associated with shipping traffic (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 loc.cit). Breeding colonies of common tern from relatively undisturbed areas may be disturbed on approach to their colonies and such disturbance can have consequences such as reduced breeding success.

For diving seabirds increases in suspended sediment concentrations may affect water clarity thus reducing foraging success. Underwater noise is also 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 2014, Dierschke loc.cit). Hansen et al. (2017) demonstrated the hearing sensitivity of cormorants during diving, indicating that such species which spend much of their foraging time underwater actively pursuing prey are likely to have hearing sensitivity and are therefore potentially vulnerable to anthropogenic underwater noise similar to cetaceans and seals. 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 2012, Fleissbach 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

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.

3.2.5 Invasive Alien Species

Ships' hull may act as a vector for the introduction of invasive alien species. This may adversely affect the structure and functioning of benthic communities and their constituent species.

3.3 Identification of the relevant European site/s

Special Area of Conservations (SAC) were screened on the potential for connectivity between the proposed project and their qualifying interests. 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).

3.3.1 Annex I habitats

The Foreshore Licence Application Area overlaps with the Magherabeg Dunes SAC, the Murrough Wetlands SAC and the Buckronev-Brittias Dunes and Fen SAC. It is also less than 1km from the Wicklow Reef SAC.

As the site investigations are being undertaken in the marine environment, using the Source-Pathway-Receptor model (OPR 2021), only the marine and coastal Annex I habitats were considered in this screening process.

3.3.2 Annex II species

Migratory fish

Once they leave freshwater salmon migrate to their feeding grounds in the northern Atlantic. Recent studies have found that salmon populations migrate towards oceanographic fronts for feeding (Rikardsen *et al.*, 2021). Salmon from northwest Spain and southeast Ireland appear to move out to the shelf edge before crossing the Atlantic towards Greenland. Barry *et al.* (2020) found that individuals from Irish rivers in the northeast migrate out of the Irish Sea through the North Channel into deeper offshore waters further north.

The Freshwater Pearl Mussel utilises Atlantic salmon at a certain stage in its life cycle, Sea lamprey is a predator of salmon (OSPAR 2009). Therefore it is considered that if the salmon is significantly impacted by an activity there is a possibility that these species may also be negatively affected. The Zone of Influence for these species was considered the same as that for Atlantic salmon.

Recent information on Twaite Shad recorded movement of up to 950km from the River Severn with one individual detected in the Blackwater Estuary (Davies *et al.* 2020). However given the spatial and temporal nature of the proposed works only those SAC designated for shad species on the south coast of Ireland are considered to have connectivity with the Application Area; more distant sites are considered too far for any significant interaction to occur.

This logic was also applied to sea lamprey which is a predator of both shad and salmon (OSPAR 2009). Similarly only SACs designated for River lamprey on the east coast of Ireland were considered further in the screening process.

Therefore only SACs along the eastern seaboard and in the vicinity of the Foreshore Licence Application Area were considered to be in the Zone of Influence of the proposed project.

Using this criteria no migratory fish species SAC was identified to be considered further in the screening process.

Marine mammals

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. This is considered the Zone of Influence for this species.

In Ireland the foraging range for harbour seal ranges between 20km and 40km (Cronin 2010), using the precautionary principle that latter value was considered in the screening process and is taken as the Zone of Influence for this species.

Otters are a semi-aquatic species who use the marine environment for foraging. Otters that forage on the coast have flexible foraging times linked to the tides. The Zone of Influence for this species is 20km along the shore.

In Ireland there are a number of SACs designated for the cetaceans, harbour porpoise and common bottlenose dolphin. As these species are highly mobile species specific Management Units (MU) are used to assess to the effect of an activity on them. The Zone of Influence of a project which has the potential to impact on a species is considered to be the MU for that species which overlaps with the project. With respect to the proposed project the overlapping MUs for both harbour porpoise and bottlenose dolphin is the Irish Sea.

Using this criteria one Irish and four British sites were identified to be within the Zone of Influence of the proposed project. These are:

- Rockabill to Dalkey SAC
- North Anglesey Marine / Gogledd Môn Forol SAC
- West Wales Marine / Gorllewin Cymru Forol SAC
- North Channel SAC
- Cardigan Bay / Bae Ceredigion SAC
- Llyn Peninsula and the Sarnau / Pen Llŷn a'r Sarnau SAC

Table 4 Special Area of Conservation (SAC) 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 |
|--------------------------------------|---------------------------|---|-----------------|----------------------------|
| Magherabeg Dunes SAC | 0km | Annual vegetation of drift lines [1210] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220] | In | Physical disturbance |
| Murrough Wetlands SAC | 0km | Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> [7210] Alkaline fens [7230] | In | Physical disturbance |
| Buckroneys-Brittas Dunes and Fen SAC | 0km | Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150] Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170] Humid dune slacks [2190] Alkaline fens [7230] | In | Physical disturbance |

| Site and Code | Distance from Survey Area | Qualifying Interests | Screened In/Out | Potential source of impact |
|---|---------------------------|--|-----------------------------------|--|
| Wicklow Reef SAC | Less than 1km | Reefs [1170] | In | Increased suspended solids from geotechnical surveys /physical disturbance |
| Saltee Islands SAC [Site code IE000707] | 104km | Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] Halichoerus grypus (Grey Seal) [1364] | Out In | Disturbance from underwater noise |
| Slaney River Valley SAC [Site code IE000781] | 56 | Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows (Glaucopuccinellietalia maritima) [1330] Mediterranean salt meadows (Juncetalia maritimi) [1410] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaiter Shad) [1103] | Out | |

| Site and Code | Distance from Survey Area | Qualifying Interests | Screened In/Out | Potential source of impact |
|---|----------------------------------|---|-----------------|-------------------------------------|
| | | Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Phoca vitulina (Harbour Seal) [1365] | | Distance too great for Harbour Seal |
| Rockabill to Dalkey SAC [IE003000] | Within MU for Harbour Porpoise | Phocoena phocoena (Harbour Porpoise) [1351] | In | Disturbance from underwater noise |
| North Anglesey Marine / Gogledd Môn Forol [UK 0030398] | Within MU for Harbour Porpoise | Phocoena phocoena (Harbour Porpoise) [1351] | In | Disturbance from underwater noise |
| West Wales Marine / Gorllewin Cymru Forol [UK 0030397] | Within MU for Harbour Porpoise | Phocoena phocoena (Harbour Porpoise) [1351] | In | Disturbance from underwater noise |
| North Channel SAC [UK 0030399] | Within MU for Harbour Porpoise | Phocoena phocoena (Harbour Porpoise) [1351] | In | Disturbance from underwater noise |
| Cardigan Bay / Bae Ceredigion [UK 0012712] | Within MU for Bottlenose Dolphin | Tursiops truncatus (Bottlenose dolphin) [1349] | In | Disturbance from underwater noise |
| Lleyn Peninsula and the Sarnau / Pen Llŷn a'r Sarnau [UK 0013117] | Within MU for Bottlenose Dolphin | Tursiops truncatus (Bottlenose dolphin) [1349] | In | Disturbance from underwater noise |

3.3.3 Birds

A Special Protection Area (SPA) is considered to have connectivity if it either overlaps with the Foreshore Licence Application Area or is within 15km of this area. It is acknowledged that seabirds generally have large foraging ranges (Woodward *et al.* 2019) and may occasionally occur in the Foreshore Licence Application Area from more distant SPAs. If the survey area represents the outer extent of the foraging range of species, such as Manx Shearwater which have very large ranges, then the connectivity between it and SPAs for which the species is an SCI is considered to be insignificant.

Using the above criteria three European Sites are considered to be within the Zone of Influence of the proposed project:

- Wexford Harbour and Slobbs SPA
- The Raven SPA, and
- Cahore Marshes SPA

Table 5 Special Protection Areas (SPA) and their qualifying interests to be considered further in the screening process.

| Site and Code | Distance from Survey Area | Qualifying Interests | Screened In/Out | Potential source of impact |
|----------------------------------|---------------------------|---|-----------------|--|
| The Murrough SPA [IE004186] | Adjacent to survey area | Red-throated Diver [A001] Greylag Goose [A043] Light-bellied Brent Goose [A046] Wigeon [A050] Teal [A052] Black-headed Gull [A179] Herring Gull [A184] Little Tern [A195] Wetland and Waterbirds [A999] | In | Disturbance and displacement by above water noise, underwater noise and visual impacts |
| Wicklow Head SPA [IE004127] | 0.6km | Kittiwake [A188] | In | Disturbance and displacement by above water noise, underwater noise and visual impacts |
| Wicklow Mountains SPA [IE004040] | 13km | Merlin [A098] Peregrine [A103] | Out | These QI's do not forage or roost in the marine environment. |

3.4 Assessment of Likely Significant Effects

3.4.1 Annex I Habitats

The proposed site investigation survey area overlaps with the Magherabeg Dunes SAC, the Murrough Wetlands SAC and the Buckronev-Brittis Dunes and Fen SAC. It is less than 1km from the Wicklow Reef SAC. Therefore the possibility of likely significant effects on Annex I habitats, as a result of the proposed site investigation surveys **cannot be excluded**.

3.4.2 Annex II species

In relation to Annex II migratory fish species no SAC is considered to be in the Zone of Influence of the proposed site investigation surveys. Therefore the possibility of likely significant effects on migratory fish species, as a result of the proposed site investigation surveys **can be excluded**.

The potential sound pressure level from equipment proposed in these site investigations is within the range to cause Permanent Threshold Shift (PTS) in very high frequency cetaceans hearing group (this group includes Harbour porpoise) and Temporary Threshold Shift (TTS) in seals in water (table 3). Therefore, using the precautionary principal, the possibility of likely significant effects as a result of the proposed project on marine mammals within the Zone of Influence of the proposed project **cannot be excluded**.

3.4.2 Birds

Information on the underwater hearing abilities of diving birds and evidence of the effects of underwater anthropogenic noise on them is very limited. Studies suggest that mortality occurs when in close proximity to the event (Danil & St Leger 2011). While seabird responses to approaching vessels are highly variable (e.g. Fliessbach *et al.* 2019), flushing disturbance would be expected to displace most diving seabirds from close proximity to the survey vessel and any towed equipment, thereby limiting their exposure to the highest sound pressures generated. Geotechnical surveys are proposed adjacent to the Murrough SPA and within 15km of the Wicklow Head SPA. Therefore the possibility of likely significant effects as a result of the proposed project on bird species within the Zone of Influence of the proposed project **cannot be excluded**.

3.4.3 In-combination effects

Article 6(3) of the Habitats Directive requires that AA be carried out in respect of any plan or project which is likely to have a significant effect on one or more European sites, “either individually or in combination with other plans or projects”. Therefore, regardless of whether or not the likely effects of a plan or project are significant when considered in isolation, the potential for the plan or project to significantly affect European sites in combination with other past, present or foreseeable future plans or projects must also be assessed.

In a search of the Department’s Foreshore applications web site and Wicklow County Council’s planning portal on the 25th of January 2023 a number of projects were identified which may have potential to have in-combination effects with the proposed project.

| Application | Project | Application Status | In-combination effects |
|--------------------|---|----------------------------|---|
| FS007283 | Banba Wind Ltd., Site Investigations for proposed Offshore Wind Farm | Applied 23/12/2021 | Possible in-combination effects if projects coincide with one another. |
| FS007163 | Wicklow Sea Wind Ltd., Site Investigations for the proposed Wicklow Project offshore wind farm | Applied 10/01/2022 | Possible in-combination effects if projects coincide with one another. |
| FS007546 | Codling Wind Park Ltd., Site Investigations for proposed Offshore Wind Farm | Consultation 13/06/2022 | Possible in-combination effects if projects coincide with one another |
| FS007472 | Mac Lir Offshore Wind Limited Site Investigations for proposed Offshore Wind Farm, off Counties Wexford, Wicklow and Dublin | Applied 22/09/22 | Possible in-combination effects if the projects were to coincide with each other. |
| FS007367 | Greystones OWL Windfarm Limited, Site Investigations for proposed Offshore Wind Farm | Applied 27/06/22 | Possible in-combination effects if the projects were to coincide with each other. |
| FS007330 | Réalt na Mara Offshore Wind Farm Limited, Site Investigations for proposed Offshore Wind Farm | Applied 10/03/2022 | Possible in-combination effects if the projects were to coincide with each other. |
| FS007188 | RWE Renewables-Site Investigations off Counties Dublin and Wicklow | Consultation 21/07/2021 | Possible in-combination effects if the projects were to coincide with each other. |
| FS007232 | DP Energy - Latitude 52 Offshore Windfarm Ltd. Site Investigations off coast of counties Wicklow and Wexford | Applied 22/12/2021 | Possible in-combination effects if the projects were to coincide with each other. |

Of these projects only those which have a temporal overlap with the proposed project are likely to have in-combination effects. Such effects, depending on the project, may include all or some of the following effects - above water noise disturbance, under water noise disturbance and visual disturbance.

All Offshore Renewable Energy site investigation surveys are considered to have in-combination effects should there be temporary overlap with the proposed project. Likely significant in-combination effects between this 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.

Increased suspended solids from geotechnical surveys causing likely significant effects could not be discounted for the following Special Areas of Conservations:

- Wicklow Reef SAC

Physical disturbance from geotechnical surveys causing likely significant effects could not be discounted for the following Special Areas of Conservations:

- Wicklow Reef SAC
- Magherabeg Dunes SAC
- Murrough Wetlands SAC
- Buckronev-Brittis Dunes and Fen SAC

Disturbance from underwater noise causing likely significant effects could not be discounted for the following Special Areas of Conservations:

- Saltee Islands SAC
- Rockabill to Dalkey SAC
- North Anglesey Marine SAC
- West Wales Marine SAC
- North Channel SAC
- Cardigan Bay SAC, and
- Lley Peninsula and the Sarnau SAC

Disturbance and displacement by above water noise, underwater noise and visual impacts causing likely significant effects could not be discounted for the following Special Protection Areas:

- The Murrough SPA, and
- Wicklow Head 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.

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6. Site Specific Conservation Objectives

All others are Version 1 of the site specific conservation objectives which were on NPWS's website at the time of writing. No conservation objective available for Cardigan Bay, the North Channel or Llyn Peninsula and the Sarnau at time of writing.

Magherabeg Dunes SAC

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001766.pdf

Murrrough Wetlands SAC

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002249.pdf

Buckronev-Brittis Dunes and Fen SAC

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000729.pdf

Wicklow Reef SAC 002274

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002274.pdf

Saltee Islands SAC 000707

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000707.pdf

Rockabill to Dalkey SAC IE003000

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO003000.pdf

North Anglesey Marine / Gogledd Môn Forol UK0030398

<https://data.jncc.gov.uk/data/f4c19257-2341-46b3-8e29-49665cd8f3d2/NorthAnglesey-Conservation-Advice.pdf>

West Wales Marine / Gorllewin Cymru Forol UK0030397

https://data.jncc.gov.uk/data/029e40f3-5f67-4168-b10d-8730f2c40e0a/WWM-conservation_advice.pdf

The North Channel [UK0030399]

Cardigan Bay / Bae Ceredigion [UK 0012712]

Llyn Peninsula and the Sarnau / Pen Llŷn a'r Sarnau [UK 0013117]

The Murrrough SPA [004186]

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004186.pdf

Wicklow Head SPA [004127]

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004127.pdf

Wicklow Mountains SPA [004040]

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004040.pdf