REPORT

Supporting Information for Screening for Appropriate Assessment (SISAA)

Kerry Foreshore Licence Application

Client: Kerry Offshore Wind Limited

Reference: PC1509-RHD-ZZ-XX-RP-Z-0021

Status: S3/P01

Date: 16 March 2022

Royal HaskoningDHV

Enhancing Society Together

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[redacted]

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Project related

Royal HaskoningDHV

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1 Introduction

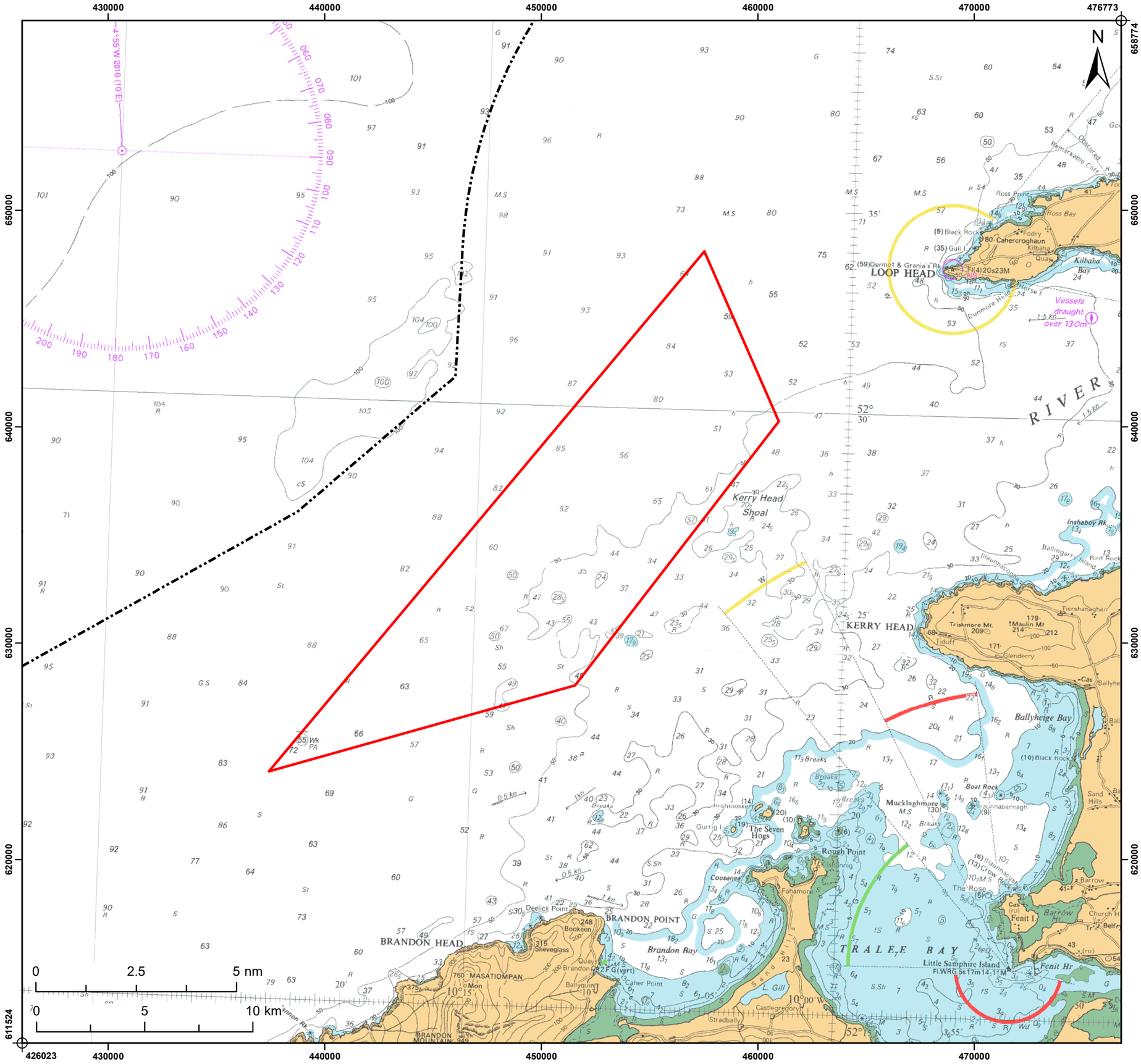
Kerry Offshore Wind Limited wish to undertake surveys to assess the suitability of the area of interest for development of an offshore wind farm (the Kerry Project). The Kerry Project proposed foreshore licence survey area (the foreshore licence survey area) lies 11km off the west coast of Ireland in the North Atlantic Ocean. **Figure 1** shows the location of the foreshore licence survey area. A Foreshore Licence is required to permit a developer to carry out surveys in the foreshore under the Foreshore Act 1933, as amended. This report accompanies the Foreshore Investigation Licence Application to provide the necessary information to the competent authority to enable an Appropriate Assessment (AA) Screening to be undertaken in accordance with the requirements set out under Article 6(3) of the Habitats Directive (92/42/EEC).

The Habitats Directive (European Communities (Birds and Natural Habitats) Regulations 2011, S.I. No. 477 of 2011) (as amended), requires the likely significant effects (LSEs) of a plan or project on European sites, which include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) within the Natura 2000 network to be assessed. A plan, project or activity can only proceed following the conclusion by the competent authority that no adverse effect on the integrity of the site will occur based upon the site's conservation objectives.

This report provides the information to inform the AA Screening of whether the proposed surveys, either alone or in combination with other plans or projects, are likely to have a significant effect on any SACs, SPAs or their designated habitats and/or species that fall within the Zone of Influence (ZoI) of the proposed surveys, in the absence of mitigation measures. This document provides the information to support the Stage 1 AA Screening Process. The full AA process is detailed in **Section 3** of this document.

Stage 1 screens European sites to determine if LSEs can be excluded.

This report was prepared by [redacted] of Royal HaskoningDHV with specialist advice from experts at Royal HaskoningDHV and with the assistance of Dr [redacted] MCIEEM of MERC Consultants Ltd.



Legend:

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

Note: Area given in Irish Transverse Mercator (ITM)

Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title: Proposed Kerry Foreshore Licence Survey Area

Figure: 1 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0114

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Co-ordinate system: IRENET95 Irish Transverse Mercator

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2 Statement of Authority

2.1 [redacted]

[redacted] is an experienced environmental consultant, having worked in the marine sector for 14 years following a BSc in Marine Biology. [redacted] has experience in collecting and analysing marine data, working as a marine surveyor undertaking benthic, intertidal and hydrographic surveys.

[redacted]s knowledge spans coastal, estuarine, offshore and terrestrial habitats with experience managing large multidisciplinary projects. Her work is centred around assessing the impacts of development on the environment and she has worked in numerous roles including project manager, technical specialist, marine surveyor and GIS analyst on a variety of projects encompassing a range of sectors throughout the UK including nuclear new build and renewables.

[redacted] has coordinated Environmental Impact Assessments (EIA) and Habitats Regulations Assessments (HRA) for both small- and large-scale projects and completed technical Environmental Statement (ES) chapters such as benthic ecology, fish ecology and contaminated sediments. She has worked on a number of major infrastructure projects such as Moorside (nuclear new build, Cumbria), Inch Cape Offshore Wind Farm (Round 3, East Coast Scotland), Robin Rigg Offshore Wind Farm (Round 1, Solway Firth), the NAREC offshore wind demonstrator site in Blyth (North East England), the North Connect HVDC link as well as other specialist marine studies, such as a sea water cooling and power station sea defence options.

Most recently [redacted] undertook site selection work for The Crown Estate's Round 4 and ScotWind's offshore wind leasing processes for England and Scotland assessing the risks and constraints to consent.

2.2 [redacted]

[redacted] is a professional ecologist with a wide range of experience in the field of conservation biology, marine habitat mapping and ecology. She completed a M.Sc. in ecology and taxonomy at the Botany Department Trinity College Dublin in 1989 and a Ph.D. in taxonomy also at the Botany Department Trinity College Dublin in 2001. For the last 15 years she has specialised in the ecology of marine ecosystems.

She has conducted field surveys and assessments for a range of habitats over the last 15 years for private and public sector clients including the National Parks and Wildlife Service (NPWS), The Marine Institute, Inland Fisheries Ireland, Coillte Teo. Environmental Protection Agency, SEAI and ESB Networks Ltd.

She was the senior ecologist and field survey team member of the 2015-2018 NPWS national monitoring of marine Annex I habitats for compliance under Article 17 of the EU Habitats Directive. In this context she was responsible for the assessment and reporting of marine Annex I habitats and was lead author of all Article 17 reports and the overarching site monitoring reports. She was also a field team member and author of the ecology sections of the Environmental Impact Statement (EIS) and Natura Impact Statement (NIS) for the AMETS and lead author for the preparation of the Department of Communications, Climate Action and Environment (2018). Guidance on Marine Baseline Ecological Assessments and Monitoring Activities - Offshore Renewable Energy Projects Part 1 and Part 2.

In addition to her scientific expertise, she has an in-depth knowledge of Irish and European Environmental legislation and policy. In 2011 she prepared the text describing Activities Requiring Consent (ARCs) for inclusion in a handbook detailing the regulatory framework for all developments within designated sites in Ireland on behalf of the NPWS. She has also produced numerous Conservation Management Plans for the

same department. To-date she has conducted in excess of 70 ecological reports in support of AA under Article 6(3) of the EU Habitats Directive.

3 Methodology

3.1 The AA Process

The AA process is comprised of four main stages and the assessment is undertaken in a stepwise process (European Commission, 2021[1]; DEHLG, 2009[2]). These four stages are outlined in **Figure 2.**

3.1.1 Stage 1: Screening for AA

The Natura 2000 network of European sites is comprised of (SACs, including candidate SACs), and SPAs (including proposed SPAs). SACs are selected for the conservation of Annex I habitats and Annex II species (other than birds). SPAs are selected for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. Each has conservation objectives for its interest features (i.e. the Annex I habitats, Annex II species or Annex I birds).

In Stage 1, European sites are identified and screened to determine if there will be LSEs, both in terms of the effects from the project alone or in combination with other plans and projects. The first stage is required under Article 6(3) of the Habitats Directive, to determine whether, firstly, a plan or project is directly connected with or necessary to the management of the site, and secondly, whether it is likely to have a significant effect on the site in view of its conservation objectives. Screening is undertaken without the consideration of mitigation[3]. The assessment moves to Stage 2 if a LSE is determined, or the conclusion is uncertain. The Department of Communications, Climate Action and Environment (2017) advise that an AA Screening report is produced to assist the competent authority in its determination.

3.1.2 Stage 2: Appropriate Assessment

Where a plan, project or activity is identified as likely to have a significant effect on a European site at Stage 1, further information is obtained to inform the AA as required by Article 6(3). A detailed assessment of the potential effects is undertaken to determine whether the project alone or in combination could adversely affect the integrity of the European site in view of its conservation objectives. The assessment includes consideration of any mitigation measures necessary to avoid or reduce the negative effects on the features of the European sites. This assessment stage is reported in the form of a NIS to inform the competent authority's AA. The NIS presents the evidence of the effects on the integrity of the European sites concerned.

In those cases where the conclusion of the NIS is that an adverse effect on the integrity of a European site has been identified, or if the assessment is inconclusive, then the assessment proceeds to stages 3 and 4.

3.1.3 Stage 3: Alternative Solutions

All reasonable alternative solutions should be considered that will enable the plan or project to proceed without an adverse effect on site integrity. As part of the assessment, if alternative solutions are identified these need to be assessed under the Stage 2. Alternative solutions can include a proposal of a different

[1] *https://ec.europa.eu/environment/nature/natura2000/management/pdf/methodological-guidance_2021-10/EN.pdf*
[2] *This Guidance may be subject to review in the course of this application to take account of the EC (2021), which is considered in this application.*
[3] *This follows the People Over Wind & Sweetman v. Coillte Teoranta (C-323/17) case. See also EC (2021) page 20 re. mitigation.*

scale or a different location. At this stage if there is still an adverse effect on the integrity of a European site there is a need to demonstrate that the least damaging alternative solution has been selected to progress to Stage 4.

3.1.4 Stage 4: Imperative Reasons of Overriding Public Interest (IROPI) / Derogation

Stage 4 examines whether there are imperative reasons of overriding public interest (IROPI) that would allow a plan or project that would cause an adverse effect on the integrity of a European site to proceed. If it is demonstrated that there are no alternative solutions to the plan, project or activity that would have a lesser effect or avoid an adverse effect on the integrity of the site(s), then a justified case will be presented that the project must be carried out for IROPI.

If the conclusion is that there are no alternative solutions and IROPI can be demonstrated, then the project may proceed only if appropriate compensatory measures are secured and delivered. The compensation measures would ensure the coherence of the Natura 2000 network and they must be approved by the Minister.

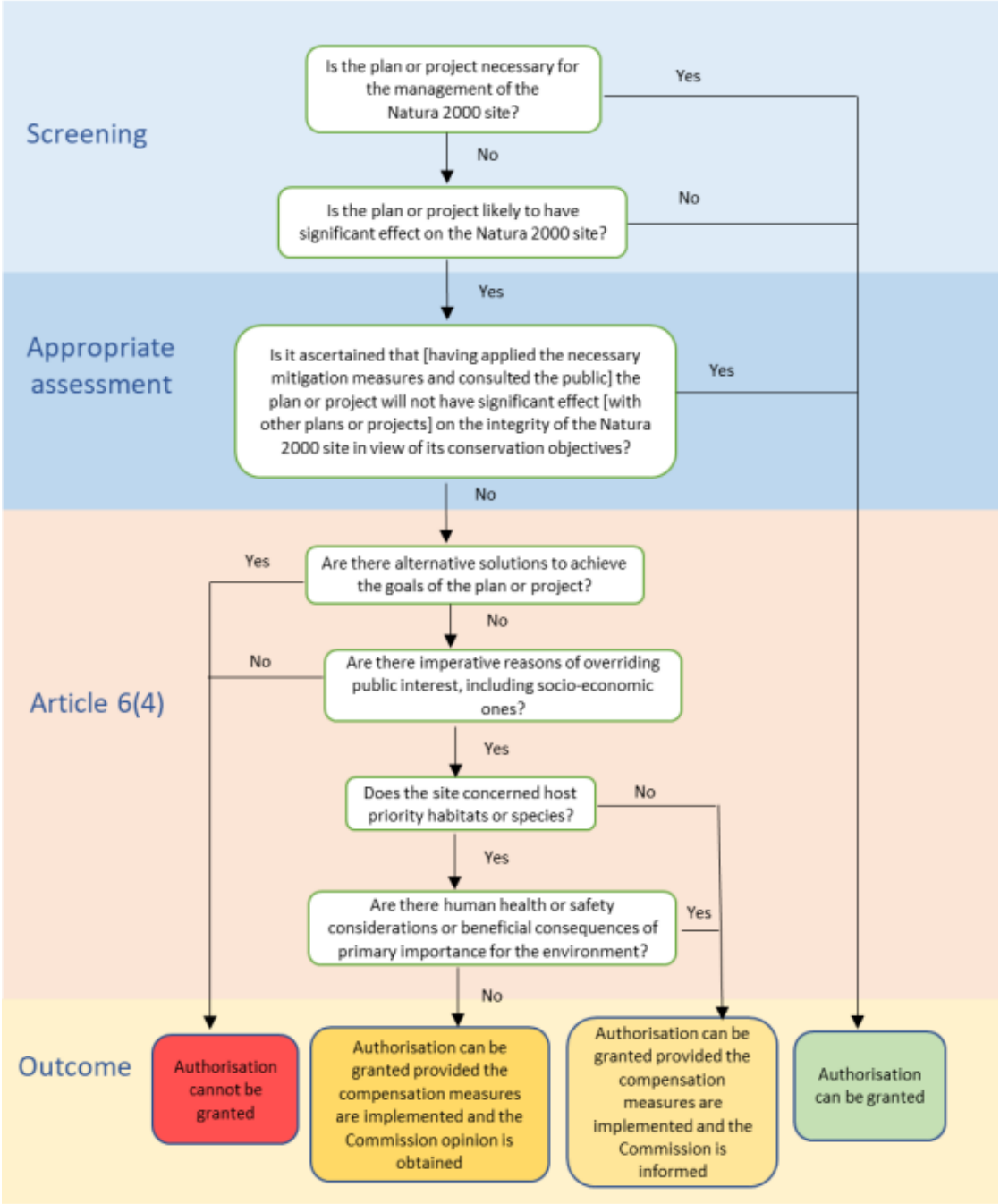


Figure 2 Flow chart of Article 6(3) and 6(4) procedure of the Habitats 92/43/EEC

3.2 Assessment Approach

A thorough literature search and data search was undertaken to inform the assessment. This included data available from NPWS. European sites that could be potentially affected by the project were identified by considering the proximity and potential connectivity to the foreshore licence survey area.

The assessment of a LSE on the features of the Natura 2000 sites was undertaken using a 'Source-Pathway-Receptor' approach.

- Source – the origin of a potential impact (noting that one source may have several pathways and could affect many receptors).
    - Example: Geophysical survey;
- Pathway – the means by which the effect of the activity could impact a receptor.
    - Example: Sound produced from the geophysical survey; and
- Receptor – the element of the receiving environment that is affected by the activity.
    - Example: presence of a receptor e.g. harbour porpoise *Phocoena phocoena,* within the direct footprint of physical effect or within range of disturbance (e.g. noise).

Where there was no pathway or the pathway was so long that the effect from the source has dissipated to a negligible level before reaching the receptor, there was justification for the screening out of that particular receptor. For any site interest feature not screened out, further assessment was undertaken to determine the potential for an adverse effect on the integrity of the site; and are included in the NIS (Royal HaskoningDHV, 2022a - document reference: PC1509-RHD-ZZ-XX-Z-RP-0022). The assessment considered all direct, indirect, short term, long term, permanent, cumulative and in combination effects.

The assessment was informed by topic specific expert advice and guidance and advice by [redacted] of MERC who has an in-depth knowledge of the foreshore licence survey area (marine area and related species) and its environs.

3.3 Legislation, Policy and Guidance

The Supporting Information for Screening for AA (SISAA) and preparation of this report has been undertaken following European Directives, national legislation, relevant guidance issued by the European Commission, national governmental bodies, NPWS and other environmental bodies. Guidance used includes:

- 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.
- Council Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds (the Birds Directive)
- Marine Strategy Framework Directive 2008/56/EC
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- Marine Spatial Planning Directive 2014/89/EC
- Maritime Area Planning Act 2021

- Foreshore Act 1933, as amended
- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011, as amended.
- European Commission (2018). Managing European sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2011). European Union (EU) Guidance on wind energy development in accordance with EU nature legislation. Publications Office of the European Union, Luxembourg.
- European Commission (2021). Assessment of plans and projects significantly affecting European sites; Methodological Guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.
- DEHLG (2009). AA of Plans and Projects in Ireland, Guidance for Planning Authorities.
- Department of Communications, Climate Action and Environment (DCCAE) (2017). Guidance on the preparation of Environment Impact Statements (EIS) and NIS for offshore renewable energy projects.
- The Department of Arts, Heritage and the Gaeltacht (DAHG) (2012). Marine NISs in Irish Special Areas of Conservation: A Working Document.
- DCCAE (2014) Offshore Renewable Energy Development Plan (OREDP) - A Framework for the Sustainable Development of Ireland's Offshore Renewable Energy Resource.
- DCCAE (2018) OREDP Interim Review May 2018.
- Department of Communications, Energy and Natural Resources (DCENR) (2014). OREDP Strategic Environmental Assessment (SEA) - SEA Statement.
- Sustainable Energy authority of Ireland (2010). SEA of OREDP in the Republic of Ireland (RoI).
- DCENR (2013). OREDP for Ireland: NIS.
- DHLGH (2021) National Marine Planning Framework and associated SEA and AA.
- DHLGH (2019) Marine Planning Policy Statement (Consultation Draft).
- OPR (2021) Office of the Planning Regulator Practice Note PN01 - AA Screening for Development Management.

3.4 Baseline Data

A review of available literature and spatial data was undertaken to establish the baseline environment. The baseline data used includes:

- Site synopsis for each designated site: https://www.npws.ie/maps-and-data/habitat-and-species-data
- European Site data forms
- European site conservation objectives
- GIS layers:
    - Article 17 Habitats and species (2019): https://www.npws.ie/maps-and-data/habitat-and-species-data/article-17/2019

- Article 12 Breeding distributions and ranges (2012): https://www.npws.ie/maps-and-data/habitat-and-species-data/article-12-data
- Ireland Whale and Dolphin Group (2005-2011) (from Ireland's Marine Atlas): https://www.npws.ie/maps-and-data/habitat-and-species-data
- Russel *et al.* (2017) Seals at sea density: https://data.marine.gov.scot/dataset/estimated-sea-distribution-grey-and-harbour-seals-updated-maps-2017
- Marine Institute (2009): Species Spawning and Nursery Areas https://data.gov.ie/dataset/species-spawning-and-nursery-areas
- Coull, J.A., Johnstone, R. and Rogers, S.I., 1998. Fisheries Sensitivity Maps in British waters. United Kingdom Offshore Operators Association Ltd.
- Ellis, J., Milligan, S., Readdy, L., South, A., Taylor, N. and Brown, M. (2010) Mapping spawning and nursery areas of species to be considered in Marine Protected Areas (Marine Conservation Zones) – Report No. 1: Final Report on development of derived data layers for 40 mobile species considered to be of conservation importance. Final Version August 2010. Defra project code MB5301.
- EU Sea Map (2016) Broad-scale predictive habitat map following EUNIS 2007-2011 classification: https://www.emodnet-seabedhabitats.eu/access-data/download-data/?linkid=1

- Small Cetaceans in the European Atlantic and North Sea (SCANS-III) data (Hammond *et al.*, 2021);
- ObSERVE aerial surveys (Rogan *et al.*, 2018a);
- Sea Watch Foundation sightings (Sea Watch Foundation, 2019);
- Revised Phase III data analysis of Joint Cetacean Protocol (JCP) data resources (Paxton *et al.*, 2016);
- UK seal at sea density estimates and usage maps (Russell *et al.*, 2017);
- Special Committee on Seals (SCOS) annual reporting of scientific advice on matters related to the management of seal populations (SCOS, 2020);
- Literature on the impact of noise on marine mammals;
- Literature on bird disturbance and displacement; and
- A comprehensive list of data and literature reviewed can be found in References (**Section 10**).

4 Details of Proposed Project

The Kerry Project site is located in the North Atlantic Ocean, approximately 11km off the west coast of Ireland (**Figure 1**). The site was identified through a thorough site selection process, considering a variety of constraints (i.e. in the physical environment and industries/transport). The Kerry Project would be for a development of an offshore wind farm with a likely capacity of around 1000MW. The site will use fixed foundation technology (either XXL Monopiles, Jacket/Tripods or a mixture of both).

This SIAA is being submitted as part of an application for a Foreshore Licence by Kerry Offshore Wind Limited for permission to carry out site investigation (SI) surveys for the Kerry Project[4]. These surveys will establish a baseline which will inform the project design, EIA and HRA. In line with the National Marine Planning Framework (NMPF) the proposals will be undertaken so that environmental effects are avoided, minimised or mitigated. The project also complies with Ireland's OREDP and with the OREDP Interim Review 2018. The findings and recommendations of the OREDP SEA, NMPF (and associated SEA and AA), have been used to inform the development of the project and the preparation of this SISAA report.

The site selection process was designed to avoid potential sensitive areas and has sought to minimise environmental impacts and interactions with other industries as far as possible. The data obtained from the surveys will be used to minimise uncertainty for various issues at an early design stage and inform the development feasibility and optimise project design. Survey information would also be used to assess the suitability of the area of interest for a renewable energy project from an environmental, economic and wider stakeholder prospective. Many of the SI surveys are listed in the OREDP as project level mitigation measures to establish a baseline and inform the impact assessment for individual developments such as geophysical and benthic survey.

The Kerry Project will contribute to the Government's ambitious target of net zero carbon emissions by 2050 and at least 5GW of installed offshore wind capacity by 2030.

The foreshore licence survey area is for the Kerry Project offshore wind farm site only. A detailed grid feasibility assessment is underway to identify the probable grid connection location for the project, to which a landfall cable route assessment will be conducted to refine the likely landfall and route for a cable. Following this, a foreshore licence application to survey this cable area will be sought. This licence application will be subject to AA Screening and if considered necessary, an AA, taking into account the cumulative impacts of the survey of the offshore survey area in this application and the cable route.

A full description of the proposed SI surveys is outlined in Schedule of Works (Royal HaskoningDHV, 2022b - document reference: PC1509-RHD-ZZ-XX-RP-Z-0023).

5 Ecology of the Site

5.1 Overview

The following describes the ecology of the foreshore licence survey area. A brief description is given in the context of the benthic environment, marine mammals, fish and bird baselines. All species and habitats considered in this report are those protected by the Habitats Directive through the Natura 2000 network of European sites (see **Section 0**).

5.2 Benthic Environment

The foreshore licence survey area has a water depth range of approximately 38-89m. Based on data obtained from the European Nature Information System (EUNIS) habitat classification system the sediment in the survey area is predominantly rock/hard substrate and coarse substrate with patches of muddy sand. **Figure 3** shows the predominant habitat types in the foreshore licence survey area.

[4] *This application is for the site investigation surveys only. The potential windfarm development would be subject to an application under the new consent regime for offshore wind currently undergoing the multi-step legislative process in the Oireachtas.*

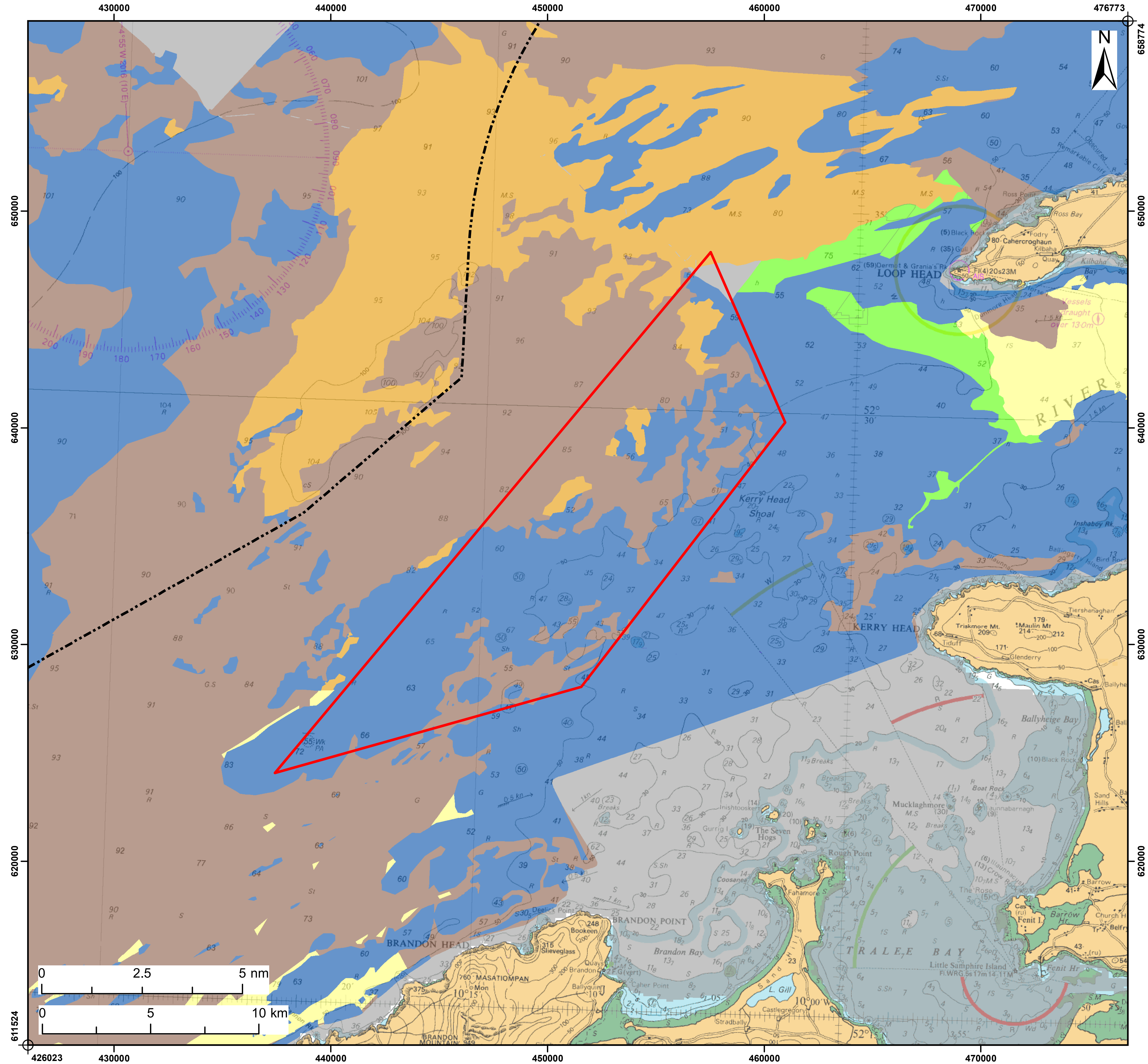
Using EMODnet seabed habitat data it is noted that the proposed survey area is a mix of habitat types. The survey site is predominately high energy circalittoral rock and deep circalittoral mud. High energy circalittoral rock and deep circalittoral mud may have a variety of faunal communities, depending upon level of energy for the former and the level of silt/clay and organic matter in the sediment for the latter. The survey area also overlaps circalittoral coarse sediment with coarse sands and gravel or shell and faunal communities on deep moderate energy circalittoral rock (EMODnet, 2022).

The closest SAC designated for benthic habitat is the Kerry Head Shoal SAC located adjacent to the eastern boundary of the foreshore licence survey area. The Kerry Head Shoal is a deep (20 - 52m) limestone reef. The SAC is situated to the north of Tralee Bay and to the west of Kerry Head and is exposed to the full force of swells from the Atlantic. The infralittoral and circalittoral reef communities of the Kerry Head Shoal SAC are extremely exposed to wave action and subject to weak tidal streams. The circalittoral reef topography ranges from large relatively flat terraces cut by gullies to ridged bedrock and angular boulders (DAHG, 2013)

The Kerry Head Shoal is of high importance as it is the best-known example of the Axinellid sponge community in Ireland (DAHG, 2013). Several species occur in associations that are unique in Ireland. The site contains a rich and diverse flora and fauna that is characterized by rare erect and encrusting sponges *Tetilla cranium, Quasillina brevis, Axinella flustra* and *Hexadella racovitzae.* These species are only known from one other locality in Ireland, while *Tetilla zetlandica* has only been found in two other localities on the west coast (DAHG, 2013).

In deeper water, at 33-46 m, the bedrock ranges from large and relatively flat terraces cut by gullies, to ridged bedrock and angular boulders. Here the reefs are colonised by excellent examples of the Axinellid cup sponge community with an extremely high number of sponge species (44 species) and a few algal species. The sponges *Axinella infundibuliformis, Phakellia ventilabrum* and *P. vermiculata* are frequent in this community, as are a number of rare species including two sponges *H. recovitzai* and *A. flustra*, the bryozoan rose ‘coral’ *Pentapora foliacea*, the sea-squirt *Diazona violacea and* the red soft coral *Alcyonium glomeratum*. In the deepest examples of this community the rare sponges *T. zetlandica*, *T. cranium*, and *Q. brevis* are also present. The rare species of sea-slug *Aldisa zetlandica* has also been recorded from the deep reefs (DAHG, 2013).

P. ventilabrum and axinellid sponges found in the SAC are sensitive to smothering and siltation changes and may be slow to recover from long-term disturbance (Readman, 2018).



Legend:

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

EUNIS Substrate Type

- Coarse Substrate
- Mixed Sediment
- Muddy Sand
- Rock or Other Hard Substrata
- Sand
- Seabed

Data Sources: © EMODnet, 2022. © UKHO, 2022. © HaskoningDHV UK Ltd. 2022.
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Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title:

Benthic Environment

Figure: 3 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0117

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02	17/02/2022	[redacted]		A3	1:175,000
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Co-ordinate system: IRENET95 Irish Transverse Mercator

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5.3 Migratory Fish

There are a number of rivers on the west coast of Ireland which have been designated as SACs for Annex II migratory fish. Although these SACs are not marine, the migratory fish for which they were designated have a marine phase of the lifecycle. These species rely on the sea to migrate to feeding grounds before returning to rivers to spawn.

The following are the species from the SACs in Ireland and the times of year of their migrations:

- Sea lamprey *Petromyzon marinus* – late April to early June;
- River lamprey *Lampetra fluviatilis* – September to June;
- Twaite shad *Alosa fallax* – year-round and migrate into rivers from April-July; and
- Atlantic salmon *Salmo salar* – May to June and autumn months.

The closest SAC to the foreshore licence survey area containing Annex II migratory fish is the Lower River Shannon SAC, which is approximately 6km away.

5.4 Marine Mammals

5.4.1 Otters

Coastal otters mostly feed close to the shore in water less than 3m deep (Natural Resources Wales (NRW), 2017). For otters, although the maximum potential home range for otters can be up to 40km on land (Green *et al.*, 1984; Roche *et al.*, 1995), the foreshore licence survey area is 11km offshore, therefore there is no pathway for direct impact on any European sites for otter.

5.4.2 Cetaceans

Ireland has recorded 25 species of cetacean, all of which are recognised as protected species under the Habitats Directive and the Irish Wildlife Act, approximately five of which have been recorded off the east coast and may be present in the foreshore licence survey area at least on a seasonal basis (IWDG, 2020).

Over a two-year survey period from 2015 – 2016 the ObSERVE Programme recorded 19 cetacean species during aerial surveys of the Celtic and Irish Sea (Rogan *et al.,* 2018a). In both years more cetacean sightings occurred in the winter period than in the summer months and cetacean species richness was higher in the winter months than in the summer months. Bottlenose dolphins *Tursiops truncatus*, harbour porpoise common dolphins *Delphinus delphis* and white-beaked dolphin *Lagenorhynchus albirostris* were the most frequency sighted odontocete (toothed whale/dolphin) species, whereas minke whale *Balaenoptera acutorostrata* was the most frequently sighted mysticete (baleen whale) species (Rogan *et al.,* 2018a).

In monitoring undertaken by Cork Ecology in 2014, the most common species recorded in the Celtic Sea area was the common dolphin, with fin whales *Balaenoptera physalus* and humpback whales *Megaptera novaeangliae* the most frequently encountered large whale species. There were sightings of minke whale, Risso's dolphin *Grampus griseus*, bottlenose dolphin and harbour porpoise (Cetacean monitoring during the Celtic Sea Herring Acoustic Survey ((CSHAS), 2014).

Two cetacean species are listed under Annex II of the Habitats Directive, requiring member states to designate areas of protection for those species. These species are harbour porpoise and the bottlenose dolphin. For this reason, only these two cetacean species are included in the assessments.

5.4.2.1 Harbour porpoise

In Irish waters, the harbour porpoise is the most commonly observed cetacean. Harbour porpoise are widely distributed throughout the Celtic and Irish Seas during most months of the year (Reid *et al.,* 2003; Mackey *et al.,* 2004; Baines and Evans, 2012; Hammond *et al.,* 2013, 2021; Rogan *et al.,* 2018a).

Harbour porpoise within the eastern North Atlantic are generally considered to be part of a continuous biological population that extends from the French coastline of the Bay of Biscay to northern Norway and Iceland (Tolley and Rosel, 2006; Fontaine *et al.,* 2007, 2014; Inter-Agency Marine Mammal Working Group (IAMMWG), 2021). However, for conservation and management purposes, it is necessary to consider this population as smaller Management Units (MUs). MUs provide an indication of the spatial scales at which effects of plans and projects alone, and in combination, need to be assessed for the key cetacean species (IAMMWG, 2021).

The IAMMWG defined three MUs for harbour porpoise: The North Sea; West Scotland, and the Celtic and Irish Sea (CIS) (comprising International Council for the Exploration of the Sea (ICES) area VI and VII, except VIId) (**Figure 4**). The foreshore licence survey area is located in the CIS MU, which has an estimated harbour porpoise abundance of 62,517 (IAMMWG, 2021), based on the Small Cetaceans in the European Atlantic and North Sea (SCANS)-II survey (Hammond *et al.*, 2013) and Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA) surveys (Macleod *et al.*, 2009). For the assessments, the CIS MU has been used as the reference population. This is appropriate to take into account the wide range and distances covered by harbour porpoise.

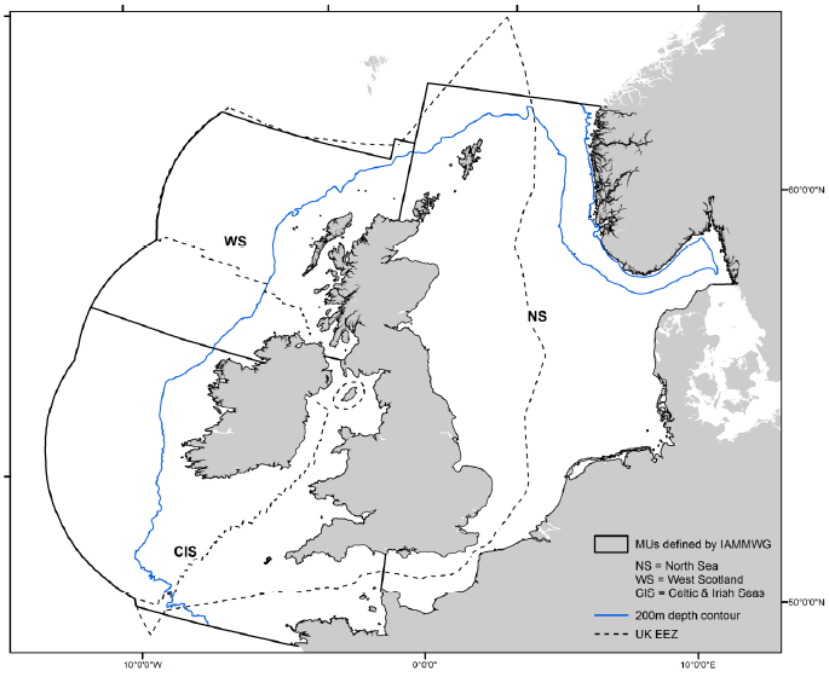


Figure 4 Harbour porpoise Management Units (IAMMWG, 2021)

SCANS-III, a large scale survey for cetaceans across European waters, was undertaken in the summer of 2016, and included areas from the Strait of Gibraltar in the south to 62°N in the north and extending west to the 200 nautical miles (nm) limits of all EU Member States (Hammond *et al.,* 2021). For the entire SCANS-III survey area, harbour porpoise abundance in the summer of 2016 was estimated to be 466,569 with an overall estimated density of 0.381/ km^2 (Coefficient of Variation CV = 0.154; 95% Confidence Interval (CI) CI = 345,306-630,417; Hammond *et al.*, 2021).

Estimates for harbour porpoise in the CIS ICES Assessment Unit (partial coverage only, including survey Blocks B, C (half of the block only), D, E, F, and 9 (parts of the block only); **Figure 5**) during the SCANS-III survey was an abundance of 26,700 and density of 0.11 km^2 (CV = 0.25; 95% CI = 16,055 – 42,128; Hammond *et al.*, 2021). The foreshore licence survey area is not within SCANS-III survey blocks (with the green blocks as shown on **Figure 5** being surveyed within the ObSERVE survey – see below).

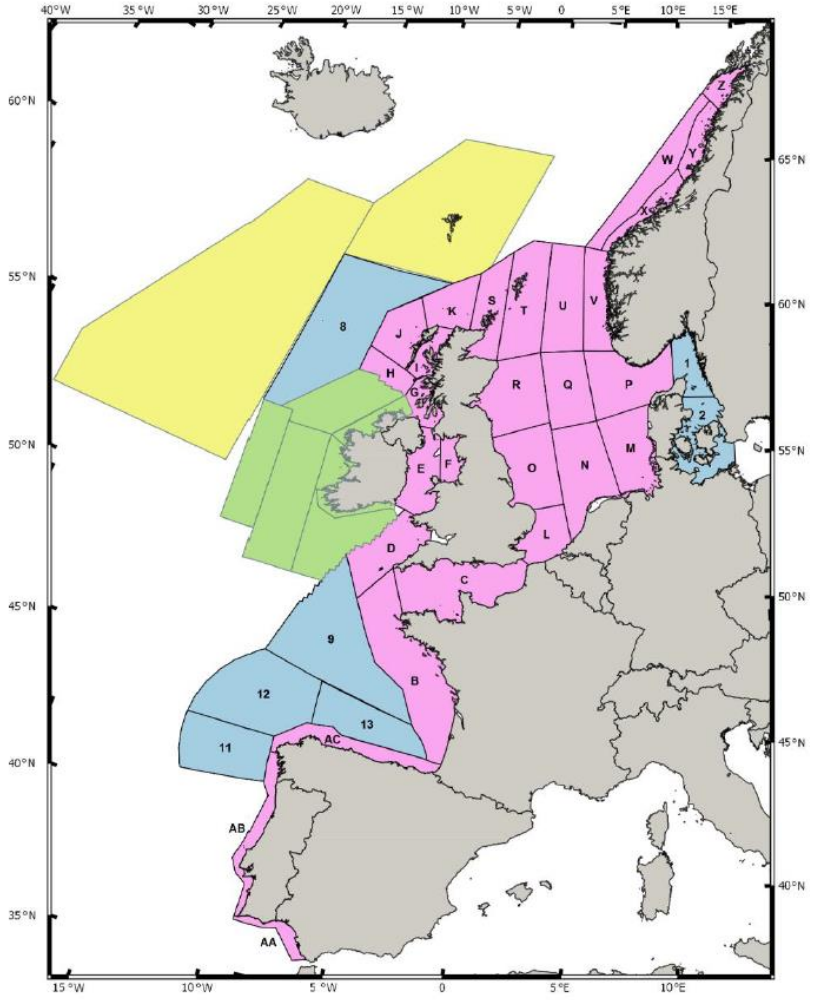


Figure 5 SCANS-III Survey Blocks (Hammond et al.,2017).

Extensive aerial surveys of Ireland's offshore waters (ObSERVE surveys) were conducted in the summer and winter months of 2015 and 2016, with additional surveys conducted in inshore/coastal areas in the summer and winter months of 2016 (Rogan *et al.,* 2018a). The study area covered waters overlying and beyond Ireland's continental shelf and was divided into five survey strata in 2015, with three smaller inshore strata added in 2016 (**Figure 6**). The foreshore licence survey area is located within Stratum 7.

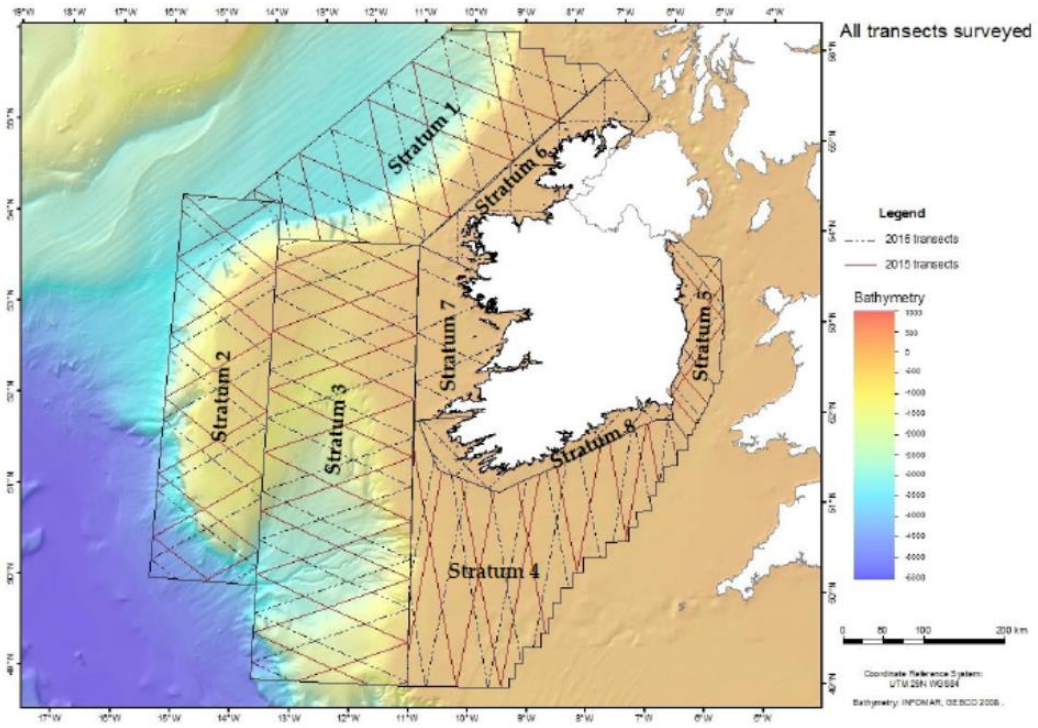


Figure 6 ObSERVE aerial transect lines flown in summer and winter (2015-2016)

During the surveys, harbour porpoises were recorded over a large area during the summer months, but a more coastal distribution was indicated in winter. Harbour porpoises were more commonly sighted in summer, with overall harbour porpoise abundance estimates of 35,975 individuals in summer (CV: 0.09) and 20,571 in winter (CV: 0.23) (Rogan *et al.,* 2018a).

The ObSERVE aerial surveys provide density estimates for the Irish Sea off the Irish Coast (Rogan *et al.,* 2018a). For stratum 7 (**Figure 7**), which covered the east coast of Ireland (and the foreshore licence survey area), the density estimates were 0.037 harbour porpoise per km^2 during the summer period and were 0.262 harbour porpoise per km^2 during the winter periods of 2016.

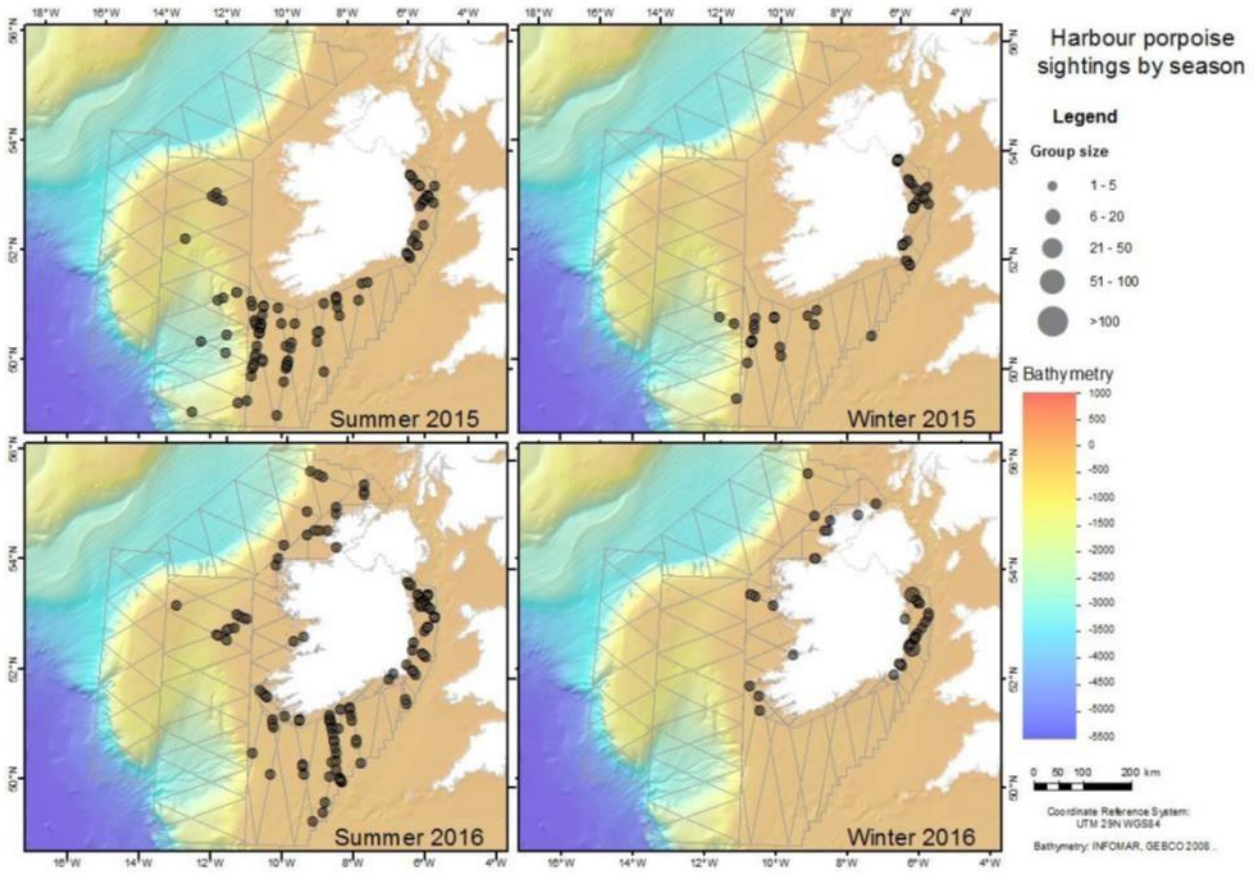


Figure 7 ObSERVE surveys sightings of harbour porpoise in each survey period

Conservation Status

The current conservation status of the harbour porpoise, as assessed in the 4th UK report on implementation of the Habitats Directive (submitted to the European Commission in 2019), is 'Favourable' and 'Stable' (NPWS, 2019).

Designated Sites

The closest SAC for harbour porpoise is the Blasket Island SAC which is 22km from the foreshore licence survey area. Details for the site and the assessment for impacts for harbour porpoise designated sites considered are outlined is **Section 8.4**.

5.4.2.2 Bottlenose dolphin

In the CIS, bottlenose dolphin have a predominantly coastal distribution, with higher concentrations off west Wales (particularly Cardigan Bay) and off the coast of Co. Wexford in southeast Ireland. They are also regularly sighted in summer off the Galloway coast of southwest Scotland and around the Isle of Man (Hammond *et al.,* 2005; Baines and Evans, 2012; Department of Communications, Climate Action and Environment (DECC), 2016).

A number of inshore groups of bottlenose dolphin have been identified in UK and Irish waters and there appears to be limited interchange between these groups (Robinson *et al.*, 2012; Cheney *et al.*, 2013; ICES, 2014; IAMMWG, 2021). In the waters off western Ireland, at least three genetically distinct populations of bottlenose dolphin occur: (i) the resident group from the Shannon Estuary plus a small group of individuals (n = 8), which utilise outer Cork Harbour; (ii) a more mobile population, moving along the west coast of Ireland, referred to as the Connemara-Mayo-Donegal population (west coast group), with an abundance for part of the range estimated as 171 (±48) (Ingram *et al.,* 2009); and (iii) a less defined population primarily

represented by stranded animals that may represent a more oceanic population (Mirimin *et al.,* 2011, Oudejans *et al.,* 2015).

For the entire SCANS-III survey area, bottlenose dolphin abundance in the summer of 2016 was estimated to be 33,123 (CV = 0.254; 95% CI = 20,305 – 54,033), with an overall estimated density of 0.0185/ km^2 (Hammond *et al.*, 2021).

The IAMMWG defined seven MUs for bottlenose dolphin, two of which are for inshore groups of populations in Irish waters; West Coast of Ireland (WCI) and Shannon Estuary (SHE) (**Figure 8**). The survey area is located in both the WCI and Oceanic Waters (OW) MUs, close to the SHE MU (IAMMWG, 2021). The reported abundance of bottlenose dolphin within OW is 70,249 (CV = 0.17; 95% CI = 49,720– 99,255) while there is no reported abundance estimate for either WCI or SHE (IAMMWG, 2021).

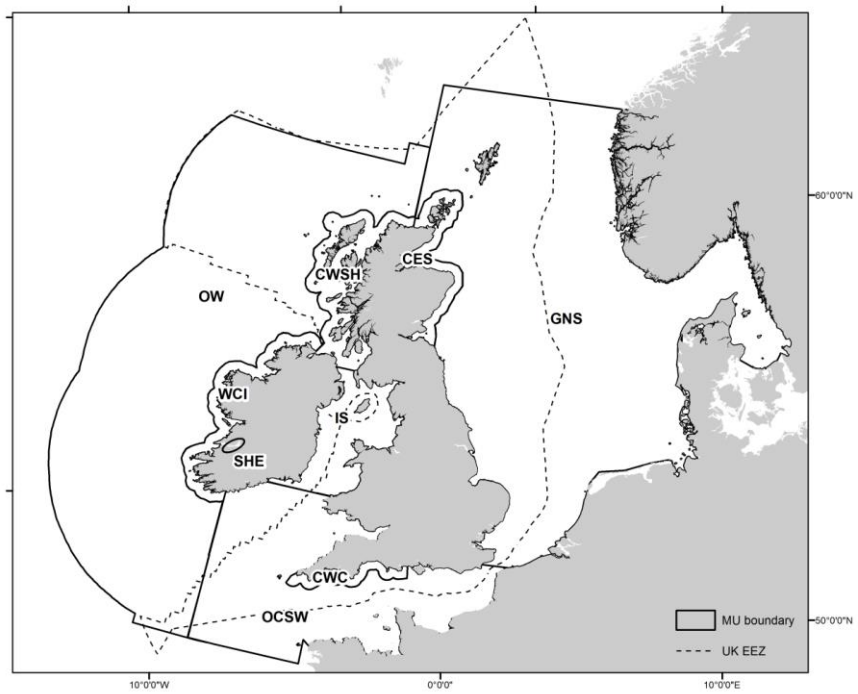


Figure 8 Bottlenose dolphin MUs (IAMMWG, 2021)

Photo-ID studies have shown that the Shannon group of bottlenose dolphins travel into both Tralee and Brandon Bay; with 62% of the known individuals of the Shannon group being identified in these two bays, through surveys undertaken from 2008 to 2016, and 92% of the dolphins sighted within the surveys undertaken in Tralee and Brandon Bay being of the Shannon group (Levesque *et al*., 2016). This indicates that any individuals identified within this area, and within close proximity to the survey area, are most likely to be of the Shannon group, and therefore from the Lower River Shannon SAC. The following assessment uses the SAC population of 145 individuals (Blázquez *et al.*, 2020).

In the ObSERVE surveys (Rogan *et al.,* 2018), there were 537 sightings of bottlenose dolphin, in contrast to harbour porpoise, bottlenose dolphin were more frequently seen in the winter than in the summer months in both years (2015 and 2016). Group size varied by stratum and by season, with large groups being observed in stratum 1 (mean group size 12.9 individuals, range 1 – 120 individuals) whereas the group size in all the other strata ranged from 1 – 60 individuals. Across all the strata, mean group size was smaller in the summer (5.99, range 1 – 40) in comparison to the winter months (mean 7.26, range 1 – 120). Sightings occurred in all strata, in oceanic, neritic and coastal waters, with few sightings in the western Irish Sea. There were very clear inter-seasonal and inter-annual differences in encounter rates, with considerably

more sightings in winter in comparison to summer months, and in 2016-17 in comparison to 2015-16, even allowing for the additional inshore survey effort in the second year (**Figure 9**).

Both the design-based and model-based abundance estimates for the ObSERVE survey area were twice as high in winter than in summer months for both years (2015 and 2016). The highest seasonal estimate (including the coastal strata) was for winter 2016-17 (season 4). The uncorrected abundance estimate, and therefore likely biased low for winter 2016-17, was very high with the model-based estimate being more precise (N = 197,848 individuals, 95% CI 153,375 – 232,577), and higher than previous estimates for this region of the north-east Atlantic. Abundance was highest in strata 1 – 4, with smaller numbers of bottlenose dolphins occurring in the coastal strata (**Figure 9**).

The design-based bottlenose dolphin density estimates for stratum 7 (within which the foreshore licence survey area is located) are 1.084 bottlenose dolphin per km^2 during the summer period and 0.160 bottlenose dolphin per km^2 during the winter period of 2016 (Rogan *et al.,* 2018a).

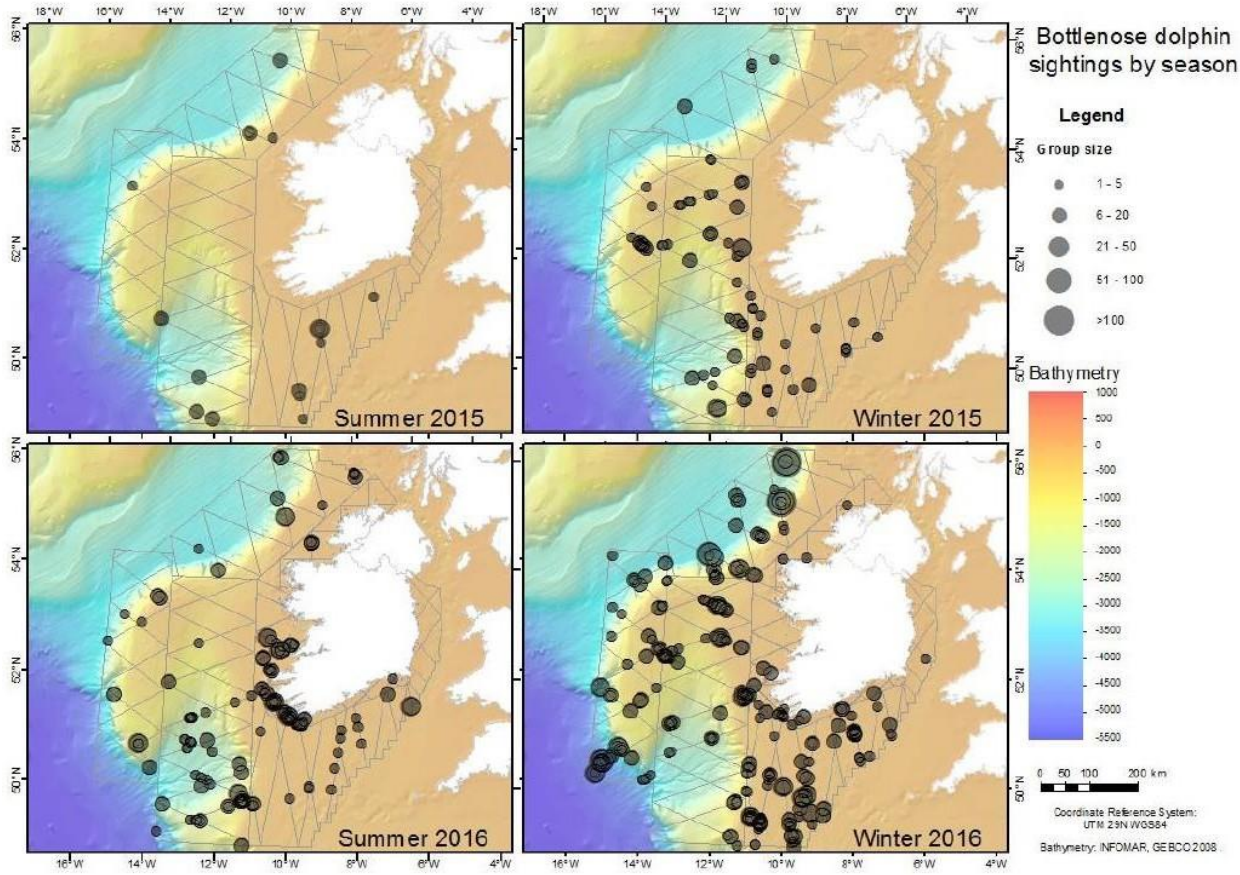


Figure 9 ObSERVE surveys sightings of bottlenose dolphin in each survey period.[5]

Coastal Populations

It has been determined that there are two eco-types of bottlenose dolphin present in Europe; the coastal type and the pelagic type, and that these types are genetically and ecologically different from each other (Louis *et al.,* 2014). It was also noted that the coastal eco-type can be further divided into specific coastal populations within Europe; the Coastal North population, containing populations from the UK and Ireland, and the Coastal South population, with individuals from Normandy and Galicia. To further investigate the demographic connectivity of the coastal populations, 425 samples from biopsies and strandings, from

[5] *Grey lines indicate the survey tracklines along which sightings were made. Circles are proportional to the estimated number of bottlenose dolphin seen in each sighting.*

across the UK and north-west coasts of France and Spain, were tested and compared to establish where the coastal populations could be further split into smaller, and genetically separate, populations (Nykänen *et al.,* 2019).

The results of this genetic analysis revealed that there are five clusters of genetically distinct coastal bottlenose dolphin populations in the UK and the north of continental Europe (as shown on map C **Figure 10**); of those, there is the potential for individuals from the Shannon group to be present in the foreshore licence survey area, but there is no evidence of connectivity with any other coastal population of bottlenose dolphin in the UK, Ireland, and northern continental Europe. Of these five populations, the migration rates from one population to another were found to be less than 1% in all possible movements, including from the Shannon group to all other coastal populations, with the exception of between Wales / West Scotland and East Scotland (with a migration rate of 25.7%) and between Galicia and East Scotland (with a migration rate of 25.7%).

This indicates, that for the foreshore licence survey area, any bottlenose dolphins present are most likely to be from the Shannon group, and therefore the Lower River Shannon SAC. As a precautionary approach the population will also be considered in the context of the wider OW MU.

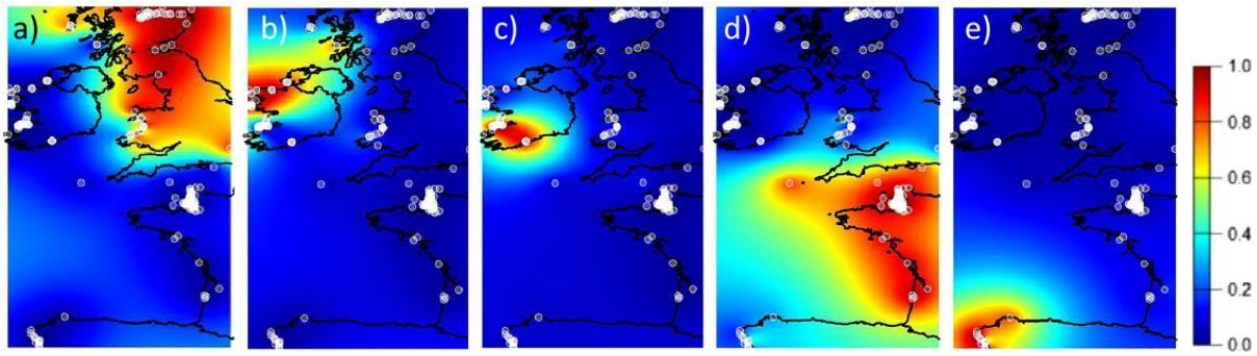


Figure 10 Maps of individual assignment probabilities per population [6]

Conservation Status

The current conservation status of the bottlenose dolphin, as assessed in the 3rd Irish report on implementation of the Habitats Directive (submitted to the European Commission in 2019), is 'Favourable' and 'Stable' (NPWS, 2019).

Designated Sites

The closest SAC for bottlenose dolphin is the Lower River Shannon SAC which is 6km from the foreshore licence survey area. Details for the site and the assessment for impacts for bottlenose dolphin designated sites considered are outlined is **Section 8.4**

5.4.3 Pinnipeds

Two species of seal are found in Ireland, the grey seal and the harbour seal. Both species are listed under Annex II of the Habitats Directive, requiring member states to designate areas of protection for them. In Ireland, grey seal occurs in greatest numbers on the western seaboard of Ireland although significant numbers also occur on the east and southeast coasts; harbour seal in Ireland occurs in the greatest numbers along the western seaboard predominantly in relatively sheltered areas (NPWS, 2021).

[6] *scale bar indicates the assignment probabilities: with red being a probability of 1 that individuals biopsied are from the relevant coastal population: (a) east and west Scotland, Wales and Galicia; (b) west Ireland; (c) Shannon estuary, Ireland; and (d) English Channel, France) (Nykänen et al., 2019)*

5.4.3.1 Grey Seal

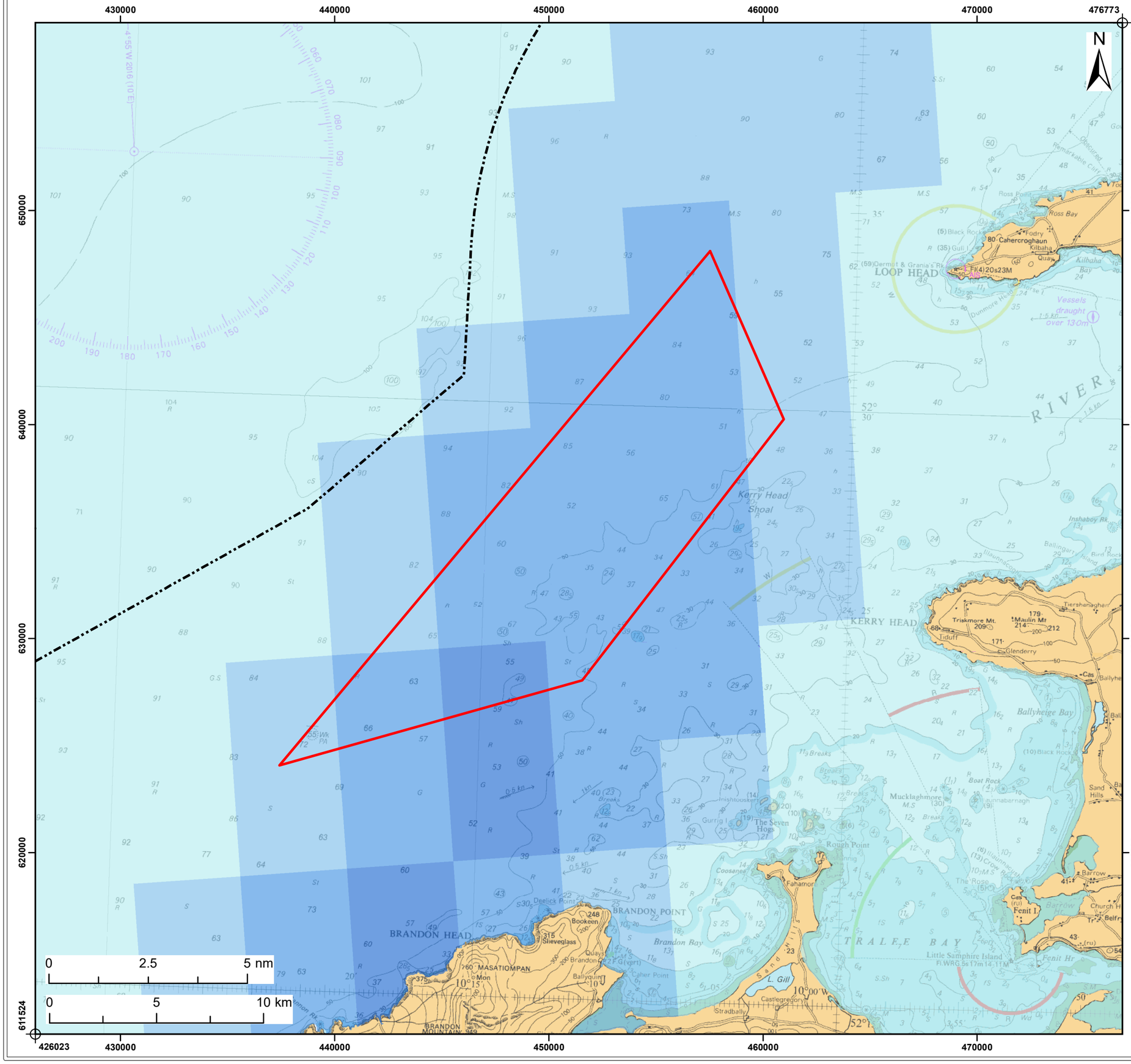
Grey seals only occur in the North Atlantic, Barents and Baltic Sea with their main concentrations on the east coast of Canada and United States of America and in north-west Europe (Special Committee on Seals (SCOS), 2020). Grey seals are regularly recorded in and around the Irish Sea (Clarke *et al.,* 2018). Grey seals are present year-round on both the Irish and Welsh coasts and are known to move between the two, for example between the southeast coast of Ireland and the southwest coast of Wales (Kiely *et al.,* 2000).

Marine Scotland commissioned the Sea Mammal Research Unit (SMRU) to produce maps of grey seal distribution (Russell *et al.*, 2017). These maps were produced by combining information about the movement patterns of electronically tagged seals with survey counts of seals at haul-out sites. The resulting maps show estimates of mean seal usage (seals per 5km x 5km grid cell). The maps indicate relatively higher usage in some areas of the CIS along coastal locations of Ireland and Wales, for example, the waters surrounding Lambay Island and Llŷn Peninsula and West Hoyle Bank in Wales, as well as the south-east tip (Saltee Islands) of Ireland.

As outlined above, SMRU has produced maps of grey seal distribution (Russell *et al.*, 2017). The grey seal density estimate of 0.09 individuals per km^2 for the foreshore licence survey area has been calculated from the mean grey seal density (at-sea usage) maps for the grid squares that overlap with the foreshore licence survey area (**Figure 11**).

In August of 2017 and 2018, the SMRU carried out an aerial thermal-imaging survey of both harbour seal and grey seal abundances and distributions around Ireland. During this survey, 3,698 grey seals were counted in Ireland compared with 2,964 counted in 2011/2012 and 1,309 counted in 2003. The grey seal count in 2017/2018 was 25% higher than the 2011/2012 count and almost three times higher than the 2003 count. In all three surveys, the greatest proportions of grey seal were counted in the west of Ireland (1,183 in 2017/2018). In the south-west region, where the proposed site is located, the grey seal count was substantially higher in 2017/2018 (n=792) than in 2011/2012 (n=453), **Figure 11** (Morris and Duck, 2019).

Grey seals forage in the open sea and may range widely to forage, frequently traveling over 100km between haul-out sites (SCOS, 2020). Foraging trips can last anywhere between one and thirty days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore (SCOS, 2020). Tagging data of grey seals from haul-out sites in Liverpool Bay, Wales and southeast Ireland, indicates that most movement from these sites was contained within the Irish Sea (Hammond *et al.,* 2005).



Legend:

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

Seal At-Sea Usage (per 25km²)

- 0.0 - 1.0
- 1.1 - 2.0
- 2.1 - 3.0
- 3.1 - 4.0

Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title:

Mean Grey Seal Density (At-Sea Usage)

Figure:	Drawing No:
11	PC1509-RHD-ZZ-XX-DR-Z-0118

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
02	17/02/2022	[redacted]		A3	1:175,000
01	22/01/2021			A3	1:175,000

Co-ordinate system: IRENET95 Irish Transverse Mercator

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Haul-out Sites

Grey seals typically spend longer periods hauled out during their annual moult between December and April, generally three and five months after the breeding season and during the breeding season, between August and December (SCOS, 2020).

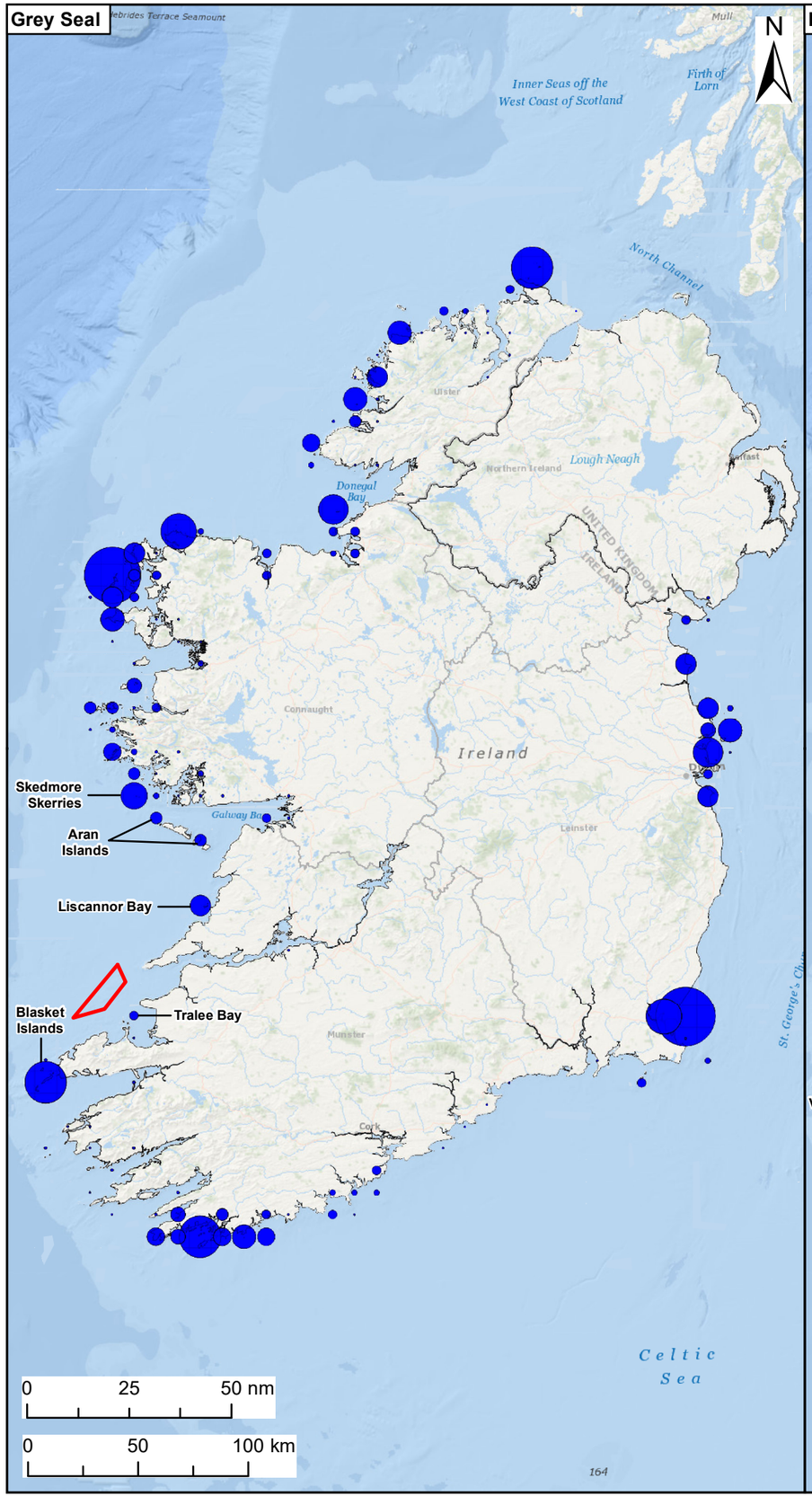
The key grey seal haul-out sites near to the survey area, include major sites such as Blasket Islands, Liscannor Bay, and Skedmore Skerries. There are also a number of smaller sites nearby, including Tralee Bay, and the Aran Islands (**Figure 12**; Duck *et al.,* 2012). The closest grey seal haul-out site is at Tralee Bay, approximately 12km from the survey area, and the closest major haul-out site is the Blasket Islands, approximately 22km from the survey area (see **Figure 12**). Numbers of grey seal are comparatively low at Tralee Bay, and in August 2017 and August 2018, approximately 10 grey seal were recorded (Morris and Duck, 2019). At the Blasket Islands, approximately 200 grey seal were recorded in the same period (Morris and Duck, 2019).

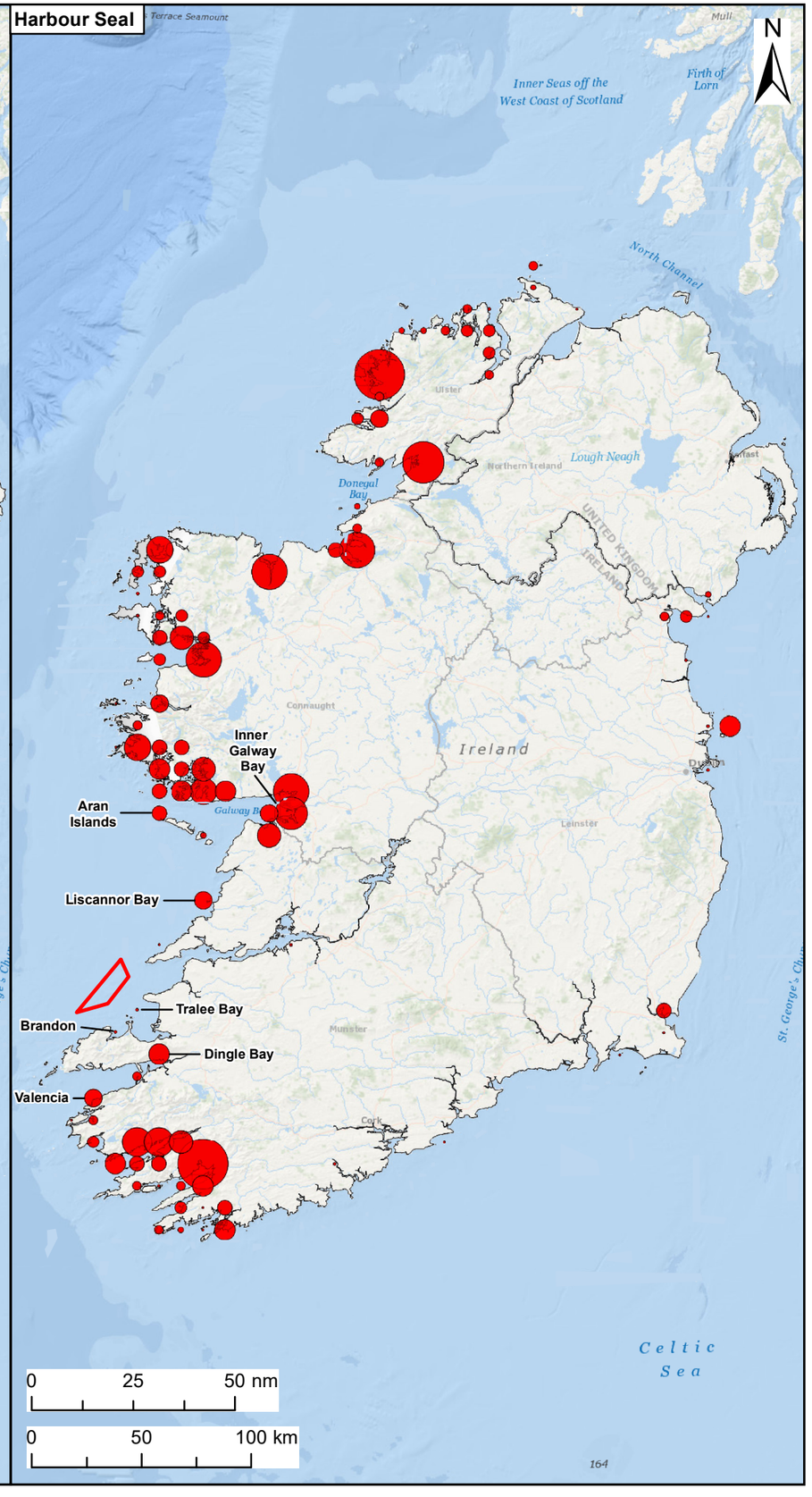
Conservation Status

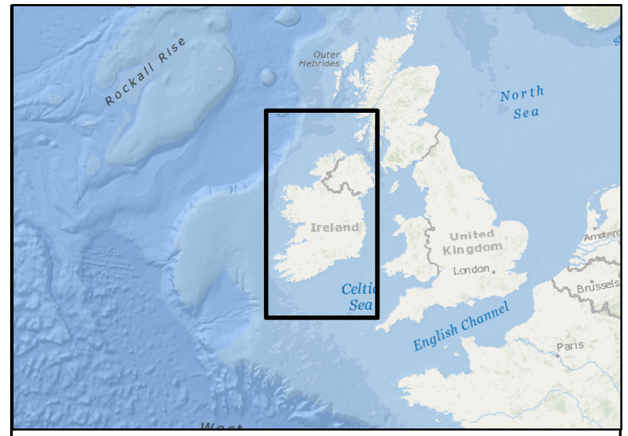
The current conservation status of the grey seal, as assessed in the 3rd Irish report on implementation of the Habitats Directive (submitted to the European Commission in 2019), is 'Favourable' and 'Improving' (NPWS, 2019).

Designated Sites

Blasket Islands SAC is the closest designated site for grey seals to the foreshore licence survey site, at 22km south. Details for the site and the assessment for impacts for grey seals designated sites considered are outlined is **Section 8.4**







Legend:

Kerry Foreshore Licence Survey Area

Grey Seal (No. of Individuals)

1
10
50
100
250
500

Harbour Seal (No. of Individuals)

1
10
50
100
250
500

Data Sources: Data derived from Duck and Morris, 2019. © HaskoningDHV UK Ltd. 2022.
Basemap: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title:

The Number and Distribution of Grey and Harbour Seals Counted in the West, South-West, South and East of Ireland in August-September 2012 (Duck & Morris, 2019)

Figure: 12 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0119

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
02	17/02/2022	[redacted]		A3	1:2,500,000
01	22/01/2021			A3	1:2,500,000

Co-ordinate system: IRENET95 Irish Transverse Mercator

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5.4.3.2 Harbour Seal

Harbour seals have a circumpolar distribution in the Northern Hemisphere and are divided into five sub-species. The population in European waters represents one sub-species *Phoca vitulina vitulina* (SCOS, 2020).

The estimated total population for the UK and Northern Ireland in 2018 was 45,800 (approximate 95% CI: 37,500-61,100). The most recent estimate of the harbour seal population in the RoI MU for 2015-2018 is 4,007, based on the latest survey counts and modelled forward (SCOS, 2020). At the Galway Bay Complex SAC, approximately 421 harbour seals were recorded in 2017/2018 (Morris and Duck, 2019).

As described above (**Section 5.4.3.1**) SMRU undertook aerial surveys of harbour seals and grey seals over the entire coastline and offshore islands of Ireland. Low numbers of harbour seal are present the East and South-east, and more numerous in the South-west, West and North regions of Ireland. Changes in the national harbour seal count between 2003 and 2011/2012 were mainly due to changes in the West region from Galway Bay to Clew Bay (Areas 3-6 combined: +539, equivalent to a 6.5% average annual increase), the overall change in the most recent count is due to slightly higher numbers found in all three main harbour seal regions (South-west, West and North combined: +496, equivalent to a 2.3% average annual increase) (Morris & Duck, 2019). Within the West region, within which the survey area is located, a total of 1,630 harbour seal were recorded within the 2017/2018 surveys, a slight increase from the 2011/2012 surveys, where 1,495 harbour seal were recorded (Morris and Duck, 2019).

The at-sea seal usage maps produced by SMRU show that the harbour seal usage is low in and around the foreshore licence survey area, with a harbour seal density of 0.005 individuals per km^2, based on the mean harbour seal density (At-sea Usage) maps for the gird squares that overlap with the foreshore licence survey area (Russel *et al.,* 2017) (**Figure 13**).

Harbour seals normally feed within 40km and 50km around their haul-out sites (SCOS, 2020). Tracking studies have shown that harbour seal typically travel between 50km and 100km offshore and can travel 200km between haul-out sites (Lowry *et al.,* 2001; Sharples *et al.,* 2012). Harbour seal exhibit relatively short foraging trips from their haul-out sites.

Haul-out Sites

Harbour seal come ashore in sheltered waters, often on sandbanks and in estuaries, but also in rocky areas. Harbour seal haul out on land regularly in a pattern that is often related to the tidal cycle (SCOS, 2020). Harbour seal give birth to their pups in June and July and pups can swim almost immediately after birth (SCOS, 2020). Harbour seals moult in August and spend a higher proportion of their time on land during the moult than at other times (SCOS, 2020).

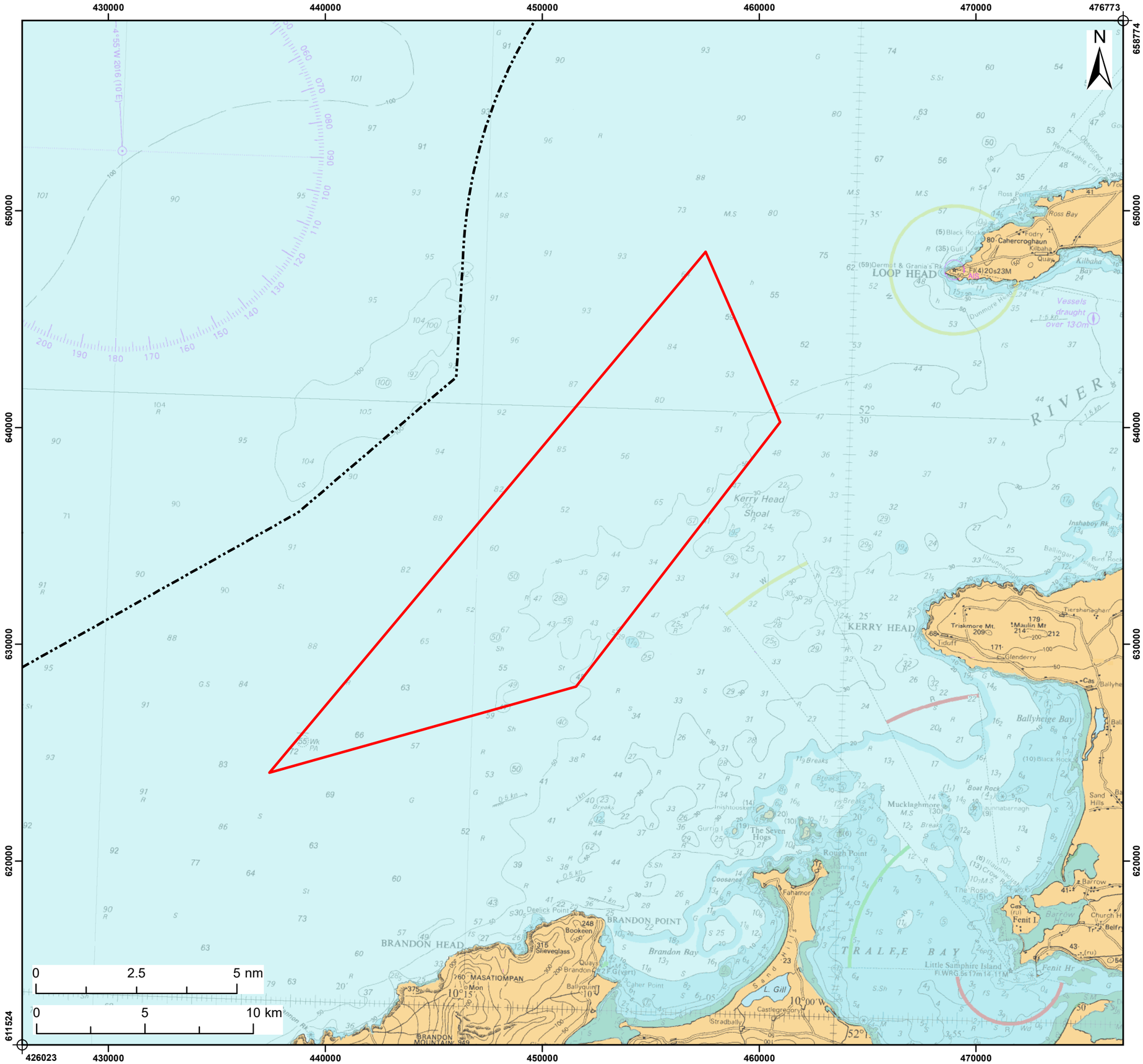
The main harbour seal haul-out site on the west coast of Ireland is at Galway Bay (approximately 91km from the survey area, with 421 harbour seal recorded in 2017/18; Duck & Morris, 2019). There are also smaller harbour seal sites along the coast, at Arran Islands, Liscannor Bay, Tralee Bay, Brandon, Dingle Bay, and Valencia (**Figure 12**). The closest harbour seal haul-out sites to the survey area are Tralee Bay and Brandon, both of which are small sites, and Dingle Bay which is approximately 35km away from the survey area. At Dingle Bay, in August 2003 and in August and September 2012 (Duck *et al*., 2012) the count was 22 and then 45. Liscannor Bay (55km away) had a count of 17 and then 27 (**Figure 12**).

Conservation Status

The current conservation status of the harbour seal, as assessed in the 3rd Irish report on implementation of the Habitats Directive (submitted to the European Commission in 2019), is 'Favourable' and 'Stable' (NPWS, 2019).

Designated Sites

The closest SAC is Galway Bay Complex SAC which is 91km from the foreshore licence survey area. Details for the site and the assessment for impacts for harbour seals designated sites considered are outlined is **Section 8.4**.



Legend:

- Kerry Foreshore Licence Survey Area
- Ireland 12nm Limit

Seal At-Sea Usage (per 25km²)

- 0.0 - 1.0

Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title: Mean Harbour Seal Density (At-Sea Usage)

Figure: 13 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0120

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
02	17/02/2022	[redacted]		A3	1:175,000
01	22/01/2021			A3	1:175,000

Co-ordinate system: IRENET95 Irish Transverse Mercator

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5.4.4 Summary of Abundance and Density Estimates

Abundance estimates of reference populations and density estimates for the species that will be used in the assessment are indicated in **bold** in **Table 1**.

Table 1 Summary of marine mammal reference populations and density estimates used in the assessments

Area	Abundance Estimate	Density Estimate	Source
Harbour porpoise			
Celtic and Irish Seas (CIS) MU	**62,517** (CV = 0.13; 95% CI = 48,324 – 80,877)	N/A	IAMMWG (2021)
ObSERVE aerial surveys stratum 7	35,975 (summer) (95% CI = 259 – 1506 ; 20,571 (winter) (95% CI = 1797 – 10883 26,964 (total) (95% CI = 24,209 – 30,033	0.037/ km^2 (summer) **0.262/ km^2** (winter)	Rogan *et al.* (2018a)
Bottlenose dolphin			
Oceanic waters (OW) MU	70,249 (CV = 0.17; 95% CI = 49,720–99,255)	N/A	IAMMWG (2021)
ObSERVE aerial surveys stratum 7	18,704 (95% CI = 5,425 – 64,484) (summer) 2,762 (95% CI = 498 – 15,317) (winter)	**1.084/ km^2** (CV=62.45) (summer) 0.160/ km^2 (CV=95.32) (winter)	Rogan *et al.* (2018a)
Shannon Estuary	**145**	N/A	Blázquez et al., 2020
Grey seal			
RoI MU	**3,698***	N/A	SCOS (2020)
Foreshore licence survey area	N/A	**0.09/ km^2**	Russell *et al.* (2017)
Blasket Islands SAC	**1,099**	N/A	NPWS (2014)
Harbour seal			
RoI MU	**4,007**	N/A	SCOS (2020)
Foreshore licence survey area	N/A	**0.005/ km^2**	Russell *et al.* (2017)
Galway Bay Complex SAC	**421**	N/A	Morris and Duck, (2019)

* *The smallest abundance estimate will be applied in the assessment to provide a conservative impact assessment*

5.4.4.1 Designated Sites

The closest designated sites for the identified species from the foreshore licence survey area are provided in detail in **Section 8.4.2**.

5.5 Birds

The coastal sea cliffs, estuaries and offshore islands of Ireland are host to a number of nationally and internationally important bird species, with many areas designated as SPAs. Coastal habitats provide important breeding sites for many species of seabirds, a number of which are protected under national and European legislation. The closest SPA to the foreshore licence survey area is the Loop Head SPA designated for kittiwake and guillemot. This site is approximately 14km away from the foreshore licence survey area. Loop Head SPA is situated at the most westerly point in Co. Clare, approximately 20km south-west of Kilkee. The site includes the cliffs, shoreline and the adjacent marine area to a distance of 500m from the shore.

The cliffs support large numbers of breeding seabirds. A survey in 1987 recorded Fulmar (66 pairs), Kittiwake (690 pairs), Guillemot (2,687 pairs) and Razorbill (70 pairs). A survey in 2000 recorded Fulmar (*Fulmarus glacialis*) (45 pairs), Guillemot (3,350 pairs), Razorbill (13 pairs) and Kittiwake (260 pairs). The Kittiwake and Guillemot populations are of national importance. The site is also utilised by breeding Chough (*Pyrrhocorax pyrrhocorax*). A survey in 1992 recorded the presence of 3 breeding pairs, plus 7 flock birds; the birds nest on the cliffs and feed on the cliff top grassland and heath. Loop Head SPA is also a traditional site for Peregrine (NWPS, 2009).

On the opposite side of the Shannon Estuary, approximately 10.5km from the foreshore licence survey area, lies Kerry Head SPA. Kerry Head SPA is characterised by sea cliff and adjacent grassland habitat and is designated for Fulmar and Chough.

This area of the west of Ireland has other important sites for sea birds and waterbirds, for example the Magharee Islands SPA which is approximately 9.5km away is designated for breeding seabirds and wintering geese. The Magheree Islands are also an important site for breeding terns, which have been known from here since the 1850s. In 1995 the following were recorded: Common Tern (58 pairs), Arctic Tern (232 pairs) and Little Tern (36 pairs). The Tralee Bay Complex SPA just over 12km away and is of high ornithological importance as it annually supports over 20,000 wintering waterbirds, including an international important population of Light-bellied Brent Goose and nationally important populations of 21 other species (NWPS, 2009).

6 European Sites

The approach for each site feature of interest; benthic habitats, migratory fish, marine mammals, and birds are outlined below. As each receptor has a different range and therefore a different potential for connectivity, the approach for each receptor varies.

6.1 Special Areas of Conservation

DCCAE (2017) specify that the ZoI is dependent on the nature, scale and location of the project, the qualifying interests of each designated site, the sensitivities of receptors, the existence or absence of pathways and the potential for in combination effects.

Kerry Offshore Wind Limited have included all SACs with potential pathways for a likely significant effect. The approach taken for inclusion of SACs in the AA screening differs depending on whether the SAC is designated for Annex I habitats or Annex II species. Kerry Offshore Wind Limited have taken a precautionary approach throughout the considerations of identifying sites to include in the AA screening. We have included all SACs designated for Annex I habitats in the screening exercise within the deemed ZoI (see **Section 8.2**) of the foreshore licence survey area, if it is deemed that there is a potential pathway (DCCAE, 2017 and DEHLG, 2010).

Marine mammals (Annex II) are highly mobile and transitory in nature; therefore, it is necessary to examine species occurrence not only within the foreshore licence survey area, but also over the wider area used by each species. Adopting the precautionary principle and based upon expert judgement, all SACs where mobile species are a qualifying feature were included within their MUs. An exception to this is where there are known populations of resident nearshore bottlenose dolphins (rather than offshore populations), which are considered to be much more localised.

For harbour porpoise, potential connectivity was considered for all SACs with harbour porpoise listed as a designated feature within the CIS MU. For bottlenose dolphin, potential connectivity was considered for all SACs with bottlenose dolphin listed as a designated feature within the OW MU. For grey seal, potential connectivity was considered for all relevant designated SACs within the RoI MU, to ensure connectivity is considered for sites that individuals may travel to and from. For harbour seal, potential connectivity was also considered for all designated SACs within the RoI MU.

Migratory fish (Annex II) are also highly mobile and transitory in nature. Annex II fish species that are known to either migrate through or spend part of their lifecycle on the east coast were identified and based upon expert judgement and considering the ZoI from the foreshore licence survey area, the pathways to SAC's designated for Annex II fish was assessed (see **Section 8.3**).

6.2 Special Protection Areas

Birds can have large foraging ranges and migration routes (Woodward *et al.*, 2019). The foraging ranges and migration routes along with the specific seasons for the species designated were considered in identifying potential SPAs for the AA screening. **Table 2** displays the foraging ranges with overlap of the foreshore licence survey area considering all species.

Table 2 SPAs with overlapping foraging ranges with Kerry foreshore licence survey area

SPA
Lambay Island SPA (Fulmar)
Saltee Islands SPA (Fulmar)
Cliffs of Moher SPA (Fulmar)
Skelligs SPA (Manx shearwater)
Blasket Islands SPA (Manx shearwater)
Puffin Island SPA (Manx shearwater)
Cruagh Island SPA (Manx shearwater)
Deenish Island and Scariff Island SPA (Manx shearwater)
Tory Island SPA (Fulmar)
West Donegal Coast SPA (Fulmar)
Dingle Peninsula SPA (Fulmar)
Iveragh Peninsula SPA (Fulmar)
Beara Peninsula SPA (Fulmar)
Kerry Head SPA (Fulmar)

SPA
Horn Head to Fanad Head SPA (Fulmar)
The Bull and The Cow Rocks SPA (Storm petrel)
Stags of Broad Haven SPA (Leach's petrel)
Mingulay and Berneray SPA (Fulmar in assemblage)
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA (Manx shearwater)
Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA (Manx shearwater)
St Kilda SPA (Manx shearwater)
Rum SPA (Manx shearwater)
Copeland Islands SPA (Manx shearwater)

Some species are sensitive to disturbance and displacement (Furness *et al.,* 2013). The species considered most likely to be at risk of disturbance or displaced from habitats are:

- Black-throated diver;
- Red-throated diver;
- Great northern diver;
- Velvet scoter; and
- Common scoter.

SPAs designated for these sensitive species with connectivity to the foreshore licence survey area are included in the screening. Taking a precautionary approach, we have followed the Office of the Planning Regulator Practice Note PN01 - AA Screening for Development Management guidance and used the Source-Pathway-Receptor model. Considering the sources, the ZoI (see **Section 8.5**) for displacement and disturbance effects are understood to be spatially confined within the order of a few kilometres of the site. For SPAs that have not been included in the AA Screening, it is considered that a likely significant effect will not occur either alone or in combination with other projects and plans, due to the scope and scale of the surveys i.e. the source and pathway.

The features of the designated European sites included in Screening are listed in **Table 3** of **Section 6.3.**

6.3 European sites included in Screening

Table 3 European sites included in AA screening

European site	Country	Qualifying Interest	Distance (km)	European site Code
SPAs				
Loop Head SPA	Republic of Ireland	Kittiwake *Rissa tridactyla* [A188] Guillemot *Uria aalge* [A199]	9	004119
Magharee Islands SPA	Republic of Ireland	Storm Petrel *Hydrobates pelagicus* [A014] Shag *Phalacrocorax aristotelis* [A018] Barnacle Goose *Branta leucopsis* [A045] Common Gull *Larus canus* [A182] Common Tern *Sterna hirundo* [A193] Arctic Tern *Sterna paradisaea* [A194] Little Tern *Sterna albifrons* [A195]	9.5	004125
Dingle Peninsula SPA	Republic of Ireland	Fulmar *Fulmarus glacialis* [A009] Peregrine *Falco peregrinus* [A103] Chough *Pyrrhocorax pyrrhocorax* [A346]	10	004153
Kerry Head SPA	Republic of Ireland	Fulmar *Fulmarus glacialis* [A009] Chough *Pyrrhocorax pyrrhocorax* [A346]	10.5	004189
Tralee Bay Complex SPA	Republic of Ireland	Whooper Swan *Cygnus cygnus* [A038]	13	004188

European site	Country	Qualifying Interest	Distance (km)	European site Code
		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]		

European site	Country	Qualifying Interest	Distance (km)	European site Code
		Turnstone *Arenaria interpres* [A169] Black-headed Gull *Chroicocephalus ridibundus* [A179] Common Gull *Larus* canus [A182] Wetland and Waterbirds [A999]		
SACs				
Kerry Head Shoal SAC	Republic of Ireland	Reefs [1170]	0.1	002263
Lower River Shannon SAC	Republic of Ireland	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] 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 maritim*i [1410]	6	002165

European site	Country	Qualifying Interest	Distance (km)	European site Code
		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] *Petromyzon marinus* Sea Lamprey [1095] *Lampetra planeri* Brook Lamprey [1096] *Lampetra fluviatilis* River Lamprey [1099] Salmon *Salmo salar* [1106] Common Bottlenose *Tursiops truncatus* Dolphin [1349] Otter *Lutra lutra* [1355]		
Magharee Islands SAC	Republic of Ireland	Reefs [1170]	8	002261
Mount Brandon SAC	Republic of Ireland	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic waters containing very few minerals of sandy plains *Littorelletalia uniflorae* [3110] Oligotrophic to mesotrophic standing	10	000375

European site	Country	Qualifying Interest	Distance (km)	European site Code
		waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojuncetea* [3130] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Species-rich Nardus grasslands, on siliceous substrates in mountain areas and submountain areas, in Continental Europe [6230] Blanket bogs * if active bog [7130] Siliceous scree of the montane to snow levels *Androsacetalia alpinae* and *Galeopsietalia ladani* [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Freshwater Pearl Mussel [1029] *Margaritifera margaritifera* Killarney Fern [1421] *Trichomanes speciosum*		
Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Republic of Ireland	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Large shallow inlets and bays [1160]	10	002070

European site	Country	Qualifying Interest	Distance (km)	European site Code
		Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] Mediterranean salt meadows *Juncetalia maritimi* [1410] Shifting dunes along the shoreline with *Ammophila arenaria* white dunes [2120] Fixed coastal dunes with herbaceous vegetation grey dunes [2130] Dunes with *Salix repens ssp. argentea Salicion arenariae* [2170] Humid dune slacks [2190] 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] Otter *Lutra lutra* [1355] Petalwort *Petalophyllum ralfsii* [1395]		
Blasket Islands SAC	Republic of Ireland	Reefs [1170]	22km	002172

European site	Country	Qualifying Interest	Distance (km)	European site Code
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] European dry heaths [4030] Submerged or partially submerged sea caves [8330] Harbour Porpoise *Phocoena phocoena* [1351] Grey Seal *Halichoerus grypus* [1364]		
Kenmare River SAC	Republic of Ireland	Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] Lesser Horseshoe Bat *Rhinolophus hipposideros* [1303] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365]	73	IE0001061
Kilkieran Bay Islands SAC	Republic of Ireland	Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365] Slender Naiad *Najas flexilis* [1833]	75	IE0001195
Galway Bay Complex SAC	Republic of Ireland	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]	91	000268

European site	Country	Qualifying Interest	Distance (km)	European site Code
		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] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365]		
Slyne Head Islands SAC	Republic of Ireland	Common Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	92	IE0002298
Slyne Head Peninsula SAC	Republic of Ireland	Coastal lagoons [1150]	94	002074

European site	Country	Qualifying Interest	Distance (km)	European site Code
		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]		

European site	Country	Qualifying Interest	Distance (km)	European site Code
		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 *Alopecurus pratensis, Sanguisorba officinalis* [6510] Alkaline fens [7230] Common Bottlenose Dolphin [1349] *Tursiops truncatus* Petalwort *Petalophyllum ralfsii* [1395] Slender Naiad *Najas flexilis* [1833]		
West Connacht Coast SAC	Republic of Ireland	Common Bottlenose Dolphin [1349] *Tursiops truncatus*	99	002998
Inishbofin and Inishshark SAC	Republic of Ireland	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] Grey Seal *Halichoerus grypus* [1364]	116	000278

European site	Country	Qualifying Interest	Distance (km)	European site Code
Roaringwater Bay and Islands SAC	Republic of Ireland	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] Harbour Porpoise [1351] *Phocoena phocoena* Otter *Lutra lutra* [1355] Grey Seal *Halichoerus grypus* [1364]	134	000101
Glengarriff Harbour and Woodland SAC	Republic of Ireland	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] Kerry Slug [1024] *Geomalacus maculosus* Lesser Horseshoe Bat *Rhinolophus hipposideros* [1303] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365]	141	000090
Clew Bay Complex SAC	Republic of Ireland	Geyer's whorl snail *Vertigo geyeri* [1013] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365]	157	IE0000440

European site	Country	Qualifying Interest	Distance (km)	European site Code
Duvillaun Islands SAC	Republic of Ireland	Common Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	169	000495
Inishkea Islands SAC	Republic of Ireland	Machairs * in Ireland [21A0] Grey Seal *Halichoerus* grypus [1364] Petalwort *Petalophyllum ralfsii* [1395]	172	000507
Killala Bay/Moy Estuary SAC	Republic of Ireland	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] 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] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* white dunes [2120] Fixed coastal dunes with herbaceous vegetation grey dunes [2130] Humid dune slacks [2190]	258	000458

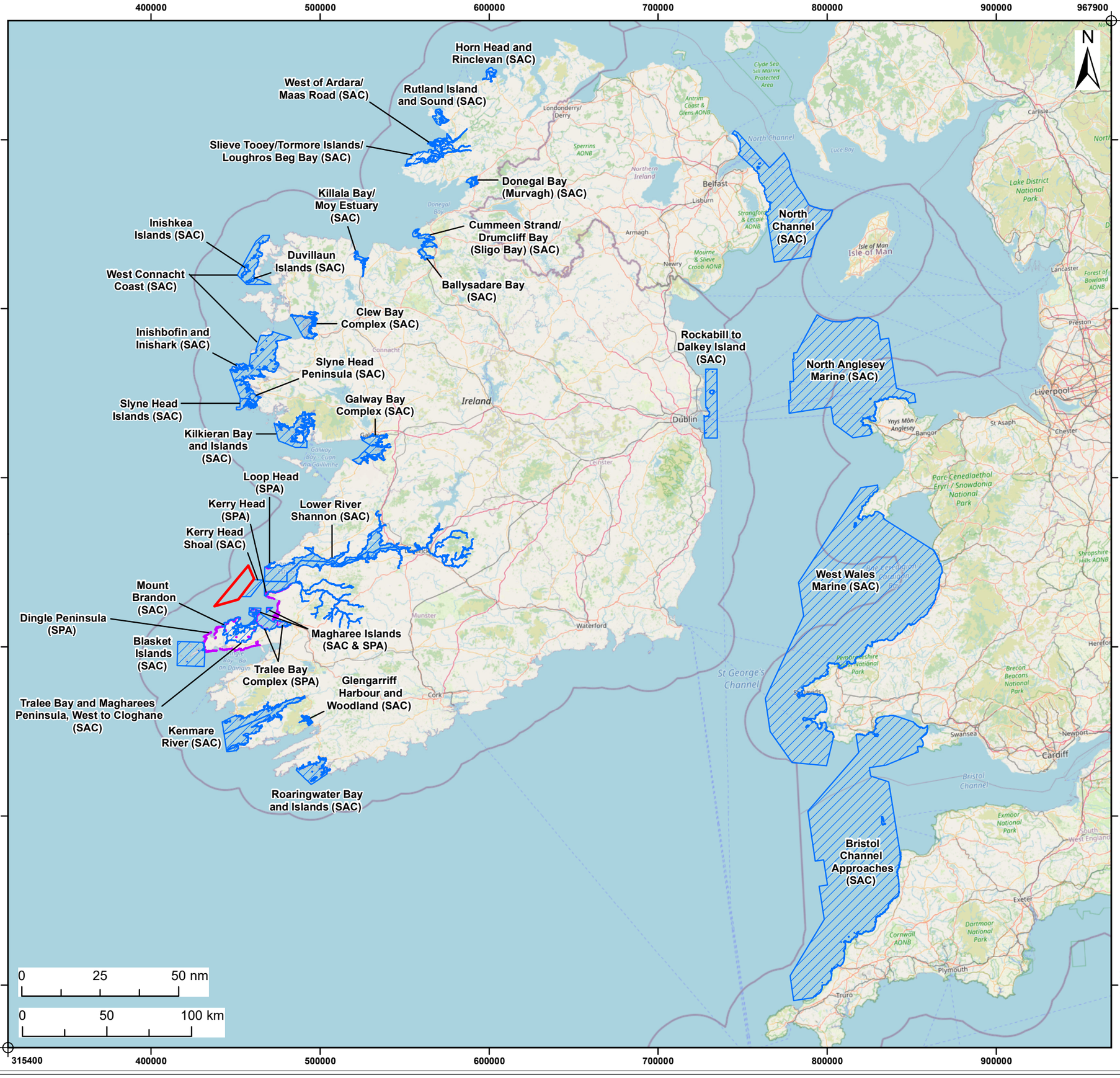
European site	Country	Qualifying Interest	Distance (km)	European site Code
		Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] Sea Lamprey *Petromyzon marinus* [1095] Harbour Seal *Phoca vitulina* [1365]		
Cummeen Strand/Drumcliff Bay Sligo Bay SAC	Republic of Ireland	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* white dunes [2120] Fixed coastal dunes with herbaceous vegetation grey dunes [2130] 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] Petrifying springs with tufa formation *Cratoneurion* [7220] Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] Sea Lamprey *Petromyzon marinus* [1095]	287	000627

European site	Country	Qualifying Interest	Distance (km)	European site Code
		River Lamprey *Lampetra fluviatilis* [1099] Harbour Seal *Phoca vitulina* [1365]		
Ballysadare Bay SAC	Republic of Ireland	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with *Ammophila arenaria* white dunes [2120] Fixed coastal dunes with herbaceous vegetation grey dunes [2130] Humid dune slacks [2190] Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] Harbour Seal *Phoca vitulina* [1365]	292	000622
Slieve Tooey / Tormore Island / Loughros Beg Bay SAC	Republic of Ireland	Narrow-mouthed Whorl Snail *Vertigo angustior* [1014] Otter *Lutra lutra* [1355] Grey Seal *Halichoerus grypus* [1364]	293	IE0002296
West of Ardara / Maas Road SAC	Republic of Ireland	Geyer's whorl snail Vertigo geyeri [1013] Freshwater Pearl Mussel Margaritifera margaritifera [1029] Marsh fritillary butterfly Euphydryas Eurodryas [1065]	311	IE0002998

European site	Country	Qualifying Interest	Distance (km)	European site Code
		Salmon *Salmo salar* [1106] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365] Petalwort *Petalophyllum ralfsii* [1395] Slender Naiad *Najas flexilis* [1833]		
Rutland Island and Sound SAC	Republic of Ireland	Harbour Seal *Phoca vitulina* [1365]	323	IE0002250
Donegal (Murvagh) SAC	Republic of Ireland	Harbour Seal *Phoca vitulina* [1365]	326	IE0000595
Horn Head and Rinclevan SAC	Republic of Ireland	Geyer's whorl snail *Vertigo geyer*i [1013] Grey Seal *Halichoerus grypus* [1364] Petalwort *Petalophyllum ralfsii* [1395] Slender Naiad *Najas flexilis* [1833]	360	IE0000147
Slaney River Valley SAC	Republic of Ireland	Mudflats and sandflats not covered by seawater at low tide [1140] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] Mediterranean salt meadows *Juncetalia maritime* [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	391	000781

European site	Country	Qualifying Interest	Distance (km)	European site Code
		Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] *Alno-Padion*, *Alnion incanae, Salicion albae* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* [91E0] Freshwater Pearl Mussel *Margaritifera margaritifera* [1029] Sea Lamprey *Petromyzon marinus* [1095] Brook Lamprey *Lampetra planeri* [1096] River Lamprey *Lampetra fluviatilis* [1099] Twaite Shad *Alosa fallax fallax* [1103] Salmon *Salmo salar* [1106] Otter *Lutra lutra* [1355] Harbour Seal P*hoca vitulina* [1365]		
West Wales Marine / Gorllewin Cymru Forol SAC	Wales	Harbour porpoise *Phocoena phocoena* [1351]	416	UK0030397
Bristol Channel Approaches SAC	England and Wales	Harbour porpoise *Phocoena phocoena* [1351]	437	UK0030396
Rockabill to Dalkey Island SAC	Republic of Ireland	Reefs [1170] Harbour Porpoise *Phocoena phocoena* [1351]	500	003000
North Anglesey Marine SAC	Wales	Harbour porpoise *Phocoena phocoena* [1351]	526	UK0030398

European site	Country	Qualifying Interest	Distance (km)	European site Code
North Channel SAC	Northern Ireland	Harbour porpoise *Phocoena phocoena* [1351]	537	UK0030399



Legend:

- Kerry Foreshore Licence Survey Area
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

Client:	Project:
Kerry Offshore Wind Limited	Kerry Offshore Wind Farm

Title:

European Sites Considered in the Screening Exercise for Kerry Foreshore Licence Survey Area

Figure:	Drawing No:
14	PC1509-RHD-ZZ-XX-DR-Z-0121

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
02	17/02/2022	[redacted]		A3	1:2,250,000
01	03/02/2021			A3	1:2,250,000

Co-ordinate system: IRENET95 Irish Transverse Mercator

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6.4 Conservation Objectives

The AA screening assessment is based upon whether the project or plan, alone or in combination with other projects or plans could have significant effects on the conservation objective of the European site. The Source-Pathway-Receptor approach has been taken as described in **Section 3.2**. Once it is established whether a pathway exists, the conservation objectives including the feature specific attributes and targets are considered in the AA screening and any further assessment to determine whether the proposed surveys will have an adverse effect on a European site.

An example of a European site conservation objective is:

Favourable conservation status of a 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 a species is achieved when:

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

Objective: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

NPWS have prepared site specific conservation objectives including attributes, measures and targets for each feature of interest for which a European site has been designated and these have been considered in the AA screening and NIS assessments. Where site-specific conservation objectives are not available the site's generic conservation objectives (together with site-specific targets and attributes assigned for those features where site-specific conservation objectives are available) have been considered.

7 In Combination

Other plans and projects are considered during AA Screening. To determine the potential for any in combination effects we have used the best available information, including but not limited to, Foreshore Licence Application Forms and supporting information, Planning and Scoping Reports and the Foreshore Applications and Determinations website[7].

A detailed search of projects and plans across the Irish Sea has been undertaken to reflect the potential for in combination effects for mobile and wide-ranging species, however given the scale of works, only projects within the ZoI of the Kerry Project are considered to have the potential for cumulative effects.

Given the location of the foreshore licence survey area, which lies approximately 11km off the coast, and that potential effects relate to the marine environment only, it is considered that there is no potential for the proposed SI surveys to act in combination with any terrestrial projects or plans.

[7] *https://www.housing.gov.ie/planning/foreshore/applications/overview*

Shipping noise is a key characteristic of the ambient underwater noise in the area. The noise produced by survey vessels described in Section 1.2 of the Schedule of Works (Royal HaskoningDHV, 2022b – document reference PC1509-RHD-ZZ-XX-Z-RP-0023) during the implementation of the proposed SI surveys, when considered cumulatively with existing shipping, shall not increase background underwater noise to levels that could disrupt communication due to masking or alter behaviour patterns of marine mammals, fish or birds in-combination with the proposed works.

From a review of potential plans and projects including project programmes (where known), plans and projects with potential to have in combination effects have been identified. Those identified as having the potential for in combination effects due to the spatial nature of the works are listed below:

- Munster - SI geophysical survey proposed Q2 2023 approximately 3 months duration (dependant of approval of foreshore licence) Ref: FS007366;
- Iris fibre optic cable – main cable lay works proposed for April – August 2022. Ref: FS007246;
- Clare Marine Energy Park - No survey information available Ref: FS006886;
- Sceirde (Skerd) Rocks Foreshore Lease Area - Foreshore lease area awarded and the potential wind farm project designated as ‘relevant projects’ by Irish ministers. No information available on timings of works. Ref: FS007246;
- Multiple Use of Space for Island Clean Autonomy - Offshore Pilot / Early Demonstrator - No information available
- Moneypoint One Foreshore Lease Area - No information available on timing of SI work: Ref: FS007137

There are a number of foreshore applications that have been submitted, however these may not, at the time of writing, be in the public domain or the timings of survey work is not yet fully known. The Schedule of Works outlined for this project is considered representative of other SI works that have the potential to occur but are unknown at this time. Therefore, as a worst-case scenario, two projects conducting SI works at the same time and in the same ZoI as the Kerry Project will be assessed to determine the potential for in combination effects on the European sites identified as having a likely significant effect in the NIS. Resource availability of surveys vessels and the timings of the allocation of foreshore licenses is that it is considered unlikely that more than three survey vessels would be undertaking SI works at any one time. A full description of any potential in combination effects with European sites screened into the NIS are described in Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-Z-RP-0022**.**

8 Appropriate Assessment Screening

This section identifies and considers potential effects; direct and indirect, on the conservation status of the qualifying interests of the SAC’s and SPA’s listed in **Table 3** of **Section 6.3,** that were identified as having a potential pathway using the Source-Pathway-Receptor approach.

The consideration of whether there is a potential pathway was based upon the judgement of the competent experts who prepared this report, considering the scale and scope of the surveys including the localised range of potential effects, corridors of connectivity and potential in combination effects during the proposed SI surveys. In combination effects have been considered throughout the screening process. Specific projects and plans, and an assumption in relation to other potential projects and plans, taken into consideration in the AA Screening are listed in **Section 7.**

8.1 Site investigation survey effects

The SI methods proposed (as outlined in Schedule of Works (Royal HaskoningDHV, 2022b – document reference PC1509-RHD-ZZ-XX-RP-Z-0023)) are considered to be non-destructive as described below, and for all the vessels associated with the surveys are included in the assessment (via disturbance).

8.1.1 Geophysical (including archaeological)

Both Multi beam echo sounders (MBES) and Side Scan Sonar (SSS) have a short duration output and limited acoustic footprint. SSS transmits an acoustic signal from directly below as it is towed behind the vessel. MBES transmit sound energy from directly beneath the vessel hull in a limited zone.

Sub-bottom profiling (SBP) uses an acoustic signal to determine the sediment of the area under consideration and is characterised by a limited acoustic footprint due to the signal being directional under the boat, and short duration output which is attenuated with distance from source.

8.1.2 Geotechnical

Cone Penetration Tests (CPT) testing rods are pushed into the seabed using direct hydraulic force so will produce no significant acoustic signal and localised seabed disturbance. Vibrocores and boreholes (undertaken via drilling) produce no significant acoustic signal and localised seabed disturbance.

8.1.3 Ecological (Benthic, marine mammal and birds)

There is no appreciable sound signal produced from using the Day Grab and/or a Hamon grab for ecological sampling. This technique removes small amounts of sediment so disturbance and/or removal of infaunal communities is considered negligible and does not affect the structure or function of the seabed. Marine mammal and bird surveys are limited to vessel disturbance (if boat-based) with no deployment of equipment.

8.1.4 Metocean

Deployment of some equipment may be bed mounted, and surface equipment will have associated mooring where disturbance to the seabed will occur, however the area of disturbance is very localised, in the order of 1m.

8.2 Connectivity with benthic habitats connected to an SAC

The Source-Pathway-Receptor approach was used to identify the potential for the proposed surveys to have a LSE on the habitats that are qualifying interest features of European sites.

For benthic habitats European sites were included in the screening exercise if:

- The proposed surveys directly interact with a European site whose features of interest include an Annex I habitat; and
- The distance between the foreshore licence survey area and the feature of interest is within a range for which there could be indirect interaction (i.e. within a ZoI for a physical process change resulting from the proposed sediment sampling).

The SI surveys (source) have the potential for effect on benthic habitats (receptor) through the following:

- Physical damage, disturbance and sediment removal from sampling (pathway) leading to

physical damage and disturbance;

- Increased suspended sediments and sediment re-deposition (pathway) leading to smothering;
- Accidental pollution (pathway) event leading to toxic contamination; and
- Introduction of invasive species from the vessels hull (pathway) leading to non-toxic contamination.

Consideration for European sites is based on the sensitivities of site-specific features of interest (receptors) and whether there is a potential pathway for habitats to receive direct or indirect effects from the proposed surveys (source). The small scale of the potential changes from the proposed surveys such as physical disturbance to the seabed, or effects on physical processes mean that the effects are localised.

Kerry Head Shoal SAC (0.1km away) is designated for an exposed subtidal reef community complex including *P. ventilabrum* and axinellid sponges on deep, wave-exposed circalittoral rock (33-46m). This community may be sensitive to smothering and siltation changes. As these communities are slow growing, resilience to long term disturbance may be low.

The small scale of the potential changes from the proposed surveys, such as physical disturbance to the seabed or effects on physical processes, mean that the effects are localised to within the foreshore licence survey area and there is no pathway for direct disturbance.

LSE that have been determined are those potential effects that cannot be discounted without further assessment (see **Section 7** for details of other projects considered) on the conservation objectives of the designated benthic features of the Kerry Head Shoal SAC. All potential impacts and results of the screening exercise are presented in **Table 10**.

8.3 Connectivity with migratory fish associated with a SAC

The Source-Pathway-Receptor approach was undertaken to identify the mechanisms of the proposed SI surveys that may potentially affect the fish that are qualifying features of interest of European sites.

The European sites that have fish species as features of interest were identified, this included:

- Determining if the foreshore licence survey area overlaps with any European sites for fish species;
- Identifying a list of sites for each species that has potential connectivity for potential effects relevant to fish based on:
    - the distance between the foreshore licence survey area and a SAC with a fish interest feature that is within the range for which there could be an interaction e.g. the distance of the SAC from the source of underwater noise that is within the range of sound transmission; and
    - the likelihood that a foraging area or a migratory route occurs within the foreshore licence survey area for the different qualifying features of interest.

European sites were identified for features of interest of Annex II fish species, including sea lamprey, river lamprey, twaite shad, allis shad (UK SACs) and Atlantic salmon within the Irish Sea. The following section

outlines the potential for the proposed SI surveys to have a LSE on the features of interest of the sites either alone or in-combination with other plans and projects.

The proposed SI surveys (source) have the potential for effect on migratory fish (receptor) through the following pathways:

- Physical damage, disturbance and sediment removal from sampling (pathway) leading to physical damage and disturbance;
- Increased suspended sediments and sediment re-deposition (pathway) leading to gill damage or barrier effects;
- Accidental pollution (pathway) event leading to toxic contamination;
- Introduction of invasive species from the vessels hull (pathway) leading to non-toxic contamination; and
- Underwater noise from the vessels leading to auditory damage.

Annex II fish species that are known to either migrate through or spend part of their lifecycle in the Irish Sea were identified (pathway). European sites designated for Annex II fish species were considered in the screening exercise.

The closest SAC designated for fish is the Lower River Shannon SAC which is approximately 6km from the foreshore licence survey area. The Lower River Shannon SAC designated species known to be migratory species are sea lamprey, river lamprey, twaite shad, and Atlantic salmon.

Disturbance to supporting habitats and removal of sediment from sampling surveys will be localised to the immediate vicinity of the sediment sampling location. Suspended sediment plumes and changes to seabed characteristics are expected to be localised and negligible in comparison to natural sediment transport (see **Section 8.2**). The Lower River Shannon SAC is beyond the potential distance of effect from sediment removal and disturbance, therefore there are no impacts expected due to increased suspended sediment concentrations.

There is potential for changes in water quality, due to potential accidental spills and leaks from the survey vessel during the proposed surveys. Changes in water quality can lead to impacts to migratory fish due to chemical barriers preventing successful migration. However, due to the short term, temporary nature of the proposed surveys and the distance from rivers used as migratory routes, any changes in water quality are not expected to impact migratory fish. In addition, the impacts on migratory fish egg survival rate for such fish as salmonids is also not predicted in response to eggs and young fry being associated with the freshwater environment of rivers.

Furthermore, given the behavioural traits of migratory fish, they have no designated offshore congregation grounds like marine fish, such as herring, and thus would not be susceptible to direct local mortality or fish kills from potential offshore accidental spills and leaks.

Of the four fish species designated in the Lower River Shannon SAC, only Atlantic salmon is known to be sensitive to noise[8].

[8] *Although allis shad is also sensitive to noise, no designations have been made in regard to the species in Ireland. The closest site designated for allis shad is the Pembrokeshire Marine/ Sir Benfro SAC located 306km from the foreshore licence survey area which is considered too far to have any impact on the species*

The proposed SI surveys from the vessel and geophysical survey could cause underwater noise within the immediate vicinity of the survey vessel. Nedwell *et al.* (2012) estimated that seismic surveys could cause potential impacts to Atlantic herring (a noise sensitive species) up to 4km. Atlantic Herring is more sensitive to sound than salmon and is thought to be comparable with twaite shad, as for both species hearing involves the swim bladder and both are from the order of Clupeiformes (Nedwell *et al.*, 2008; Popper and Hawkins, 2019). Levels of sensitivity for designated species are listed in **Table 4.**

*Table 4 Levels of hearing sensitivity for designated species of fish**

Category	Mortality/potential mortal injury	Recoverable injury	TTS	Designated species	Sensitivity to noise
Fish with a swim bladder or other air cavities to aid hearing	207 dB SEL_{cum} or >207 dB SPL_{peak}	203 dB SEL_{cum} or >207 dB SPL_{peak}	186 dB SEL_{cum}	Twaite shad	High (Hearing specialist)
Fish with a swim bladder than does not aid hearing	210 dB SEL_{cum} or >207 dB SPL_{peak}	203 dB SEL_{cum} or >207 dB SPL_{peak}	>186 dB SEL_{cum}	Atlantic salmon	Medium (Hearing generalist)
Fish without a swim bladder	219 dB SEL_{cum} or >213 dB SPL_{peak}	216 dB SEL_{cum} or >213 dB SPL_{peak}	>>186 dB SEL_{cum}	River and sea Lamprey	Low

(Popper et al. 2014) (TTS is defined as short or long-term changes in hearing sensitivity that may or may not reduce fitness)

The underwater noise generated by the works are identified in Section 1.2 of Schedule of Works (Royal HaskoningDHV, 2022b – document reference PC1509-RHD-ZZ-XX-RP-Z-0023). This underwater noise could potentially affect fish sensitive to noise and act as a barrier that could impede migration pathways. Due to the distance of the Lower River Shannon SAC to the foreshore licence survey area, and the short-term temporary nature of the surveys, it is highly unlikely that the survey noise would act as a barrier to migration and therefore there is considered to be no pathway for effect. In addition, the surveys would be temporary.

The potential for accidental discharge and spillage of oils, fuels and materials would be managed through compliance with MARPOL.

Considering the ZoI of survey activities, **no LSE is predicted** for the Lower River Shannon SAC. All other European sites designated for fish species are located at further distances from the Lower River Shannon, and due to this distance, it is not expected that Annex II migratory fish from other rivers designated as SACs will travel to the proposed survey site. However, if Annex II species do travel further than expected, or if they are using rivers that aren't designated as SACs but are closer than the Lower River Shannon SAC to the proposed foreshore licence survey area, impacts are still not expected to occur. If Annex II migratory fish species are present in the waters in the vicinity of the proposed foreshore licence survey area, it is expected they will remain relatively close to the coastline and would not be expected to be as far offshore as the proposed foreshore licence survey area which is 11km offshore. If by any chance there were any Annex II migratory fish as far offshore as the proposed foreshore licence survey area, then there are large areas either side of the foreshore licence survey area that the migratory fish can utilised if avoidance behaviour was required due to the proposed surveys. Additionally, due to the short-term temporary nature of the proposed surveys significant impacts aren't predicted for any Annex II species that may be present in the area. Overall, **no LSE is predicted for the project alone or in-combination with other projects and plans** (see **Section 7** for details of other projects considered).

8.4 Connectivity with marine mammals associated with a SAC

A Source-Pathway-Receptor approach was adopted to understand the mechanisms by which the project might affect qualifying features of interest of European sites where marine mammals are a qualifying feature.

For marine mammals, the European sites applicable for each species were identified, and this included:

- Determining if the foreshore licence survey area overlaps with any European sites for marine mammal species.
- Identifying a list of sites for each species that has potential connectivity for potential effects relevant to marine mammals based on:
  - qualifying interest features identified as being present in the area; and
  - the foraging ranges of the different qualifying interest features.

European sites were identified for harbour porpoise, bottlenose dolphin, grey seal and harbour seal by their relevant MUs as noted in **Section 6.1**. The following sections outline the potential for the proposed surveys to have a LSE on the interest features of the European sites either alone or in combination with other plans and projects.

All European sites are included where the species is a grade A, B or C[9] feature. Grade D[10] indicates a non-significant population and does not require management for their conservation (European Commission, 2011) and these European sites were not considered further.

8.4.1 Activities that have the potential to affect marine mammals

The range of proposed surveys to be undertaken at the foreshore licence survey area are outlined in the Schedule of Works (Royal HaskoningDHV, 2022b – document reference: PC1509-RHD-ZZ-XX-RP-Z-0023). With regard to marine mammals, effects from marine works could include the following, each of which is described in further detail below:

- Underwater noise disturbance;
- Potential collision risk with vessels;
- Potential for entanglement;
- Potential barrier effects;
- Potential disturbance at haul out sites (for grey seal and harbour seal only);
- Potential changes in water quality, including from accidental spills and leaks;
- Potential effects on in prey species; and
- In combination effects.

8.4.1.1 Underwater Noise Disturbance

Underwater noise can cause both physiological (e.g. lethal, physical injury and auditory injury) and behavioural (e.g. disturbance and masking of communication) effects on marine mammals (e.g. Bailey *et al.*, 2010; Madsen *et al.*, 2006; Thomsen *et al.*, 2006).

[9] *Grade A refers to the population within the SAC representing more than 15% of the national population of that species, Grade B refers to a site population representing between 2 and 15% of the national population, and Grade C is for a site population of less than 2% of the national population, as described on page 198/62 of European Commission, 2011*
[10] *Grade D is defined as where a species is rarely observed in the site, for example vagrant species, and therefore not considered to be a significant population. Where a species is given a population Grade of D within a site assessment, no other indication is required for other site evaluation criteria, as described on page 198/62 of European Commission, 2011*

High exposure levels from underwater noise sources can cause auditory injury or hearing impairment taking the form of a permanent loss of hearing sensitivity / change in hearing sensitivity (Permanent Threshold Shift (PTS)) or a temporary loss in hearing sensitivity / change in hearing sensitivity (Temporary Threshold Shift (TTS)). The potential for auditory injury is not just related to the level of the underwater sound and its frequency relative to the hearing bandwidth of the animal but is also influenced by the duration of exposure. The level of effect on an individual is a function of the Sound Exposure Level (SEL) that an individual receives as a result of underwater noise.

Marine mammals may exhibit varying intensities of behavioural response at different noise levels. These include orientation or attraction to a noise source, increased alertness, modification of characteristics of their own sounds, cessation of feeding or social interaction, alteration of movement / diving behaviour, temporary or permanent habitat abandonment, and in severe cases, panic, flight stampede or stranding, sometimes resulting in injury or death. The response can vary due to exposure level, the hearing sensitivity of the individual, context, previous exposure history or habituation, motivation and ambient noise levels (Southall *et al.*, 2007).

Vessel Noise

All required surveys (including for any boat-based ecological surveys undertaken for sea birds and marine mammals) at the foreshore licence survey area could increase the number of vessels in the area, which would produce underwater noise, although at relatively small levels. Acoustic broadband source levels typically increase with increasing vessel size, with smaller vessels (<50m) having source levels 160-175 dB (re 1µPa), medium sized vessel (50-100) 165-180 dB (re 1µPa) and large vessels (>100m) 180-190 dB (re 1µPa) (Richardson, *et al.* 1995). Noise levels reported by Malme *et al.* (1989) and Richardson *et al.* (1995) for large surface vessels indicate that physiological damage to auditory sensitive marine mammals is unlikely, and a study of the noise source levels from several different vessels (Jones *et al.*, 2017) shows that for a cargo vessel of 126m in length (on average), travelling at a speed of 11 knots (on average) would generate a mean sound level of 160 dB re 1 µPa @ 1m (with a maximum sound level recorded of 187 dB re 1 µPa @ 1m). However, the levels could be sufficient to cause local disturbance to sensitive marine mammals in the immediate vicinity of the vessel, depending on ambient noise levels.

Underwater noise generated by vessels would not be sufficient to cause PTS, and the potential for TTS is only likely if the animal remains in very close proximity to a vessel for a prolonged period of time, which is highly unlikely (see Appendix 1 of the Schedule of Works for specification of example survey vessels which are likely to be small or medium sized vessels). Disturbance is therefore the only potential effect associated with the presence and underwater noise of vessels.

Modelling by Heinänen and Skov (2015) indicates that the number of ships represent a relatively important factor determining the density of harbour porpoise in the CIS MU during summer, with markedly lower densities with increasing levels of traffic. A threshold level in terms of effect is approximately 15,000 ships per year (approximately 50 vessels per day within a 5km^2 area).

Current traffic density is relatively low-medium in the foreshore licence survey area, with denser traffic routes to the east and west of the foreshore licence survey area associated with vessels entering and exiting the Shannon Estuary.

Taking into account that not all proposed surveys will be taking place at the same time, and the relatively high number of vessels already using the foreshore licence survey area, there is unlikely to be the potential for significant disturbance to marine mammals as the increase in the number of vessels present as a result of the surveys would be small. The number of vessels in the area per day would be unlikely to exceed the Heinänen and Skov (2015) threshold level of 50 vessels within a 5km^2 area.

In addition, the survey vessels (including for boat-based seabird and marine mammal surveys) would be slow moving (or stationary) and most noise emitted is likely to be of a lower frequency, associated with large, slow moving vessels and the use of dynamic positioning systems. Therefore, it is **not considered that there would be LSE for marine mammal species as a result of vessel noise**, and therefore all other vessel noise has been screened-out of further assessment.

Survey Noise Sources

There will be no significant underwater acoustic signal results from the operation of CPT, or from vibrocores, boreholes and benthic video and grab surveys. Data indicates that sound pressure levels are not at a level that is thought to cause a disturbance or injury to marine mammals (e.g. Erbe and McPherson, 2017).

Therefore, of the surveys to be undertaken, only geophysical surveys have the potential to emit levels of underwater noise which could impact marine mammals (potential noise levels identified in Section 1.2 of the Schedule of Works (Royal HaskoningDHV, 2022b - document reference: PC1509-RHD-ZZ-XX-RP-Z-0023). Therefore, there is the potential for LSE from underwater noise as a result of the geophysical surveys for all cetacean and pinniped species, and therefore **this effect will be considered further**.

8.4.1.2 Potential collision risk with vessels

Marine mammals are able to detect and avoid vessels. However, vessel strikes are still known to occur, possibly due to distraction whilst foraging and socially interacting, or due to the marine mammals' inquisitive nature (Wilson *et al.,* 2007). Therefore, increased vessel movements, especially those outside recognised vessel routes, can pose an increased risk of vessel collision to harbour porpoise, bottlenose dolphin, grey seal and harbour seal.

Studies have shown that larger vessels are more likely to cause the most severe or lethal injuries, with vessels over 80m in length causing the most damage to marine mammals (Laist *et al.,* 2001). Vessels travelling at high speeds are considered to be more likely to collide with marine mammals, and those travelling at speeds below 10 knots would rarely cause any serious injury (Laist *et al.,* 2001). Given that all vessels will be slow moving, and the majority would be less than 80m in length (with the geotechnical survey vessels having the potential to reach 55-90m in length), and the area is relatively busy in nature with regards to vessels, it is considered **unlikely for there to be the potential for LSE for any marine mammal species resulting from collision**.

8.4.1.3 Potential for entanglement

To date, there have been no recorded instances of marine mammal entanglement with seismic or geophysical towed equipment, or with the mooring lines of LiDAR buoys. As such, the potential for entanglement is considered to be very low (and indirect only), and therefore **would not have the potential for LSE on any marine mammal species.**

8.4.1.4 Potential barrier effects

There is no potential for barrier effects to marine mammals as a result of the proposed surveys, preventing movement of marine mammals between important feeding and / or breeding areas, or potentially increasing swimming distances if marine mammals avoid the foreshore licence survey area (approximately 188km^2) and go around it. The potential for underwater noise disturbance is considered above. Therefore, there is **no potential for LSE as a result of barrier effects from the presence of the proposed surveys themselves.**

8.4.1.5 Potential disturbance at haul-out sites

Hauled-out seals are sensitive to disturbance, particularly during the breeding or moult periods. As outlined in **Sections 5.4.3.1** and **5.4.3.2**, the nearest grey seal and harbour seal haul-out sites are at a sufficient distance that there would be no disturbance effect at the haul-out sites themselves (12km to the nearest grey and harbour seal haul-out site).

Studies on the distance of disturbance, on land or in the water, from hauled-out seals have found that the closer the disturbance, the more likely seals are to move into the water. For the grey seal, mothers responded by moving into the water more due to boat speed rather than as a result of the distance, although movement into the water was generally observed to occur at distances of between 20 and 70m, with no detectable disturbance at 150m (Wilson, 2014; Strong and Morris, 2010). However, grey seals have also been reported to move into the water when vessels are at a distance of approximately 200m to 300m (Wilson, 2014).

A study of the reactions of harbour seal from cruise ships found that, if a cruise ship was less than 100m from a harbour seal haul-out site, individuals were 25 times more likely to flee into the water than if the cruise ship was at a distance of 500m from the haul-out site (Jansen *et al.,* 2010). At distances of less than 100m, 89% of individuals would flee into the water, at 300m this would fall to 44% of individuals, and at 500m, only 6% of individuals would flee into the water (Jansen *et al.,* 2010). Beyond 600m, there was no discernible effect on the behaviour of harbour seal.

There is the potential for underwater noise disturbance of seals at the foreshore licence survey area, however this is considered in the underwater noise assessment as described above. The distance between the foreshore licence survey area and both grey and harbour seal haul-out sites (22km and 91km respectively) is considerably more than the reported disturbance distances for both species. It is **not considered that there would be any potential for LSE for seals as a result of disturbance to seal haul-out sites**.

8.4.1.6 Potential changes in water quality

During the surveys, marine sediment sampling within the geotechnical surveys is a potential pathway for disturbance of the seabed, and re-suspension of sediments, either directly from the seabed, or from sub-seabed drill cuttings and for these re-suspended sediments to be dispersed through the water. As survey samples are small and localised the re-suspension of sediments will be a small volume and will disperse quickly.

There is the potential for changes in water quality as a result of accidental discharge and spillage of oils, fuels and materials (which could also impact upon marine mammal prey species). If any such substances were accidentally released / leaked, quantities would likely be small due to relatively small amounts being present on the vessel.

The short duration and type of the proposed survey works, the small scale of sediment disturbance, along with the distance from European sites would only have short term and localised effects on water quality. Therefore, it is not considered that there is any risk to marine mammals due to changes in water quality, and it **is not considered that there is any potential for LSE**.

The potential for accidental discharge and spillage of oils, fuels and materials would be managed through compliance with MARPOL.

8.4.1.7 Potential effects on prey species

Potential effects on marine mammal prey species include:

- Underwater noise (that could lead to mortality, physical injury, auditory injury or behavioural responses);
- Physical disturbance and temporary loss of seabed habitat; and
- Increased suspended sediment concentrations and sediment re-deposition.

The diet of the harbour porpoise consists of a wide variety of prey species and varies geographically and seasonally, reflecting changes in available food resources. Harbour porpoise have relatively high daily energy demands and need to capture enough prey to meet its daily energy requirements. It has been estimated that, depending on the conditions, harbour porpoise can rely on stored energy (primarily blubber) for three to five days, depending on body condition (Kastelein *et al.*, 1997). Harbour porpoise are therefore considered to have low to medium sensitivity to changes in prey resources.

Bottlenose dolphin are opportunistic feeders that have large foraging ranges (Santos *et al.*, 2001; Reid *et al.*, 2003; Sea Watch Foundation, 2012) and are therefore considered to have low sensitivity to changes in prey resources.

Grey and harbour seal feed on a variety of prey species. Both species are considered to be opportunistic feeders that are able to forage in other areas and have relatively large foraging ranges. Grey seal and harbour seal are therefore considered to have low sensitivity to changes in prey resources.

As outlined above, the potential for any physical disturbance and temporary loss of seabed habitat or increased suspended sediment concentrations and sediment re-deposition is unlikely and will only affect a small area for a very short period of time, therefore there are unlikely to be any effects on marine mammal prey species.

The effects of underwater noise on prey species will be less than the potential impacts on marine mammal species, i.e. the impact ranges for fish will be less than those for marine mammals. As the potential effects of underwater noise assessed for marine mammals, as outlined above, are greater than those predicted for their prey, there would be no further effect as marine mammals would already be disturbed from the area of potential prey displacement.

Given the potential for temporary and insignificant effects on fish species and the ability of marine mammals to feed on a wide range of prey, and to move to other locations for foraging in the event that there is a change in prey availability in the foreshore licence survey area, it is **not considered that there is the potential for LSE for any marine mammal species**.

8.4.1.8 In-combination effects

There is the **potential for in-combination effects on all marine mammal species**, as a result of underwater noise. As shown in **Section 7**, there is the potential for other geophysical surveys to be undertaken at the same time as the proposed surveys, with the same potential for underwater noise effects. There is therefore the potential for LSE, and this will be assessed further in the NIS (Royal HaskoningDHV, 2022a – document reference PC1509-RHD-ZZ-XX-Z-RP-0022).

8.4.1.9 Summary of Potential for LSE for Marine Mammals

Table 5 shows the effect pathways that have been screened in or out of the potential for LSE on European sites. For those sites screened-in for assessment, based on their location in relation to each species' relevant MU, the effects with potential for LSE will be further assessed.

Table 5 Summary of potential effects for marine mammals

Effect Pathway	Screened in for potential LSE	Screened out for potential LSE
Underwater noise from surveys	✓	
Underwater noise from vessels		✓
Potential for collision risk with vessels		✓
Potential for entanglement		✓
Potential barrier effects		✓
Potential disturbance at haul out sites		✓
Potential changes in water quality		✓
Potential effects on prey species (due to changes in water quality only)		✓
In combination effects	✓	

8.4.2 Screening of Designated Sites for Marine Mammals

8.4.2.1 Harbour porpoise

For harbour porpoise, initially connectivity was determined to be possible between the project and any European site within the CIS MU. The closest designation to the foreshore licence survey area is the Blasket Islands SAC (22km from the foreshore licence survey area). The harbour porpoise population of the CIS is the most likely population to interact with the survey area. European sites outside the MU were not considered further.

Blasket Islands SAC

Blasket Islands SAC is located 22km from the survey area, and as such is the closest designated SAC for harbour porpoise. The site is primarily of importance for harbour porpoise, a species which has a regular presence in Blasket Sound. A population estimate in 2014 of 41 - 516 individuals. Sighting rate and group size recorded during the survey of the Blasket Islands SAC in 2018 were very low compared to previous surveys of this site at 39 – 93 individuals with a density of 0.28 harbour porpoise per km^2 (O'Brien and Berrow, 2018). Due to the small area of the SAC relative to the potential range of highly mobile harbour porpoises, large variations in densities within the SAC would be expected unless there were critical factors driving a preference for habitats within the site. These short-term variations are likely to be driven by local prey availability in addition to underlying seasonal changes, which are poorly understood at present.

It is not appropriate to use a SAC population estimate for assessment, as the harbour porpoise is wide ranging and it is not possible to determine where there is any site fidelity of harbour porpoise, or what the potential number of harbour porpoise within the site may be at any one time. The following assessment therefore uses the wider CIS MU reference population of 62,517 harbour porpoise (IAMMWG, 2021). Other cetaceans regularly observed in the site include common dolphin, bottle-nosed dolphin, Risso's dolphin, killer whale and minke whale.

The conservation objective for the Blasket Islands SAC is *"To maintain the favourable conservation condition of harbour porpoise in Blasket Islands SAC"* which is defined by the attributes and targets as set out in **Table 6**.

Table 6 Attributes and targets for harbour porpoise at Blasket Islands SAC

Target	Attribute
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein. It does not refer to short-term or temporary restriction of access or range. Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.
Disturbance	Human activities should occur at levels that do not adversely affect the harbour porpoise population at the site Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle. This target *al*so relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour porpoises depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis. Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the harbour porpoise community at the site.

Other Harbour Porpoise Designated SACs

Other European sites designated for the harbour porpoise within the screening area are the Roaringwater Bay and Islands SAC, West Wales Marine / Gorllewin Cymru Forol SAC, Rockabill to Dalkey Island SAC, North Anglesey Marine SAC, North Channel SAC, or Bristol Channel Approaches SAC.

For harbour porpoise, connectivity was initially determined to be possible between the foreshore licence survey area and any European site within the CIS MU. As the harbour porpoise population of the CIS is the most likely population to interact with the foreshore licence survey area, European sites outside the CIS MU were not considered further.

8.4.2.2 Summary of Screening for Harbour Porpoise

The SACs designated for harbour porpoise with potential for LSE for harbour porpoise, due to the potential effects of underwater noise and in-combination effects are:

- Blasket Islands SAC;
- Roaringwater Bay and Islands SAC;
- West Wales Marine / Gorllewin Cymru Forol SAC;
- Rockabill to Dalkey Island SAC;
- North Anglesey Marine SAC;
- North Channel SAC; and
- Bristol Channel Approaches SAC

All other potential effects from the proposed surveys as outlined in **Section 8.4.1** are considered to have no potential for LSE for all SACs designated for harbour porpoise. LSE that have been determined are those

potential effects that cannot be discounted without further assessment. Potential impacts and results of the screening exercise are detailed in **Table 10.**

8.4.2.3 Bottlenose Dolphin

For bottlenose dolphin, connectivity was initially considered possible between the proposed survey work and any European site within the Shannon Estuary and OW MUs (**Figure 8**). The bottlenose dolphin population in these MU are the most likely populations to interact with the survey area. European sites outside this MU were not considered further.

Lower River Shannon SAC

While it is known that bottlenose dolphins use the Shannon Estuary throughout the year (e.g. Englund *et al.,* 2007), numbers have been shown to decrease during the winter months (Ingram, 2000; Englund *et al.,* 2007). The ranging behaviour and habitat use by 'Shannon' animals whilst outside of the estuary remains largely unknown due to a lack of photo-ID matches from other sites. It should however be noted that survey effort has concentrated on the summer and early autumn months and comparatively little is known of the species' winter-spring occurrence and ecology. Dolphin biopsy sampled in Cork Harbour belonged to a small group of largely unmarked individuals (Ryan *et al.*, 2010) and genetic analysis clustered these animals with Shannon Estuary dolphins. It is therefore likely that these animals had relocated from the Shannon Estuary at some point prior to being biopsied, indicating that there is some movement of the Shannon group outside of the estuary to the south Ireland coast.

Recent surveys of the Shannon Estuary dolphins (photo-ID surveys undertaken in 2018), which are designated within the Lower River Shannon SAC, identified a population of 139±15 (CV=0.11, 95% CI= 121–160) individuals within the Shannon Estuary (Baker *et al*., 2018; Rogan *et al.,* 2018b). Photo-ID captures collated by IWDG between 2011 and 2015 were analysed, resulting in the estimated abundance of 145 bottlenose dolphins within the Shannon group (Blázquez *et al.,* 2020). These photo-ID captures were subsequently compared with the catalogue held by NPWS to ensure there were no additional bottlenose dolphins not already included within that abundance estimate. This process determined that the abundance estimate of 145 individuals was the most up to date and accurate estimate of the SAC at that time (Blázquez *et al.,* 2020).

The Conservation Objectives for bottlenose dolphin at the Lower River Shannon SAC are summarised in **Table 7.**

Table 7 Attributes and targets for bottlenose dolphin at Lower River Shannon SAC

Target	Attribute
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of harbour porpoise from part of its range within the site or will permanently prevent access for the species to suitable habitat therein. It does not refer to short-term or temporary restriction of access or range. Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.
Supporting Habitats and Species	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be conserved in a natural condition. This target 3 is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) aquatic habitat used preferentially by bottlenose dolphin during the annual cycle and (b) the natural behaviour of bottlenose dolphin within such critical areas (i.e., preferred habitat). Operations or activities that cause displacement of individuals from a critical area (i.e. preferred habitat) or alteration of natural behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.

Target	Attribute
Disturbance	Human activities should occur at levels that do not adversely affect the harbour porpoise population at the site Proposed activities or operations should not introduce man-made energy (e.g. aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the community of harbour porpoise within the site. This refers to the aquatic habitats used by the species in addition to important natural behaviours during the species annual cycle. This target also relates to proposed activities or operations that may result in the deterioration of key resources (e.g. water quality, feeding, etc) upon which harbour porpoises depend. In the absence of complete knowledge on the species ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis. Proposed activities or operations should not cause death or injury to individuals to an extent that may ultimately affect the bottlenose dolphin community at the site.

Other Bottlenose Dolphin Designated SACs

Other European sites designated for bottlenose dolphin within the screening area are the Slyne Head Penninsula SAC; West Connacht Coast SAC; Duvillian Islands SAC and Slyne Head Islands SAC.

For bottlenose dolphin, connectivity was initially determined to be possible between the foreshore licence survey area and any European Designated Site within the CIS. The bottlenose dolphin population in the Shannon Estuary and OW MUs is the most likely population to interact with the foreshore licence survey area and therefore European sites outside these MUs were not considered further.

8.4.2.4 Summary of Screening for Bottlenose Dolphin

The SACs designated for bottlenose dolphin with potential for LSE for bottlenose dolphin, due to the potential effects of underwater noise and in-combination effects are:

- Lower River Shannon SAC;
- Slyne Head Penninsula SAC;
- West Connacht Coast SAC;
- Duvillian Islands SAC; and
- Slyne Head Islands SAC

All other potential effects from the proposed surveys, as outlined in **Section 8.4.1,** are considered to have no potential for a LSE for all SACs designated for bottlenose dolphin. LSE that have been determined are those potential effects that cannot be discounted without further assessment. Potential impacts and results of the screening exercise are detailed in **Table 10.**

8.4.2.5 Grey Seal

For grey seal, connectivity was initially determined to be possible between the foreshore licence survey area and any European site on the Irish west coast. The closest designated site is the Blasket Islands SAC which is 22km from the foreshore licence survey area.

Blasket Islands SAC

Blasket Islands SAC is designated for the marine Annex I qualifying interest of reefs and submerged or partially submerged sea caves and the Annex II species grey seal and harbour porpoise. NPWS surveillance of two of the grey seal population within the site has continued on a regular basis through the annual efforts of regional staff, a regional monitoring programme for the species (Ó Cadhla *et al.*, 2013) and ancillary data

collected during summer population surveys for harbour seal (Duck and Morris, 2013). A minimum estimate of 989 grey seals was recorded at the site during the moult season in 2007 and an estimated 314 pups were born in Blasket Islands SAC in 2011 (NPWS, 2014). The corresponding minimum population estimate for the site numbered 1,099 - 1,413 grey seals of all ages (NPWS, 2014).

The Conservation Objectives for grey seal and harbour seal at the Blasket Islands SAC (NPWS, 2013) are "*to maintain the favourable conservation condition of grey seal and harbour seal in Blasket Islands SAC, which is defined by the following list of attributes and targets"* (**Table 8**).

Table 8 Attributes and targets for grey seal and harbour seal at Blasket Islands SAC

Target	Attribute
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use.
Breeding behaviour	The breeding sites should be maintained in a natural condition.
Moulting behaviour	The moult haul-out sites should be maintained in a natural condition.
Resting behaviour	The resting haul-out sites should be maintained in a natural condition.
Disturbance	Human activities should occur at levels that do not adversely affect the grey seal population at the site.

Other Grey Seal Designated SACs

Other European sites designated for grey seal within the screening area are the Inishbofin and Inishshark SAC, Roaringwater Bay and Islands SAC, Duvillaun Islands SAC, Inishkea Islands SAC, Slieve Tooey / Tormore Island / Loughros Beg Bay SAC, Slyne Head Islands SAC, and Horn Head and Rinclevan SAC. For grey seal, initially connectivity was determined to be possible between the foreshore licence survey area and any European site on the Irish west coast. The grey seal population on the Irish west coast is the most likely population to interact with the foreshore licence survey area and therefore European sites outside this area were not considered further.

8.4.2.6 Summary of Screening for Grey Seal

The SACs designated for grey seal with potential for LSE for grey seal, due to the potential effects of underwater noise and in-combination effects are:

- Blasket Islands SAC;
- Inishbofin and Inishshark SAC;
- Roaringwater Bay and Islands SAC;
- Duvillaun Islands SAC;
- Inishkea Islands SAC;
- Slieve Tooey/Tormore Island/Loughros Beg Bay SAC;
- Slyne Head Islands SAC; and
- Horn Head and Rinclevan SAC.

All other potential effects from the proposed surveys as outlined in **Section 8.4.1** are considered to have no potential for a LSE for all SACs designated for grey seal. LSE that have been determined are those potential effects that cannot be discounted without further assessment. Potential impacts and results of the screening exercise are detailed in **Table 10.**

8.4.2.7 Harbour Seal

For harbour seal, connectivity was initially determined to be possible between the foreshore licence survey area and any European designated site on the Irish west coast. The closest designated site for harbour seal to the foreshore licence survey area is the Galway Bay Complex SAC (91km from the foreshore licence survey area).

Galway Bay Complex SAC

As the harbour seal is wide ranging, the following assessment uses the wider RoI MU reference population of 4,007 (SCOS, 2020), but also puts the potential effects into context of the Galway Bay Complex SAC harbour seal population estimate of 421 individuals (Morris and Duck, 2019).The Conservation Objectives for harbour seal are outlined in **Table 9**.

Table 9 Attributes and targets for harbour seal at Galway Bay Complex SAC

Target	Attribute
Access to suitable habitat	Species range within the site should not be restricted by artificial barriers to site use.
Breeding behaviour	The breeding sites should be maintained in a natural condition.
Moulting behaviour	The moult haul-out sites should be maintained in a natural condition.
Resting behaviour	The resting haul-out sites should be maintained in a natural condition.
Disturbance	Human activities should occur at levels that do not adversely affect the grey seal population at the site.

Other Harbour Seal Designated SACs

Other European sites designated for harbour seal within the screening area are the Glengarriff Harbour and Woodland SAC, Killala Bay/Moy Estuary SAC, Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC, Ballysadare Bay SAC, Clew Bay Complex SAC, Donegal Bay (Murvagh) SAC, Kenmare River SAC, Kilkieran Bay and Islands SAC, Rutland Island and Sound SAC, or West of Ardara/Maas Road SAC. For harbour seal, connectivity was initially determined to be possible between the proposed survey works and any European designated site on the Irish west coast. The harbour seal population on the Irish west coast is the most likely population to interact with the foreshore licence survey area and therefore European sites outside this area were not considered further.

8.4.2.8 Summary of Screening for Harbour Seal

The SACs designated for harbour seal with potential for LSE for harbour seal, due to the potential effects of underwater noise and in-combination effects are:

- Galway Bay Complex SAC;
- Glengarriff Harbour and Woodland SAC;
- Killala Bay/Moy Estuary SAC;
- Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC;
- Ballysadare Bay SAC;
- Clew Bay Complex SAC;
- Donegal Bay (Murvagh) SAC;

- Kenmare River SAC;
- Kilkieran Bay and Islands SAC;
- Rutland Island and Sound SAC; and
- West of Ardara/Maas Road SAC.

All other potential effects from the proposed surveys as outlined in **Section 8.4.1** are considered to have no potential for a LSE for all SACs designated for harbour seal. LSE that have been determined are those potential effects that cannot be discounted without further assessment. Potential impacts and results of the screening exercise are detailed in **Table 10.**

8.5 Connectivity with bird species associated with SPA

The Source-Pathway-Receptor approach was undertaken to identify the mechanisms that the proposed SI surveys may potentially affect the birds that are qualifying interest features of SPAs.

All SPAs were identified considering the following criteria:

- Determining if the foreshore licence survey area overlaps with any SPAs;
- The distance between the foreshore licence survey area and a site with a bird interest feature is within the range for which there could be an interaction i.e. the pathway is not too long. For seabirds in the breeding season this element of the screening process is informed by published information on maximum foraging range;
- Assessment of species-specific risk which informs the extent to which populations of particular species may be at risk of disturbance or displacement (Furness *et al.* 2013); and
- The likelihood that a foraging area or a migratory route occurs within the survey area for the qualifying interest features.

The potential effects from the proposed SI surveys include:

- potential disturbance due to the presence of vessels;
- disturbance from underwater noise;
- potential changes to prey availability; and
- potential changes to water quality (including accidental pollution).

The foreshore licence survey area does not overlap with a SPA, however, the foreshore licence survey area may be used by foraging and resting birds and by birds passing through (on transit/migration). The closest SPAs are: Loop Head SPA (9km) designated for kittiwake and guillemot; Magharee Islands SPA (9.5km) designated for storm petrel, shag, barnacle, common gull, common tern, Arctic tern and little tern; Dingle Peninsula SPA (10km) designated for fulmar, peregrine and chough; Kerry Head SPA (10.5km) designated for fulmar and chough; Tralee Bay Complex SPA (13km) designated for whooper swan, light-bellied brent goose, shelduck, wigeon, teal, mallard, pintail, scaup, oystercatcher, ringed plover, golden plover, grey plover, lapwing, sanderling, dunlin, black-tailed godwit, bar-tailed godwit, curlew, redshank, turnstone, black-

headed gull, common gull and wetland and waterbirds. These are the only SPAs with a potential pathway and therefore the only SPAs included in the screening.

The proposed surveys that involve the presence of a vessel are: SBP, geotechnical SIs, SSS and MBES. The potential impacts due to these activities would be disturbance to seabirds from the presence of the vessels and underwater noise disturbance caused by acoustic signals emitted during SBP, SSS and MBES.

There is a lack of studies on the effects of underwater noise on water column feeders, however one study by Mardik and Camphuysen (2009) concluded that seismic air gun emissions caused no fatalities or affected bird abundance. In addition, the presence of the vessels could potentially displace some birds from the survey site whilst the survey is underway, further reducing any noise disturbance to diving birds. It is considered that the effects of underwater noise would be *de minimis*.

It is possible that any fish near the survey will be temporarily displaced by the noise, thus also displacing the food resource for seabirds. This is an area already busy with regular vessel traffic and fish are likely to be habituated to noise. The survey noise impacts will be temporary and be highly localised and therefore, will be unlikely to affect prey availability, nor will the surveys create a barrier to connectivity. Given the potential for temporary and insignificant effects on fish as described in **Section 8.3**, and the ability of birds to feed on a wide range of prey and forage in large areas, it is considered that, based on best evidence, the effects on prey availability would be *de minimis*.

Analysis on seabird vulnerability by (Furness *et al.*, 2013) indicates that all diver species, velvet scoter and common scoter are most likely at risk of disturbance or displacement from habitats. The risks to divers and scoters from the proposed site investigation works would be survey vessel movement. Based on reported disturbance levels (Burger *et al*., 2019; Mendel *et al*., 2019; Fliessbach *et al*., 2019) and using the precautionary principle, a 5km ZoI from the foreshore licence survey area for divers is used.

Therefore, the foreshore licence survey area is beyond the maximum displacement distance of red-throated diver and other divers as well as seaducks (the most sensitive to disturbance and displacement), meaning that there is no pathway for direct effects on any SPA. The survey vessels could however displace birds from the SPA that were within the foreshore licence survey area. The area already experiences low-medium vessel traffic and seabirds are likely to be habituated to this activity. The survey vessels will be slow moving during surveys and therefore less likely to cause disturbance than fast moving vessels. Therefore, any potential displacement effects will not give rise to a likely significant effect upon the SPAs. In addition, due to the temporary, short duration and small-scale and nature of the works there will be no direct or indirect LSEs on the conservation objectives of the European sites.

The potential for accidental discharge and spillage of oils, fuels and materials would be managed through compliance with MARPOL.

Given the duration of the proposed site investigation surveys, the size of the foreshore licence survey area and its location in open offshore waters, significant impacts on seabirds, which may be disturbed or displaced from the survey site, either alone or in combination with other projects and plans are not considered likely and below the threshold level of *de minimis*. **No LSE on the conservation objectives of Loop Head SPA, Dingle Peninsula SPA, Kerry Head SPA, Tralee Bay Complex SPA or any other SPA alone and in-combination with other plans and projects is concluded** (see **Section 7** for other plans and project considered).

8.6 Appropriate Assessment Screening for all European sites Summary

A detailed summary of potential effects on the European sites and their qualifying features and the conclusion of whether a LSE is predicted or cannot be excluded, is provided in **Table 10**.

Table 10 Relevant European sites and relevant qualifying interests and summary of potential effects

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
Kerry Head Shoal SAC	Reefs [1170]	Kerry Head Shoal SAC is designated for an exposed subtidal reef community complex. Kerry Head Shoal SAC is designated for an exposed subtidal reef community complex including *P. ventilabrum* and axinellid sponges on deep, wave-exposed circalittoral rock 33-46 m which may be sensitive to smothering and siltation changes. As these communities are slow growing, resilience to long term disturbance may be low and recovery may be slow.	No effect predicted	LSE cannot be excluded Screened In
Lower River Shannon SAC	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] 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]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to common bottlenose dolphin if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect bottlenose dolphin through a change in water quality, and indirectly cause a change to prey availability in the event that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only. Disturbance to supporting habitats and removal of sediment from sampling surveys will be localised to the immediate vicinity of the sediment sampling location. Suspended sediment plumes and changes to seabed characteristics are expected to be localised and negligible in comparison to natural sediment transport. The Lower River Shannon SAC is beyond the potential distance effects from sediment removal and disturbance. Given the potential for changes in water quality, including accidental spills and leaks will be at some considerable distance away from rivers that are used as migratory routes for fish, the effects acting as a chemical barrier and thus preventing the successful passage of migratory fish is not predicted.	Bottlenose dolphin - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] Mediterranean salt meadows *Juncetalia maritimi* [1410] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion v*egetation [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] Freshwater Pearl Mussel *Margaritifera margaritifera* [1029] Sea Lamprey *Petromyzon marinus* [1095] Brook Lamprey *Lampetra planeri* [1096] River Lamprey *Lampetra fluviatilis* [1099] Salmon *Salmo salar* [1106]	In addition, the impacts on migratory fish egg survival rate for such fish as salmonids is also not predicted in response to eggs and young fry being associated with the freshwater environment of rivers. Furthermore, given the behavioural traits of migratory fish, they have no designated offshore congregation grounds like marine fish, such as herring, and thus would not be susceptible to direct local mortality or fish kills from potential offshore accidental spills and leaks. Of the four fish species designated in the Lower River Shannon SAC, only Atlantic salmon and twaite shad are known to be sensitive to noise. The proposed SI surveys from the vessel and geophysical survey could cause underwater noise within the immediate vicinity of the survey vessel, Nedwell *et al*. (2012) estimated that seismic surveys could cause potential impacts to herring (a noise sensitive species) up to 4km. Herring is more sensitive to sound than salmon and is thought to be comparable with twaite shad, as for both species hearing involves the swim bladder and both are from the order of *Clupeiformes* (Nedwell *et al*., 2008; Popper & Hawkins, 2019). This underwater noise could potentially effect fish sensitive to noise by causing behavioural changes, temporary hearing loss or even act as a barrier that could impeding migration pathways. Due to the distance of the Lower River Shannon SAC to the survey area it is highly unlikely that the proposed surveys would act as a barrier to migration and therefore there is considered to be no pathway for effect. In addition, the surveys would be temporary, and **no LSE is predicted**. For otters, although the maximum potential home range for otters can be up to 40km on land Green *et al*., 1984; Roche *et al*., 1995, as the survey site is offshore this study focused on those marine European sites within the potential area of effect. While coastal otters can hunt as far as 100m offshore in water over 10m deep, most feeding is done close to the shore in water less than 3m deep NRW, 2017. There is no pathway for impact on any European sites for otter and therefore otters were screened-out from further assessment.		

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	Bottlenose *Dolphin Tursiops truncatus* [1349] Otter *Lutra lutra* [1355]			
Magharee Islands SAC	Reefs [1170]	There is no potential for direct effect on reef habitats due to the limited nature of the works in both area and temporal extent. No works are proposed in this SAC and the proposed SI surveys are not significant in nature and would not cause significant resuspension of sediments or effects that would cause impacts to the features of interest of this SAC. As a result of the distance, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any sediment or toxic and non-toxic contamination generated from the proposed surveys materials would be negligible.	No effect predicted	No Likely Significant Effect predicted Screened Out
Mount Brandon SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] 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] Northern Atlantic wet heaths with *Erica tetralix* [4010] European dry heaths [4030]	There is no potential for effect on the qualifying features of interest of this SAC, due to the limited nature of the works in both area and temporal extent. The features of interest represent coastal habitats and intertidal habitats. No works are proposed in this SAC and the proposed SI surveys are not significant in nature and would not cause significant resuspension of sediments or effects that would cause impacts to the features of interest of this SAC. As a result of the distance, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any sediment or toxic and non-toxic contamination generated from the proposed surveys materials would be negligible.	No effect predicted	No Likely Significant Effect predicted Screened Out

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	Alpine and Boreal heaths [4060] Species-rich Nardus grasslands, on siliceous substrates in mountain areas and submountain areas, in Continental Europe [6230] Blanket bogs * if active bog [7130] Siliceous scree of the montane to snow levels *Androsacetalia alpinae* and *Galeopsietalia ladani* [8110] Calcareous rocky slopes with chasmophytic vegetation [8210] Siliceous rocky slopes with chasmophytic vegetation [8220] Freshwater Pearl Mussel *Margaritifera margaritifera* [1029] Killarney Fern *Trichomanes speciosum* [1421]			
Tralee Bay And Magharees Peninsula, West To Cloghane SAC	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140]	There is no potential for effect on the qualifying features of interest of this SAC, due to the limited nature of the works in both area and temporal extent. The features of interest represent coastal habitats and intertidal habitats. No works are proposed in this SAC and the proposed SI surveys are not significant in nature and would not cause significant resuspension of sediments or effects that would cause impacts to the features of interest of this SAC. As a result of the	No effect predicted	No Likely Significant Effect predicted

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	Coastal lagoons [1150] Large shallow inlets and bays [1160] Reefs [1170] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows Glauco-Puccinellietalia maritimae [1330] Mediterranean salt meadows Juncetalia maritimi [1410] Shifting dunes along the shoreline with Ammophila arenaria white dunes [2120] Fixed coastal dunes with herbaceous vegetation grey dunes [2130] Dunes with Salix repens ssp. argentea Salicion arenariae [2170] Humid dune slacks [2190]	distance, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any sediment or toxic and non-toxic contamination generated from the proposed surveys materials would be negligible. For otters, although the maximum potential home range for otters can be up to 40km on land Green *et al*., 1984; Roche *et al*., 1995, as the foreshore licence survey area is offshore, this study focused on those marine European sites within the potential area of effect. While coastal otters can hunt as far as 100m offshore in water over 10m deep, most feeding is done close to the shore in water less than 3m deep NRW, 2017. There is no pathway for impact on any European sites for otter and therefore otters were screened-out from further assessment.		Screened Out

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	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] Otter Lutra lutra [1355] Petalwort Petalophyllum ralfsii [1395]			
Blasket Islands SAC	Harbour Porpoise *Phocoena phocoena* [1351] Grey Seal *Halichoerus grypus* [1364]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between	Harbour porpoise and grey seal - LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect both harbour porpoise and grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Galway Bay Complex SAC	Harbour Seal *Phoca vitulina [1365]*	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al.*, 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey	Harbour seal - LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Slyne Head Peninsula SAC	Bottlenose Dolphin *Tursiops truncatus* [1349]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to common bottlenose dolphin if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect bottlenose dolphin through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Bottlenose dolphin - LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
West Connacht Coast SAC	Bottlenose Dolphin *Tursiops truncatus* [1349]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to common bottlenose dolphin if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect bottlenose dolphin through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Inishbofin and Inishshark SAC	Grey Seal *Halichoerus grypus* [1364]	Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance	LSE are not considered likely, however, cannot be discounted for without further assessment.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Potential effect possible.	
Roaringwater Bay and Islands SAC	Harbour Porpoise *Phocoena phocoena* [1351] Grey Seal *Halichoerus grypus* [1364]	The harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up.	Harbour porpoise and grey seal -LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise and grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Glengarriff Harbour and Woodland SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul -out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Harbour seal - LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Duvillaun Islands SAC	Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to common bottlenose dolphin if present in the area prior to start-up. Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect both bottlenose dolphin and grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Inishkea Islands SAC	Grey Seal *Halichoerus grypus* [1364]	Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect both grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Grey seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Killala Bay/Moy Estuary SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment.	LSE cannot be excluded

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Potential effect possible.	Screened In
Cummeen Strand/Drumcliff Bay Sligo Bay SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
Ballysadare Bay SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
West Wales Marine / Gorllewin Cymru Forol SAC	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to Harbour Porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Rockabill to Dalkey Island SAC	Harbour Porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to Harbour Porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Harbour porpoise - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
North Anglesey Marine SAC	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to Harbour Porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
North Channel SAC	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to Harbour Porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
Bristol Channel Approaches SAC	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. Evidence currently suggests that underwater noise impacts for some types of sub-bottom profilers boomers, sparkers, pingers, chirps and multi-beam echosounders used in geophysical surveys activities can be relatively loud at source with high duty cycles but, on the whole, these are highly directional sources with expected low levels of horizontal sound propagation; many operating at high frequencies and therefore subject to high transmission loss e.g. Crocker & Fratantonio 2016, Crocker *et al*. 2019. JNCC guidance in the UK recommends a precautionary 5km EDR from the source. However, due to the consideration of the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to Harbour Porpoise if present in the area prior to start-up and therefore LSE cannot be discounted. The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the foreshore licence survey area. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect harbour porpoise through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Slyne Head Islands SAC	Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, multi beam and side scan sonar, will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to common bottlenose dolphin if present in the area prior to start-up. Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect both bottlenose dolphin and grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.		
Slieve Tooey / Tormore Island / Loughros Beg Bay SAC	Grey Seal *Halichoerus grypus* [1364]	Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up. There is the potential for any accidental spills or leaks from any of the survey vessels or equipment used to effect both grey seal through a change in water quality, and indirectly cause a change to prey availability in the case that any accidental spills or leaks cause effect to prey species. Therefore, the potential for changes to water quality and prey availability are taken forward for further assessments, in respect of accidental spills and / or leaks only.	Grey seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Horn Head and Rinclevan SAC	Grey Seal *Halichoerus grypus* [1364]	Grey seals forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites SCOS, 2017. Foraging trips can last anywhere between one and 30 days. Tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site, although they can feed up to several hundred kilometres offshore SCOS, 2017. Taking into account that the tracking of individual grey seals has shown that most foraging probably occurs within 100km of a haul-out site. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to grey seals if present in the area prior to start-up.	Grey seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
Clew Bay Complex SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Donegal Bay (Murvagh) SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Kenmare River SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment.	LSE cannot be excluded

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Potential effect possible.	Screened In
Kilkieran Bay and Islands SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Rutland Island and Sound SAC	Harbour Seal *Phoca vitulina* [1365]	Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
West of Ardara/Maas Road SAC	Salmon *Salmo salar* [1106] Harbour Seal *Phoca vitulina* [1365]	Atlantic salmon are sensitive to noise. Due to the distance of the SAC from the survey site it is highly unlikely that the proposed surveys would act as a barrier to migration. In addition, the surveys would be temporary, and no LSE is predicted, therefore these fish will not be assessed any further. Harbour seal exhibit relatively short foraging trips from their haul-out sites. The range of these trips varies depending on the location and surrounding marine habitat. For example, 25km on the west of Scotland Cunningham *et al*., 2009 and 30 km-45 km in the Moray Firth Thompson *et al*., 1996. Data from telemetry studies in The Wash 2003- 2005 suggest that harbour seal travel further, and repeatedly forage between 75 km and 120 km offshore, with one seal travelling 220 km Sharples *et al*., 2008; 2012. Information on harbour seal at-sea movements and habitat use in southwest Ireland suggests a limited range, generally staying within 20 km of their haul-out site Cronin *et al.*, 2008. Although occasional longer trips do occur, these are often associated with young animals dispersing from sites. Any disturbance due to underwater noise generated by proposed SI surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary. However, with due consideration to the precautionary principle, it is recognised that start-up of acoustic equipment may lead to temporary disturbance to harbour seals if present in the area prior to start-up.	Harbour seal - LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Loop Head SPA	Kittiwake *Rissa tridactyla* [A188] Guillemot *Uria aalge* [A199]	There is no potential for effect on the feature of interest of this SPA, due to the limited nature of the works in both area and temporal extent. Due to the distance of operations from the SPA in an area that has regular boat traffic, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any silt, noise or pollution generated from the surveys materials or noise from works would be negligible to this European site.	No effect predicted	No Likely Significant Effect predicted Screened Out

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
Magharee Islands SPA	Storm Petrel *Hydrobates pelagicus* [A014] Shag *Phalacrocorax aristotelis* [A018] Barnacle Goose *Branta leucopsis* [A045] Common Gull *Larus canus* [A182] Common Tern *Sterna hirundo* [A193] Arctic Tern *Sterna paradisaea* [A194] Little Tern *Sterna albifrons* [A195]	There is no potential for effect on the feature of interest of this SPA, due to the limited nature of the works in both area and temporal extent. Due to the distance of operations from the SPA in an area that has regular boat traffic, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any silt, noise or pollution generated from the surveys materials or noise from works would be negligible to this European site.	No effect predicted	No Likely Significant Effect predicted Screened Out
Dingle Peninsula SPA	Fulmar *Fulmarus glacialis* [A009] Peregrine *Falco peregrinus* [A103] Chough *Pyrrhocorax pyrrhocorax* [A346]	There is no potential for effect on the feature of interest of this SPA, due to the limited nature of the works in both area and temporal extent. Due to the distance of operations from the SPA in an area that has regular boat traffic, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any silt, noise or pollution generated from the surveys materials or noise from works would be negligible to this European site.	No effect predicted	No Likely Significant Effect predicted Screened Out
Kerry Head SPA	Fulmar *Fulmarus glacialis* [A009] Chough *Pyrrhocorax pyrrhocorax* [A346]	There is no potential for effect on the feature of interest of this SPA, due to the limited nature of the works in both area and temporal extent. Due to the distance of operations from the SPA in an area that has regular boat traffic, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in	No effect predicted	No Likely Significant Effect predicted

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
		within the marine environment any silt, noise or pollution generated from the surveys materials or noise from works would be negligible to this European site.		Screened Out
Tralee Bay Complex SPA	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]	There is no potential for effect on the feature of interest of this SPA, due to the limited nature of the works in both area and temporal extent. Due to the distance of operations from the SPA in an area that has regular boat traffic, the small scale of the works in the subtidal environments, the minor and localised nature of perceived impacts and the dilution of materials /mixing in within the marine environment any silt, noise or pollution generated from the surveys materials or noise from works would be negligible to this European site.	No effect predicted	No Likely Significant Effect predicted Screened Out

European site	Relevant Qualifying Interests	Potential Impacts	Assessment of Impact	LSE Decision
	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]			

9 Appropriate Assessment Screening Conclusions

AA screening of the proposed works, using the precautionary principle and the Source-Pathway-Receptor links between the proposed survey works and European sites with the potential to result in significant adverse effects on the conservation objectives and features of interest of the European sites was carried out (**Table 10**).

All European Sites were included in screening whereby a pathway of effect was identified. Based on the screening results, the potential for LSE (alone or in-combination with other plans and projects) caused by the proposed survey was excluded for the following European sites:

- Magharee Islands SAC
- Mount Brandon SAC
- Tralee Bay And Magharees Peninsula, West To Cloghane SAC

Taking into account the precautionary principle, LSE cannot be ruled out (without the use of mitigation measures) to cetaceans or pinnipeds through noise disturbance and changes to prey availability for the following European sites which will be taken forward into the NIS assessment (**Table 11**) (Royal HaskoningDHV, 2022a – document reference PC1509-RHD-ZZ-XX-Z-RP-0022).

Table 11 European Sites and Designated Species taken forward into the NIS

European Sites	Species
Blasket Islands SAC	Screened in for harbour porpoise
Roaringwater Bay and Islands SAC	Screened in for harbour porpoise
West Wales Marine / Gorllewin Cymru Forol SAC	Screened in for harbour porpoise
Rockabill to Dalkey Island SAC	Screened in for harbour porpoise
North Anglesey Marine SAC	Screened in for harbour porpoise
North Channel SAC	Screened in for harbour porpoise
Bristol Channel Approaches SAC	Screened in for harbour porpoise
Lower River Shannon SAC	Screened in for bottlenose dolphin
Slyne Head Penninsula SAC	Screened in for bottlenose dolphin
West Connacht Coast SAC	Screened in for bottlenose dolphin
Duvillian Islands SAC	Screened in for bottlenose dolphin
Slyne Head Islands SAC	Screened in for bottlenose dolphin
Blasket Islands SAC	Screened in for grey seal
Inishbofin and Inishshark SAC	Screened in for grey seal

European Sites	Species
Inishkea Islands SAC	Screened in for grey seal
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	Screened in for grey seal
Horn Head and Rinclevan SAC	Screened in for grey seal
Duvillaun Islands SAC	Screened in for grey seal
Slyne Head Islands SAC	Screened in for grey seal
Galway Bay Complex SAC	Screened in for harbour seal
Glengarriff Harbour and Woodland SAC	Screened in for harbour seal
Killala Bay/Moy Estuary SAC	Screened in for harbour seal
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Screened in for harbour seal
Ballysadare Bay SAC	Screened in for harbour seal
Clew Bay Complex SAC	Screened in for harbour seal
Donegal Bay (Murvagh) SAC	Screened in for harbour seal
Kenmare River SAC	Screened in for harbour seal
Kilkieran Bay and Islands SAC	Screened in for harbour seal
Rutland Island and Sound SAC	Screened in for harbour seal
West of Ardara/Maas Road SAC	Screened in for harbour seal
Kerry Head Shoal SAC	Screened in for reefs

9.1 AA Screening Assessment

The AA screening identified the potential for LSE on the interest features of European sites with connectivity to the site investigation works and foreshore licence survey area. Following the screening exercise, 31 European sites were identified where a LSE could not be excluded (without the use of mitigation measures). It was considered that a likely significant effect could not be ruled out, applying the precautionary principle to cetaceans or pinnipeds that are qualifying features of 13 European sites. A NIS has been prepared in support of this foreshore licence application (Royal HaskoningDHV, 2022a – document reference: PC1509-RHD-ZZ-XX-Z-RP-0022).

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