REPORT

Supporting Information for Screening for Appropriate Assessment (SISAA)

Kinsale Foreshore Licence Application

Client: Kinsale Offshore Wind Limited

Reference: PC1509-RHD-ZZ-XX-RP-Z-0005

Status: S3/P01

Date: 17 December 2021

Royal HaskoningDHV

Enhancing Society Together

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Royal HaskoningDHV

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1 Introduction

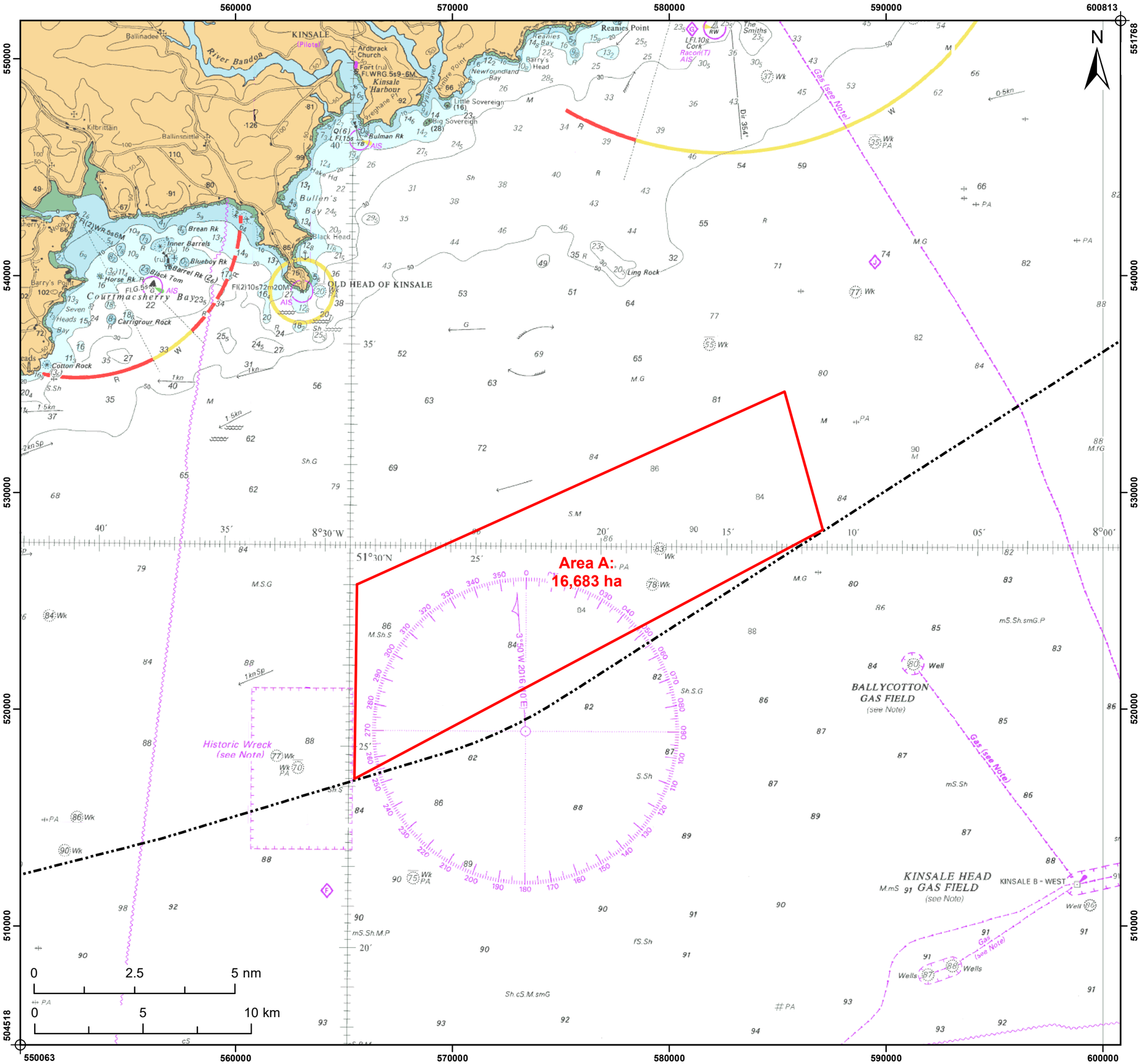
Kinsale Offshore Wind Limited wish to undertake surveys to assess the suitability of the area of interest for development of an offshore wind farm (the Kinsale Project). The Kinsale Project foreshore licence survey area lies off the south coast of Ireland in the Celtic Sea. **Figure 1** shows the location of the foreshore licence survey area. A Foreshore Investigation 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 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), require the likely significant effects 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. A plan or 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 in determining whether the proposed surveys, either alone or in combination with other plans or projects, are likely to have a significant effect on any European sites 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 likely significant effects 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:

- Kinsale Foreshore Licence Survey Area
- Ireland 12nm Limit

Note: Area given in Irish Transverse Mercator (ITM)

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale Offshore Wind Farm

Title: Kinsale Foreshore Licence Survey Area

Figure: 1 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0122

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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 Appropriate Assessment Process

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

3.1.1 Stage 1: Screening for Appropriate Assessment

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 a likely significant effect, 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 consideration of mitigation[2]. The assessment moves to Stage 2 if a likely significant effect 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 scale or a different location. At this stage if there is still an adverse effect on the integrity of a European site

[1] *https://ec.europa.eu/environment/nature/natura2000/management/pdf/methodological-guidance_2021-10/EN.pdf*
[2] *This follows the People Over Wind & Sweetman v. Coillte Teoranta (C-323/17) case. See also EC (2021) page 20 re. mitigation.*

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.

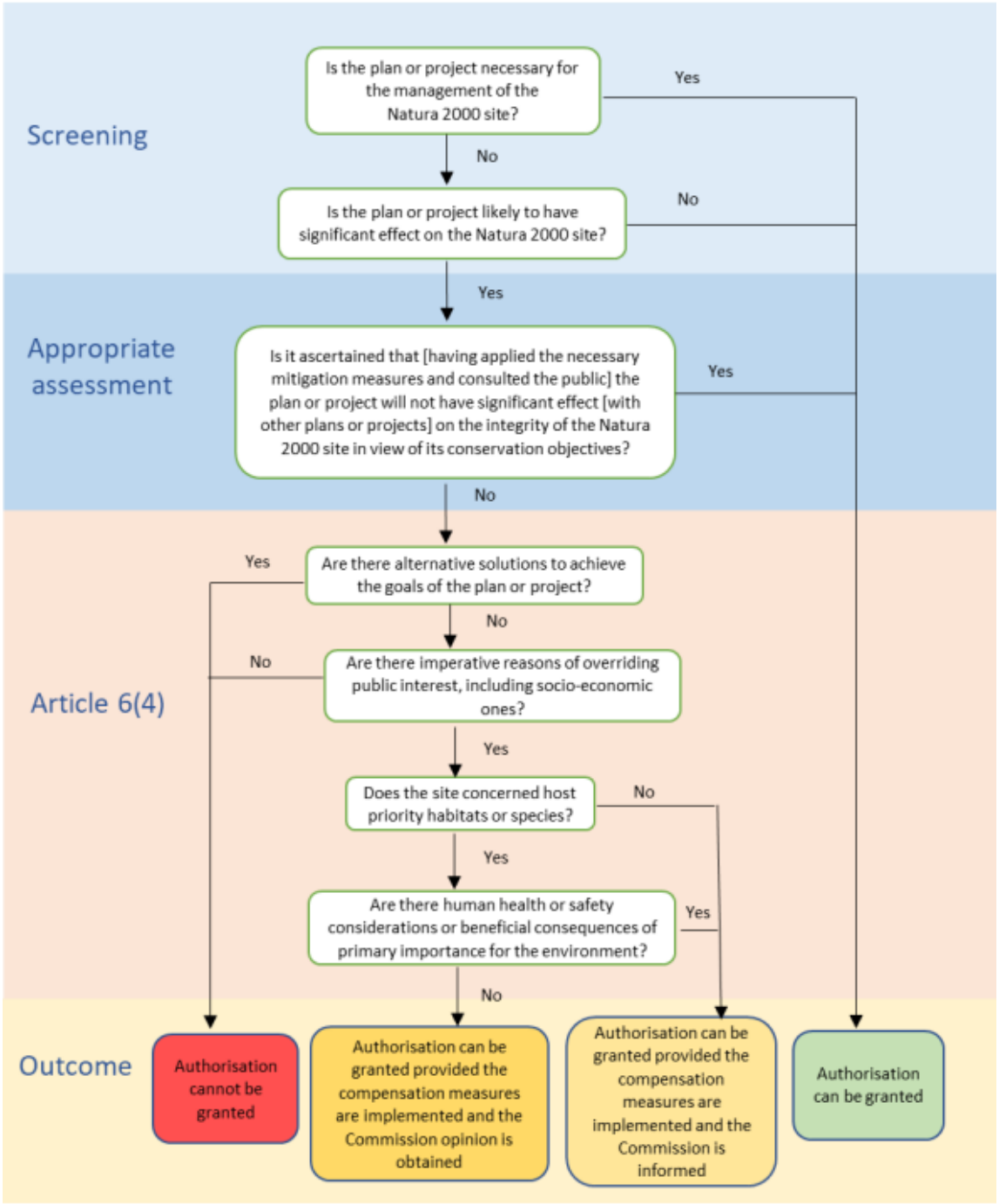


Figure 2 Flow chart of Article 6(3) and 6(4) procedure of the Habitats Directive 92/43/EEC

3.2 Assessment Approach

A thorough literature search and data search was undertaken to inform the assessment. This included data available from National Parks and Wildlife. 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 likely significant effect 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, 2021a - document reference: PC1509-RHD-ZZ-XX-RP-IM-0006). 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.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011, 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 EU, 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 (2012). Marine NISs in Irish SACs: 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) Offshore Renewable Energy Development Plan Interim Review May 2018.
- Department of Communications, Energy & Natural Resources (DCENR) (2014). OREDP Strategic Environmental Assessment - SEA Statement.
- Sustainable Energy Authority of Ireland (2010). Strategic Environmental Assessment (SEA) of OREDP in the Republic of Ireland.
- DCENR (2013). OREDP for Ireland: NIS.
- Department of Housing, Local Government and Heritage (DHLGH) (2021) Maritime Area Planning (MAP) Bill.
- Marine Policy Statement Directive 2014/89/EU.
- DHLGH (2021) National Marine Planning Framework and associated SEA and AA.
- DHLGH (2019) Marine Planning Policy Statement (Consultation Draft).
- Office of the Planning Regulator (OPR) (2021) OPR 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 Sites 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
  - Irish 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., 2017);
- ObSERVE aerial surveys (Rogan et al., 2018);
- 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, 2017);

- 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 the Reference list (**Section 10**).

4 Details of Proposed Works

The application for a foreshore licence for Kinsale Offshore Wind Limited is to survey a new area for a proposed fixed foundation offshore wind project in the Celtic Sea, approximately 13km off the coast of Cork at the nearest point (**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 Kinsale 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 SISAA is being submitted as part of an application for a Foreshore Licence by Kinsale Offshore Wind Limited for permission to carry out site investigation surveys for the Kinsale Project[3]. These surveys will establish a baseline to 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.

[3] *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.*

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 site investigation 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 Kinsale 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 Kinsale Project offshore wind farm site only, which will hereafter be described as the foreshore licence survey area. 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 site investigation surveys is outlined in the Schedule of Works (Royal HaskoningDHV, 2021b – document reference: PC1509-RHD-ZZ-XX-RP-Z-0007).

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 sites (see **Section 3**).

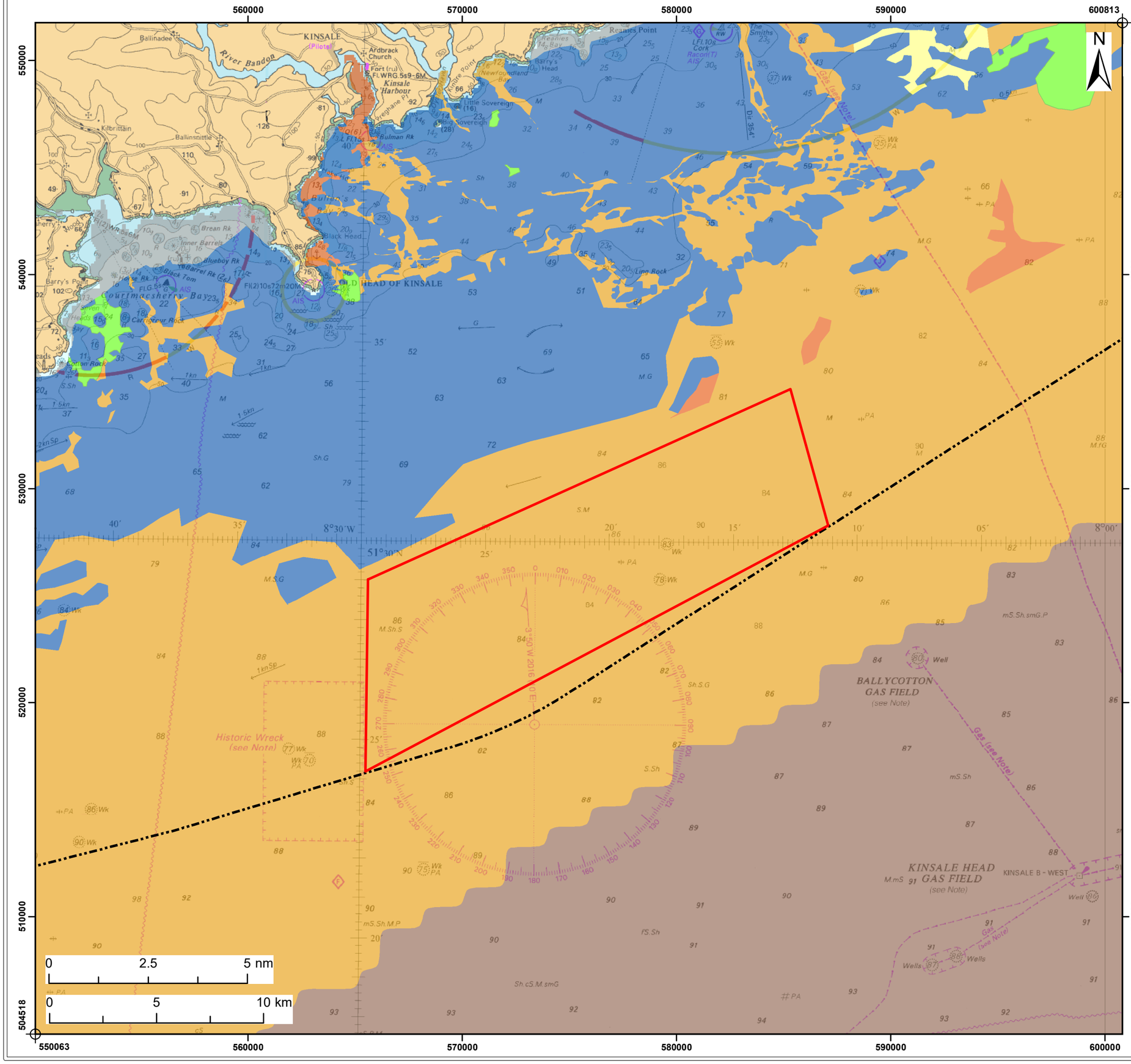
5.2 Benthic Environment

The foreshore licence survey area has a water depth range of approximately 80 to 90m. Based on data obtained from the European Nature Information System (EUNIS) habitat classification system the sediment of the foreshore licence survey area the coastline along the Cork coast is predominantly hard substate (Rock). Further offshore, including the foreshore licence survey area the substrate is predominantly muddy sand (see **Figure 3**).

EMODnet seabed habitat data records the proposed survey site is within the deep circalittoral mud. In this habitat type a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves such as *Thyasira spp.*, echinoderms and foraminifera. The survey site also overlaps offshore (deep) circalittoral habitats with coarse sands and gravel or shell. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species (EMODnet, 2021).

The closest SAC designated for benthic habitat is the Courtmacsherry Estuary SAC located 21km from the survey site. The estuary consists of the drowned valley of the Argideen River, which is now filled with

sediments, resulting in an extensive area of mudflats. The SAC is designated for a range of coastal habitats including vegetated shingle, saltmarsh and sand dunes, including grey dunes which are listed as priority habitat. The site is also of ornithological importance for the many waders and wildfowl that feed on the mud and sandflats (NPWS, 2014).



Legend:

- Kinsale Foreshore Licence Survey Area
- Ireland 12nm Limit

EUNIS Substrate Type

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

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale Offshore Wind Farm

Title: Benthic Environment

Figure:	Drawing No:
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5.3 Migratory Fish

There are a number of rivers on the south and east 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 lists the species from 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 is the Blackwater River (Cork/Waterford) SAC which is approximately 49km away and the qualifying interests include the species above.

Note that Brook lamprey does not migrate to the sea and therefore will not be considered in this assessment.

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 approximately 13km offshore, therefore there is no pathway for direct impact on any European sites for otter and therefore otters were screened out from further assessment.

5.4.2 Cetaceans

Ireland has recorded 25 species of cetacean and two species of pinnipeds, all of which are recognised as protected species under the Habitats Directive and the Irish Wildlife Act; approximately seven of which have been recorded off the south coast and may be present in the foreshore licence survey area at least on a seasonal basis. Of those species, four 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, bottlenose dolphin *Tursiops truncatus*, grey seal *Halichoerus grypus* and harbour seal *Phoca vitulina*. Therefore, only these four marine mammal species are included in the assessments.

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. In both years more cetacean sightings occurred in the winter period than in the summer period and cetacean species richness was higher in the winter months than in the summer months. Bottlenose dolphin and harbour porpoise were among the most frequently sighted cetacean species recorded during these surveys, which also included common dolphin *Delphinus delphis* minke whale *Balaenoptera acutorostrata* (Rogan *et al.,* 2018).

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).

5.4.2.1 Harbour porpoise

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). 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, 2017; Rogan *et al.,* 2018).

The IAMMWG defined three MUs for harbour porpoise: The North Sea; West Scotland, and the Celtic and Irish Sea (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 Celtic and Irish Seas MU, which has an estimated harbour porpoise abundance of 62,517 (Coefficient of Variation (CV) = 0.13; 95% Confidence Interval (CI) = 48,324 – 80,877) (IAMMWG, 2021), based on the Small Cetaceans in the European Atlantic and North Sea (SCANS)-III survey (Hammond *et al.,* 2017) and ObSERVE surveys (Rogan *et al.,* 2018). For the assessments, the Celtic and Irish Sea MU has been used as the reference population. This is considered to be appropriate to take into account the wide range and distances covered by harbour porpoise.

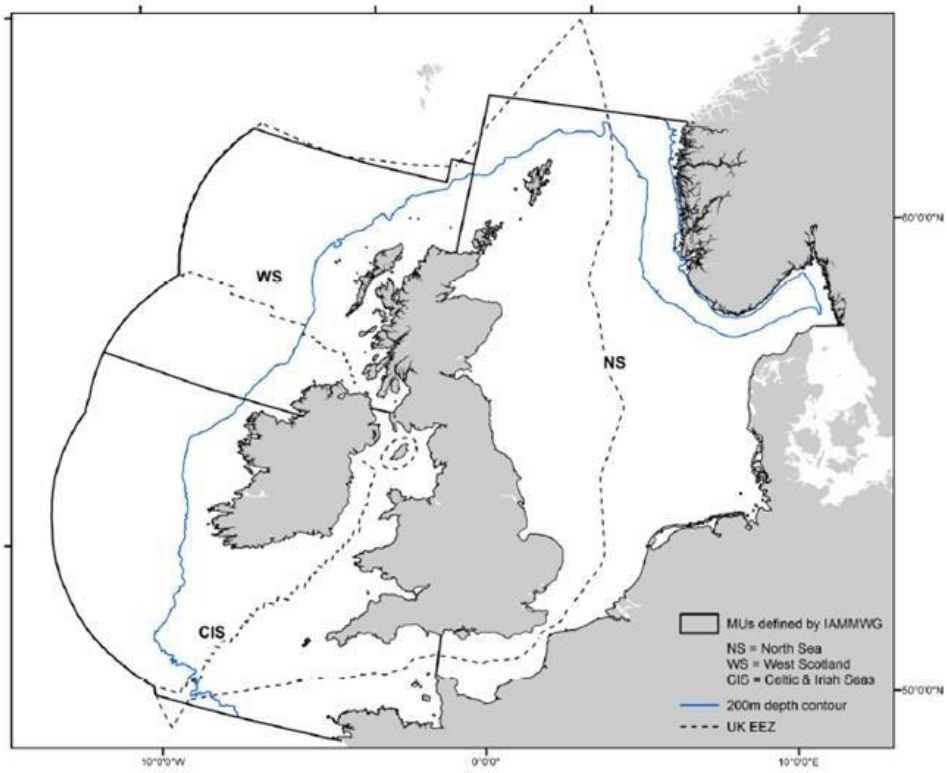


Figure 4 Harbour porpoise Management Units (IAMMWG, 2021)

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 (CV = 0.154; 95% CI = 345,306-630,417), with an overall estimated density of 0.373/ km^2 (Hammond et al., 2021).

Estimates for harbour porpoise in the Celtic and Irish Seas ICES Assessment Unit (partial coverage only, including SCANS-III 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).

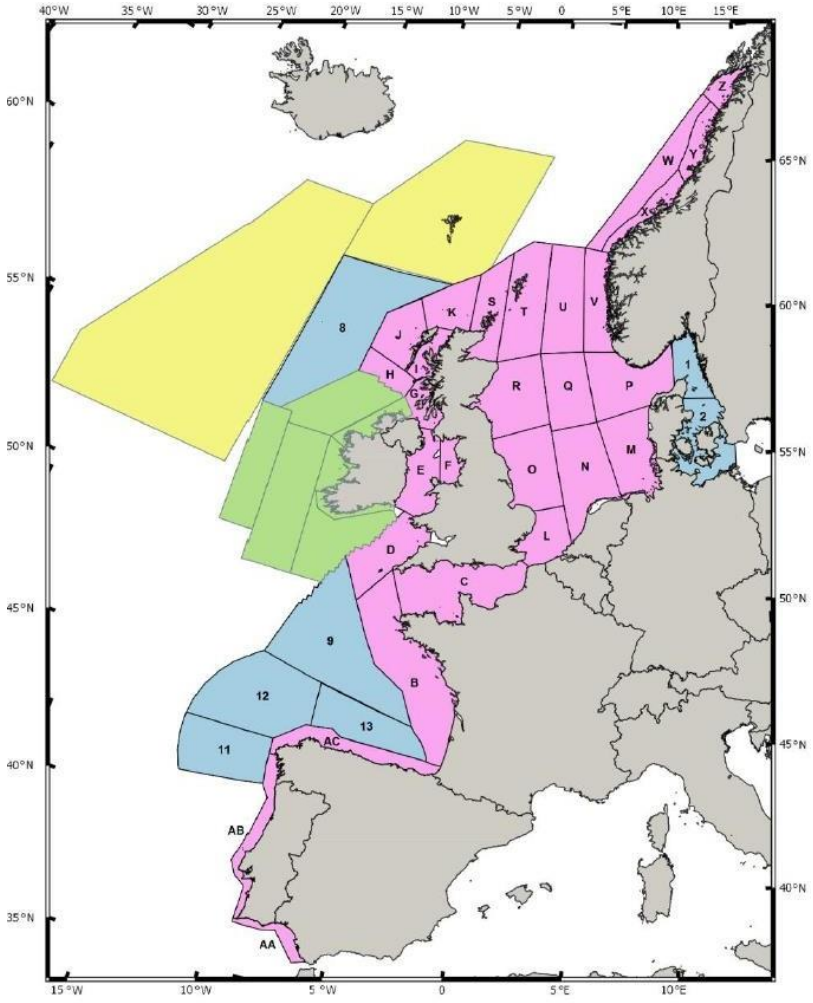


Figure 5 SCANS-III Survey Blocks (Hammond et al.,2021)

Extensive aerial surveys of Ireland's offshore waters (ObSERVE surveys) were conducted in the summer and winter of 2015 and 2016, with additional surveys conducted in inshore/coastal areas in the summer and winter of 2016 (Rogan *et al.,* 2018). 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 4, very close to the boundary with Stratum 8.

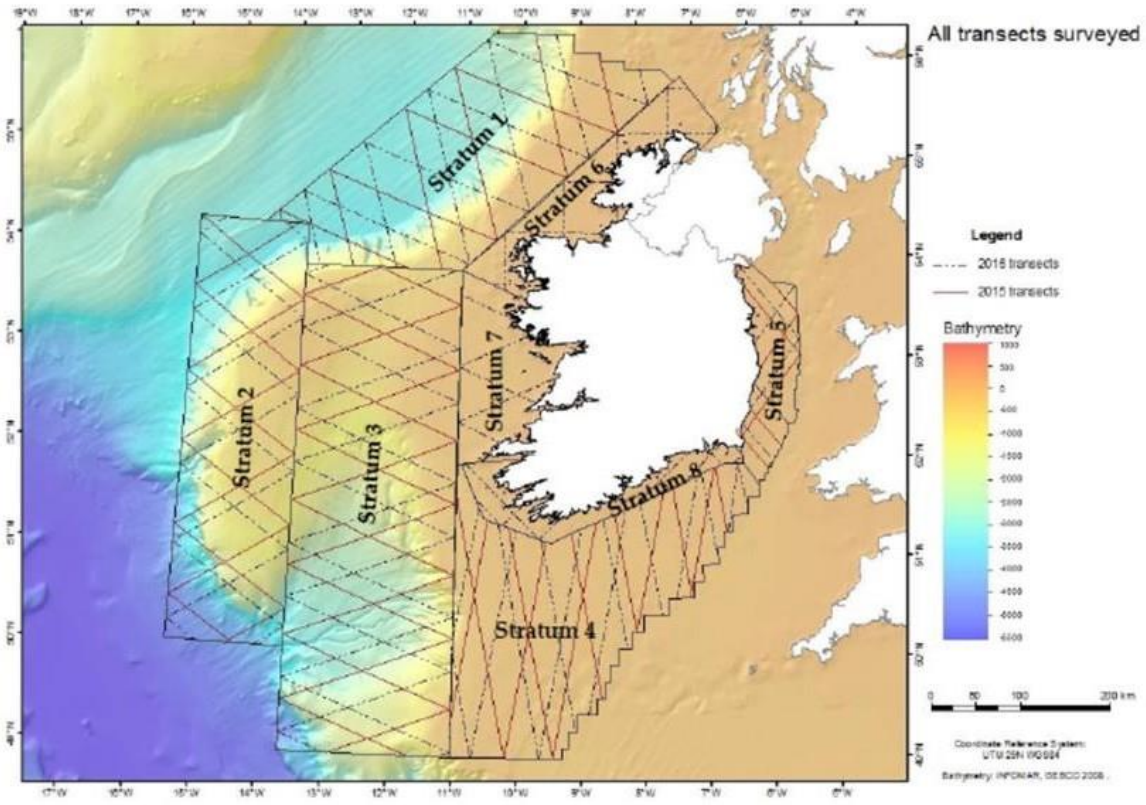


Figure 6 ObSERVE aerial transect lines flown in summer and winter (2015-2016)[4]

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 harbour porpoise abundance estimates across the whole ObSERVE survey area of 35,975 individuals in summer (CV: 0.09) and 20,571 in winter (CV: 0.23) (Rogan *et al.,* 2018).

The ObSERVE aerial surveys provide density estimates around the Irish Coast (Rogan *et al.,* 2018). For stratum 4 (

), which covered the south east coast of Ireland (and the foreshore licence survey area), the corrected design-based density estimates were 0.227/ km^2 during both the summer 2015 and 2016 periods; and during the winter period was 0.060/ km^2 in 2015. Stratum 4 was surveyed during the winter period of 2016.

[4] *The Kinsale foreshore survey area is located within Stratum 4, very close to the boundary with Stratum 8*

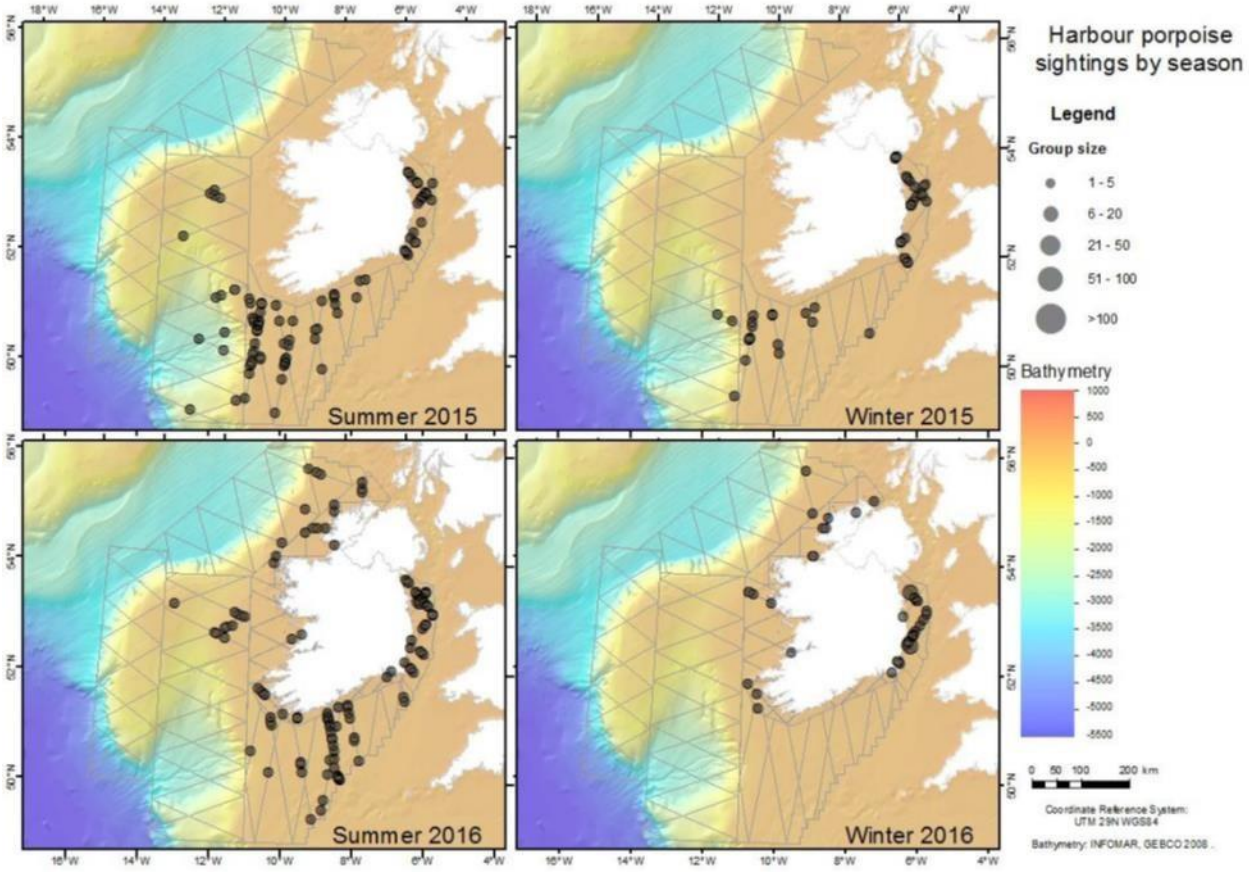


Figure 7 ObSERVE surveys sightings of harbour porpoise in each survey period

Conservation Status

The current conservation status of the harbour porpoise, as assessed in the most recent EU Article 17 report submitted to the European Commission is 'Favourable' and 'Stable' (NPWS, 2019).

5.4.2.2 Bottlenose Dolphin

In the Irish and Celtic Seas, 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; 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). 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 foreshore licence survey area is located in the Offshore Channel, Celtic Sea and South West England (OCSW) MU (**Figure 8**), which has an estimated bottlenose dolphin abundance of 10,947 (CV = 0.25; 95% CI = 6,727 – 17,814; IAMMWG, 2021).

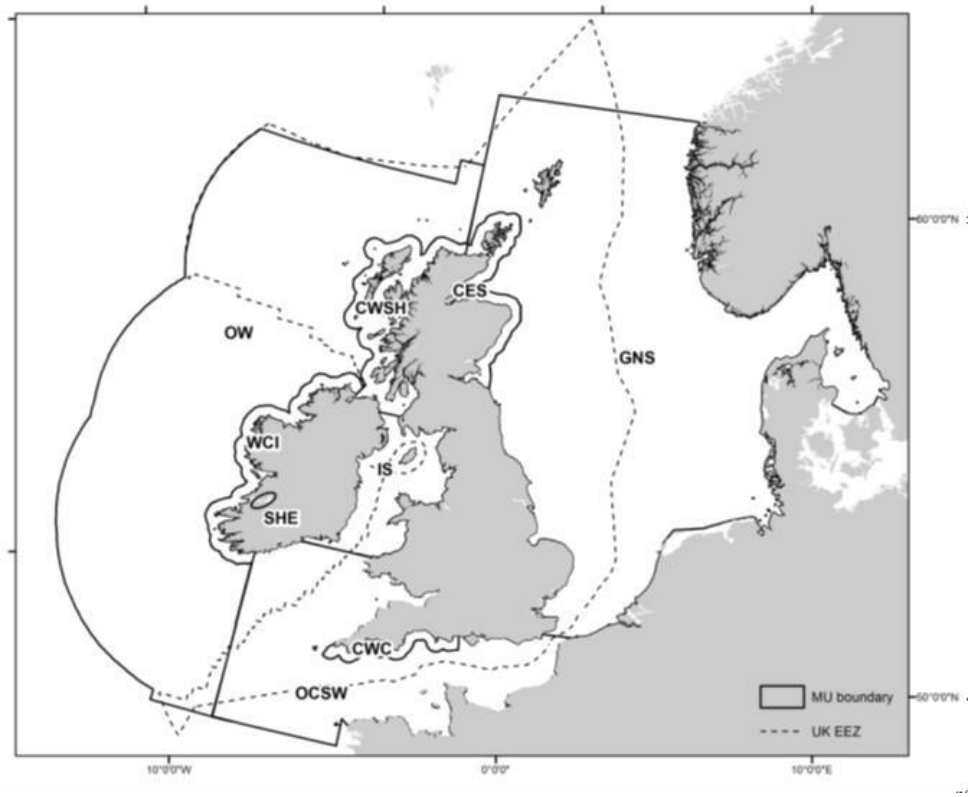


Figure 8 Bottlenose dolphin Mus (IAMMWG, 2021)

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 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 (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, 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 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**).

During the ObSERVE aerial surveys, abundance was highest in strata 1 – 4, with smaller numbers of bottlenose dolphins occurring in the coastal strata (**Figure 9**) (Rogan *et al.,* 2018). The design based bottlenose dolphin density estimates for stratum 4 (within which the foreshore licence survey area is located) are 0.062 / km² and 0.088 / km² in the summer surveys for 2015 and 2016, respectively, and 0.098 / km² and 0.929 / km² in the winter surveys for 2015 and 2016, respectively (Rogan *et al.,* 2018). The ObSERVE aerial surveys also surveyed inshore areas. In stratum 8 (**Figure 9**), which is adjacent to the foreshore licence survey area, density estimates were 1.161 / km² and 0.342 / km² in the summer and winter of 2016, respectively.

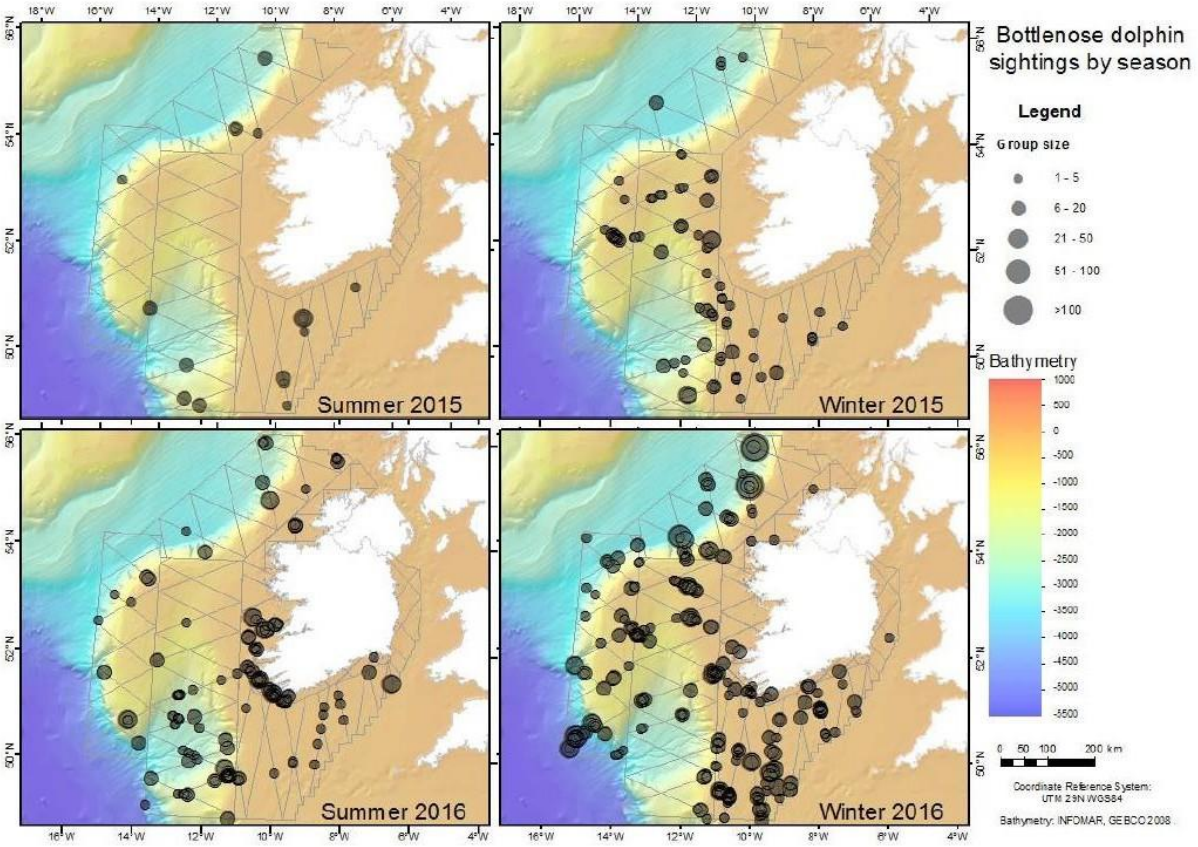


Figure 9 ObSERVE surveys sightings of bottlenose dolphin in each survey period.[5]

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 stranding's, from 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 migrations 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%).

[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.*

This indicates, that for the foreshore licence survey area, any bottlenose dolphin present are most likely to be from the Shannon group, and therefore the Lower River Shannon SAC, and no other coastal bottlenose dolphin population is shown to have connectivity to the foreshore licence survey area (or the south coast of Ireland).

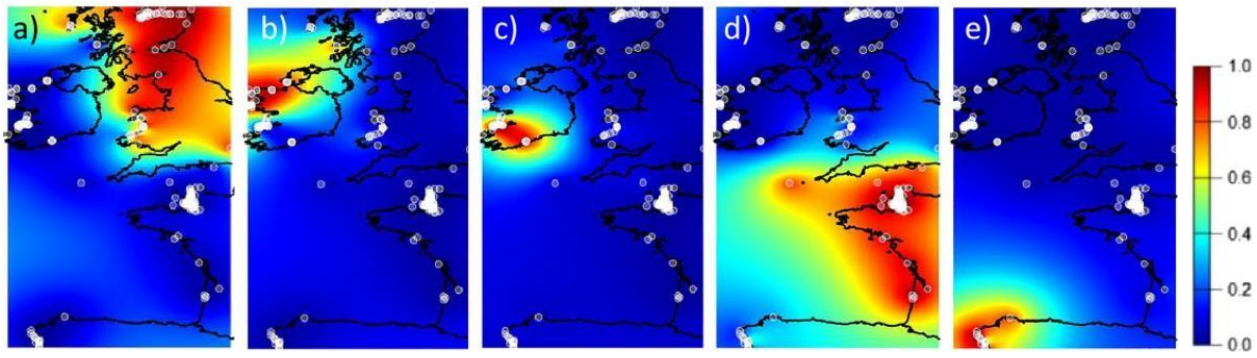


Figure 10 Maps of individual assignment probabilities per population [6]

Conservation Status

The current conservation status of the bottlenose dolphin, in the most recent EU Article 17 report submitted to the European Commission is 'Favourable' and 'Stable' (NPWS, 2019).

5.4.3 Pinnipeds

Two species of seal are found in Ireland, the grey seal and the harbour seal. The grey seal is found on both sides of the North Atlantic Ocean although the greatest proportion of the population is found in UK and Ireland waters. In Ireland, it occurs in greatest numbers on the western seaboard of Ireland although significant numbers also occur on the east and southeast coasts. The harbour seal in Ireland occurs in the greatest numbers along the western seaboard predominantly in relatively sheltered areas (NPWS, 2021).

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 seal 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 5 km x 5 km grid cell). The maps indicate relatively higher usage in some areas of the Celtic and Irish Sea along coastal locations of Ireland and Wales, for example, the waters surrounding West Hoyle Bank in Wales, as well as the south-east tip (Saltee Islands) and south-west of Ireland.

The seal at-sea usage maps produced by SMRU show that the grey seal usage is low in and around the foreshore licence survey area, with a grey seal density of 0.02 / km^2, based on the mean grey seal density (At-sea Usage) maps for the gird squares that overlap with the foreshore licence survey area (Russel *et al.,* 2017) (**Figure 11**).

[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)*

Grey seal surveys took place around Ireland between 2009 – 2012 across seven principal breeding areas, the population was estimated at population numbers approximately 7,284 - 9,365 seals of all ages (Ó Cadhla *et al.,* 2013). Roaringwater Bay and Islands SAC is the closest designated site for grey seals o the foreshore licence survey area.

In the South and West England and Wales MU and the Northern Ireland MU, of which there are some European sites for grey seal with potential connectivity to the foreshore licence survey area, the grey seal pup production (autumn) was 1,900 with an estimated summer population size of 6,000, based on summer survey counts 1994-2003 and 2007 (SCOS, 2017; IAMMWG, 2013). In the Northern Ireland MU, the most recent grey seal summer survey count was 505 (SCOS, 2020). While there are no equivalent MUs for the Republic of Ireland, connectivity is possible between the Republic of Ireland, and both Northern Ireland and Wales, and therefore these population estimates are used to consider the wider grey seal population.

Grey seal forage in the open sea and they may range widely to forage and frequently travel over 100km between haul-out sites (SCOS, 2020). 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, 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).

Haul-out Sites

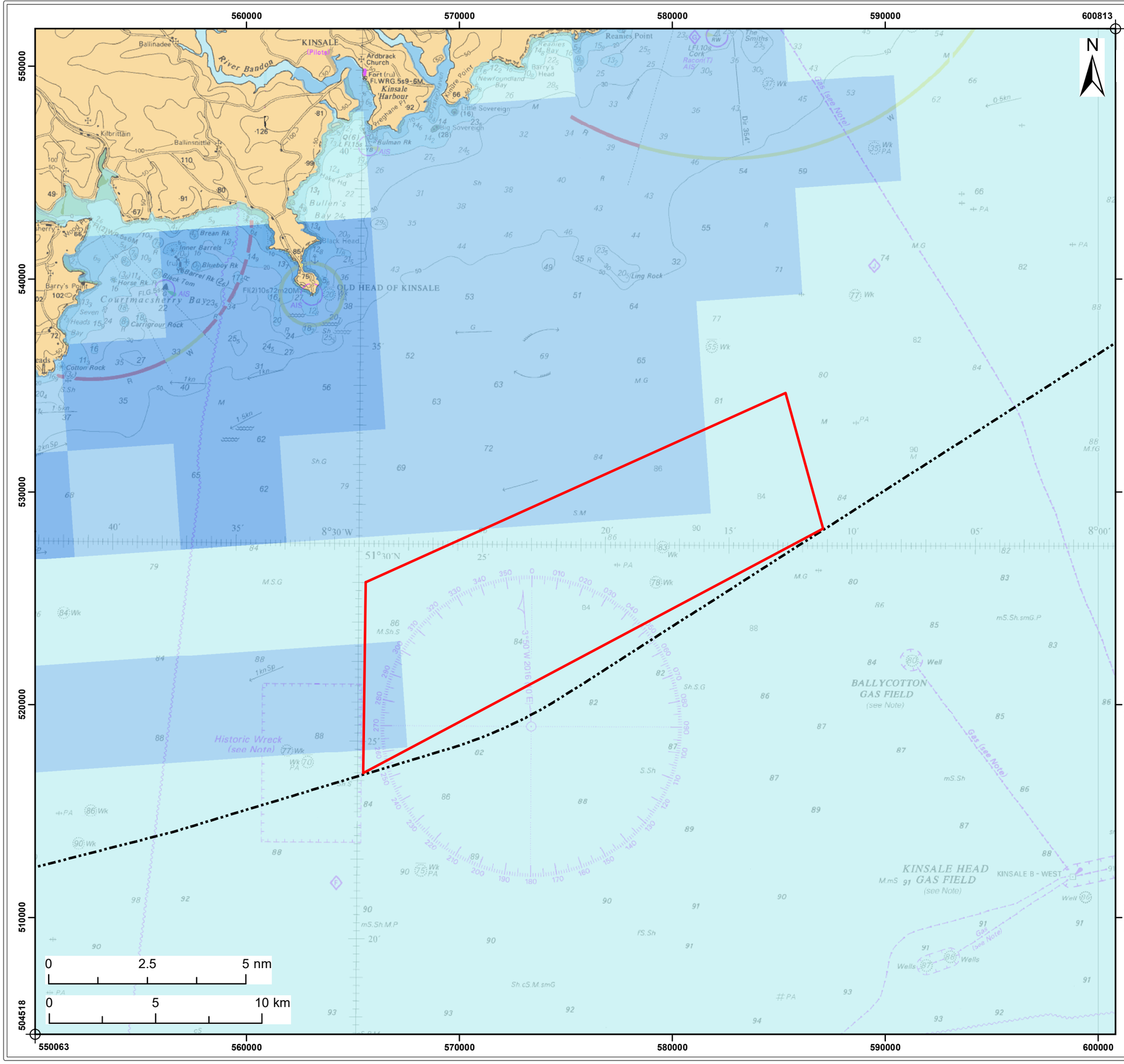
Grey seal typically spend longer hauled out during their annual moult between December and April, generally three and five months after the breeding season and during the breeding season between August and December (SCOS, 2019).

In August 2017 and August 2018, SMRU of the University of St Andrews, Scotland carried out a comprehensive aerial survey of harbour seals and grey seals over the entire coastline and offshore islands of Ireland. Within the area around Dundalk on the east coast of Ireland, around to Tralee Bay on the west coast (including Roaringwater and Bay Islands SAC and the foreshore licence survey area), a total of 1,765 grey seals were recorded in the 2017/2018 surveys, increasing significantly from 919 recorded in the 2011/2012 surveys (Morris & Duck, 2019).

The key grey seal haul-out sites on the east, south and south-west coasts of Ireland near to the foreshore licence survey area, include major sites such as Roaringwater Bay and surrounding area to the west (with 411 grey seal recorded in the area in 2017/2018; approximately 45km from the foreshore licence survey area), the Wexford sites to the east (with a total of 550 grey seal recorded; approximately 164km from the foreshore licence survey area), and the Blasket Islands to the on the west coast (with approximately 200 grey seal recorded in 2017/2018; approximately 188km from the foreshore licence survey area). There are also a number of smaller sites close to the foreshore licence survey area, with 46 individuals recorded along the coastline from the Kinsale to Cork Harbours, in a number of much smaller sites (**Figure 12**; Duck & Morris, 2019). The closest of these to the foreshore licence survey area is at Bream Rock, approximately 13.5km from the foreshore licence survey area.

Conservation Status

The current conservation status of the grey seal, as assessed in the in the most recent EU Article 17 report submitted to the European Commission is ‘Favourable’ and ‘Improving’ (NPWS, 2019).



Legend:

- Kinsale Foreshore Licence Survey Area
- Ireland 12nm Limit

Mean Grey Seal At-Sea Usage (per 25km²)

- 0.0 - 1.0
- 1.1 - 2.0
- 2.1 - 3.0

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale Offshore Wind Farm

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

Figure:	Drawing No:
11	PC1509-RHD-ZZ-XX-DR-Z-0126

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Co-ordinate system: IRENET95 Irish Transverse Mercator

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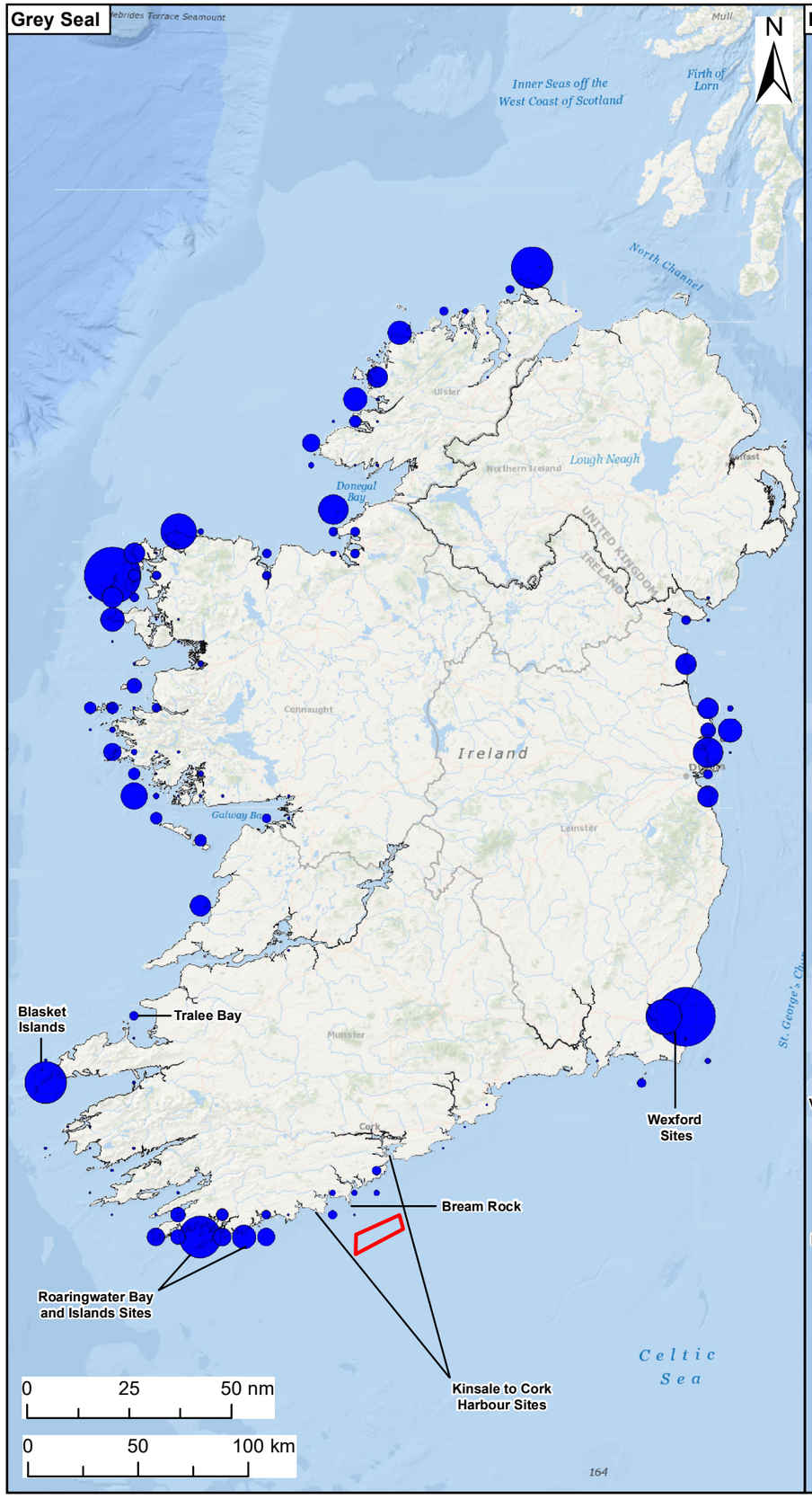

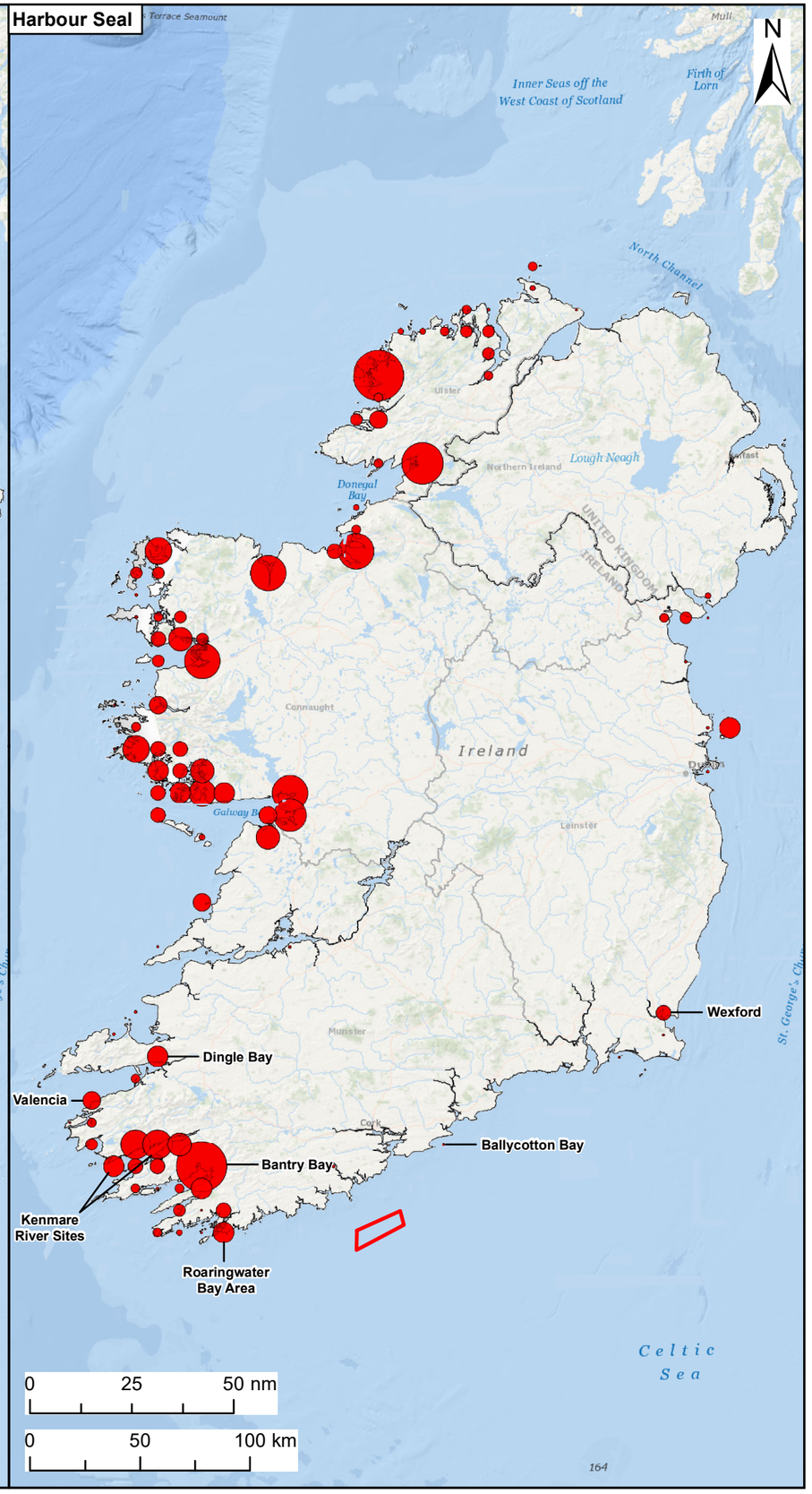

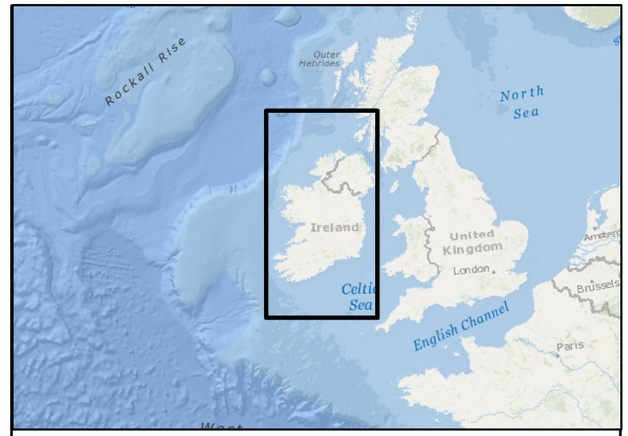

Legend:

Kinsale 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. 2021.
Basemap: Sources: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org, and other contributors.

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale 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-0127

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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 most recent estimate of the harbour seal population in the Republic of Ireland MU for 2015-2018 is 4,007, based on the latest survey counts and modelled forward (SCOS, 2020). In the Northern Ireland MU, of which there are some European sites for harbour seal with potential connectivity to the foreshore licence survey area, the most recent harbour seal summer survey count was 1,012 individuals, with approximately 80- 85% of the population being recorded between Carlingford Loch and Copeland Islands (SCOS, 2020).

As described above, SMRU undertook aerial surveys of harbour seals and grey seals over the entire coastline and offshore islands of Ireland. Low numbers of harbour seal were present in the East and South-east, with higher number recorded 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 foreshore licence 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 & Duck, 2019).

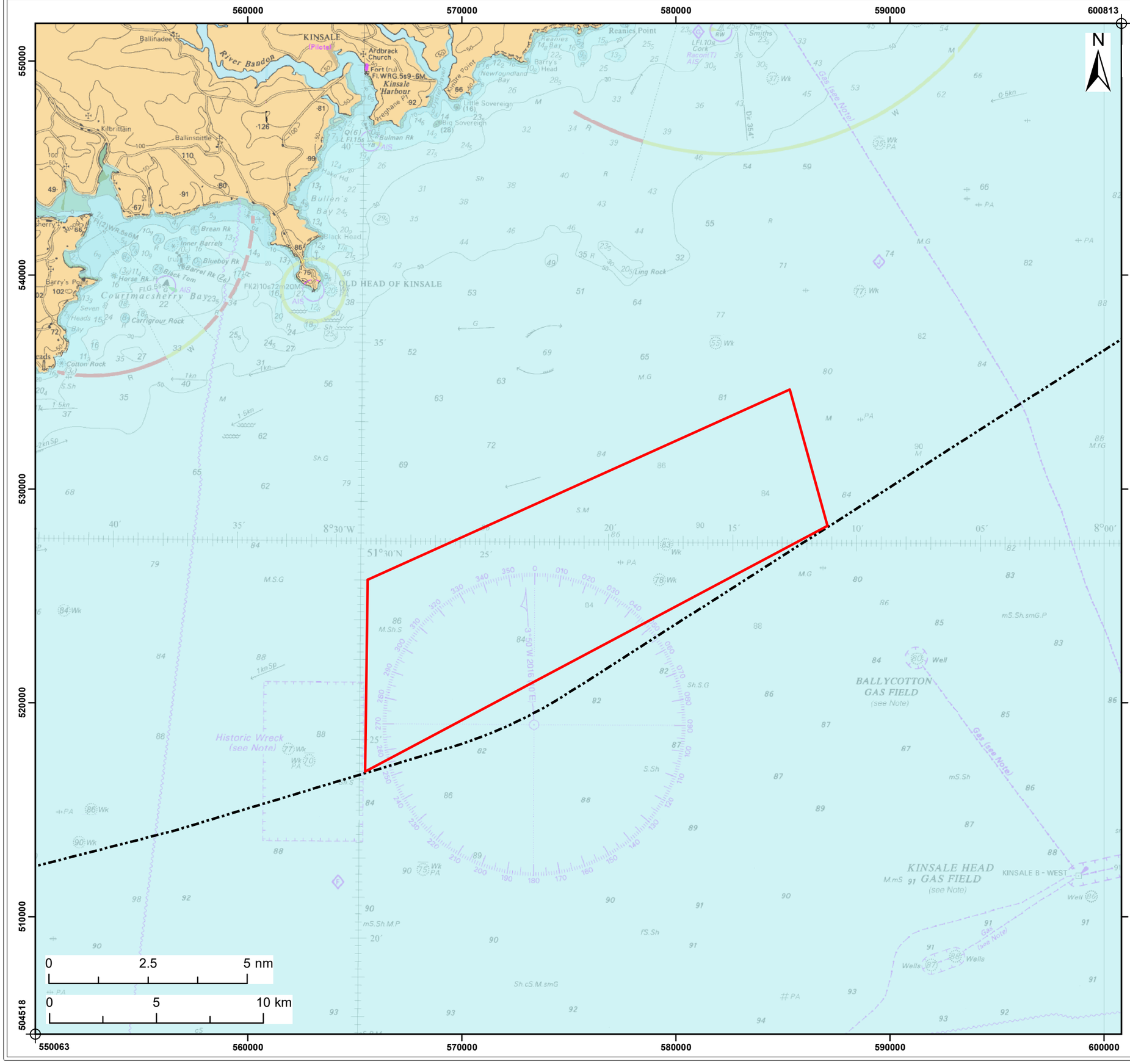
The seal at-sea usage maps produced by SMRU show that the harbour seal usage is low in and around the foreshore licence survey area, with a harbour seal density of 0.003/ km^2, based on the mean harbour seal density for the grid squares that overlap with the foreshore licence survey area (Russel *et al.,* 2017) (**Figure 13**).

Harbour seals normally feed within 40km and 50km around their haul out sites (SCOS, 2019). 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 sites on the south coast of Ireland are the Roaringwater Bay area (with 115 harbour seal recorded in 2017/2018 (Morris & Duck, 2019); approximately 45km from the foreshore licence survey area), in Bantry Bay (with 393 harbour seal recorded; approximately 136km from the foreshore licence survey area), and at the Kenmare River sites (with 441 harbour seal recorded; approximately 150km from the foreshore licence survey area). There is also a smaller harbour seal site along the south-east coast at Wexford (with 33 recorded harbour seal; approximately 164km from the foreshore licence survey area) (**Figure 12**; Morris & Duck, 2019). The closest harbour seal haul-out site to the foreshore licence survey area is at Ballycotton Bay (approximately 38km from the foreshore licence survey area), however only one harbour seal was recorded here in the 2017/2018 survey (Morris & Duck, 2019).



Legend:

- Kinsale Foreshore Licence Survey Area
- Ireland 12nm Limit

Mean Harbour Seal At-Sea Usage (per 25km²)

- 0.0 - 1.0

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale Offshore Wind Farm

Title:

Mean Harbour Seal Density (At-Sea Usage)

Figure:	Drawing No:
13	PC1509-RHD-ZZ-XX-DR-Z-0128

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Conservation Status

The current conservation status of the harbour seal, as assessed in the most recent EU Article 17 report submitted to the European Commission (submitted to the European Commission in 2019), is 'Favourable' and 'Stable' (NPWS, 2019).

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 listed in **Table 1** below.

Table 1 Summary of marine mammal reference populations and density estimates

Area	Abundance Estimate	Density Estimate	Source
Harbour porpoise			
Celtic/Irish Seas (partial coverage only)	26,700 (95% CI[3] =16,055-42,128)	0.11/ km^2	Hammond *et al*. (2021)
Celtic and Irish Seas (CIS) MU	62,517 (CV = 0.13; 95% CI = 48,324 – 80,877)	-	IAMMWG (2021)
ObSERVE aerial surveys stratum 4	14,190 – 14,196 (summer) (95% CI = 10,792 – 18,658 ; 95% CI = 9363 - 21524 – 15,486) 3752 (winter) (95% CI = 2345 – 6002	0.227/ km^2 (summer) 0.060/ km2 (winter)	Rogan *et al.* (2018)
Roaringwater Bay and Islands SAC	289 ± 80 (95% CI 155-541)	N/A	O'Brien & Berrow (2015)
Bottlenose dolphin			
Offshore Channel, Celtic Sea and South West England (OCSW) MU	10,947 (CV = 0.25; 95% CI = 6,727-17,814)	-	IAMMWG (2021)
ObSERVE aerial surveys stratum 4	3,885-5,549 (95% CI = 1,210 – 12,473; 95% CI = 2,241 - 13,739 (summer)) 6,217 - 58,647 (95% CI = 3,565 – 10,842; 95% CI 37,881 – 90,798 (winter))	0.062km² - 0.088km² (CV 64.33; CV 47.72 (summer)) 0.098km² - 0.929km² (CV 28.36; CV 22.32 (winter))	Rogan *et al.* (2018)
Shannon Estuary	139 ± 15 (CV=0.11, 95% CI= 121–160)	N/A	Baker *et al.* (2018)
Grey seal			
Republic of Ireland MU	7,284*	N/A	Ó Cadhla *et al*. (2013)
Foreshore licence survey area	N/A	0.02/ km^2	Russell *et al*. (2017)
Northern Ireland MU	505	N/A	SCOS, 2020
South and West England and Wales MU	6,000	N/A	SCOS, 2017; IAMMWG, 2013
Roaringwater Bay and Islands SAC	168	N/A	Duck & Morris (2013)

Area	Abundance Estimate	Density Estimate	Source
Harbour seal			
Republic of Ireland MU	4,007	N/A	SCOS (2020)
Foreshore licence survey area	N/A	0.003/ km^2	Russell *et al*. (2017)
Kenmare River SAC	419	N/A	Morris & Duck (2019)

5.4.4.1 Designated Sites

The closest designated sites for the identified species 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. At least 45 species of seabird (including divers and grebes) have been recorded during at-sea surveys in Irish waters, of which 23 species regularly breed around Ireland (Pollock et al., 2008, Mackey et al., 2004). In addition, a further 59 species of waterfowl and wader regularly occur at coastal sites such as estuaries around Ireland: including 5 grebe species, 2 heron species, 26 species of wildfowl and 26 wader species (Crowe 2005). Some of these species are migratory and are present only during migration periods in spring and autumn; others come to Ireland to breed or to spend the winter, while some are resident all year round.

The closest SPA to the foreshore licence survey area is the Old Head of Kinsale SPA designated for kittiwake *Rissa tridactyla* and Guillemot *Uria aalge.* This site is approximately 14km away from the foreshore licence survey area. The Old Head lies approximately 10 km south of the town of Kinsale in Co. Cork and is a 5km long headland formed of steeply inclined beds of rock. The Old Head is the largest seabird colony on the south coast between the Bull Rock and the Saltee Islands. In 2001 the Seabird 2000 Survey recorded nationally important populations of Kittiwake (951 pairs) and Guillemot (2,330 pairs), as well as smaller numbers of Fulmar (37 pairs), Shag (26 pairs), Herring Gull (11 pairs) and Razorbill (59 pairs). Chough and Peregrine, which breed elsewhere on the Head, are regularly seen within the site. The SPA is of high ornithological importance for its breeding seabird populations, two species of which occur in nationally important numbers. The presence of Chough and Peregrine, two species listed on Annex I of the E.U. Birds Directive, is also of note. Owing to the importance of the bird populations, the site was designated as a Refuge for Fauna in 1989 (NPWS, 2014).

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.

We 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. We 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 Management Units. 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 Celtic and Irish Seas MU. For bottlenose dolphin, connectivity was determined based on the genetic studies of coastal dolphins of northern Europe, which indicates connectivity is with the Lower River Shannon SAC only. For grey seal, potential connectivity was considered for all relevant designated SACs within the Republic of Ireland, as well as the Northern Ireland and Wales MUs, to ensure connectivity is considered for sites within Wales and Ireland that individuals may travel to and from. For harbour seal, due to their shorter foraging ranges, potential connectivity was considered for all designated SACs within the Republic of Ireland MU only.

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 south 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**).

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

6.2 Special Protected 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 Kinsale foreshore licence survey area considering all species.

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

SPA	
Irish Sea Front SPA	St Kilda SPA
Saltee Islands SPA	Rum SPA
Cliffs of Moher SPA	Scilly Isles SPA
Helvick Head to Ballyquin SPA	Copeland Islands SPA
Skelligs SPA	Grassholm SPA
Blasket Islands SPA	Sovereign Islands SPA
Puffin Island SPA	Clare Island SPA
Cruagh Island SPA	High Island, Inishshark and Davillaun SPA

SPA	
Deenish Island and Scariff Island SPA	Duvillaun Islands SPA
Tory Island SPA (fulmar precautionary)	Old Head of Kinsale SPA
West Donegal Coast SPA	Cork Harbour SPA (common tern precautionary)
Dingle Peninsula SPA	Ouessant-Molène SPA
Iveragh Peninsula SPA	Côte de Granit Rose-Sept Iles SPA
Beara Peninsula SPA	Iles Haut-Hoedic SPA
Kerry Head SPA	Cap Sizun SPA
Horn Head to Fanad Head SPA (fulmar precautionary)	Tregor Goelo SPA
The Bull and The Cow Rocks SPA	Camaret SPA
Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA	Cap d'Erquy-Cap Frehel SPA
Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA	Mid-Waterford Coast SPA (herring gull precautionary)
Magharee Islands SPA	

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 - Appropriate Assessment 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 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

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
SPAs				
Old Head of Kinsale SPA	Republic of Ireland	Kittiwake *Rissa tridactyla* [A188] Guillemot *Uria aalge* [A199]	14	004021
SACs				
Blackwater River (Cork/Waterford) SAC	Republic of Ireland	Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] 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] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] Austropotamobius pallipes (White-clawed Crayfish) [1092] Petromyzon marinus (Sea Lamprey) [1095] Lampetra planeri (Brook Lamprey) [1096] Lampetra fluviatilis (River Lamprey) [1099] Alosa fallax fallax (Twaite Shad) [1103] Salmo salar (Salmon) [1106] Lutra lutra (Otter) [1355] Trichomanes speciosum (Killarney Fern) [1421]	49	002170

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU 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]	61	IE000101
Saltee Islands SAC	Republic of Ireland	Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] Grey Seal *Halichoerus grypus* [1364]	118	IE000707
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] 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 *Phoca vitulina* [1365]	160	IE000781

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
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]	120	IE0001061
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]	131	IE000090
Pembrokeshire Marine/ Sir Benfro Forol SAC	Wales	Sandbanks which are slightly covered by sea water all the time [1110] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] Submerged or partially submerged sea caves [8330] Shore dock *Rumex rupestris* [1441] Sea lamprey *Petromyzon marinus* [1095] River lamprey *Lampetra fluviatilis* [1099] Twaite Shad *Alosa fallax fallax* [1103] *Allis shad Alosa alosa [1102]* Otter *Lutra lutra* Otter[1355] Grey Seal *Halichoerus grypus* [1364]	170	UK0013116
West Wales Marine / Gorllewin Cymru Forol SAC	Wales	Harbour porpoise *Phocoena phocoena* [1351]	180	UK0030397
Blasket Islands SAC	Republic of Ireland	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 *Phocoena phocoena* [1351] Grey Seal *Halichoerus grypus* [1364]	191	IE002172
Bristol Channel Approaches SAC	England and Wales	Harbour porpoise *Phocoena phocoena*	203	UK0030396

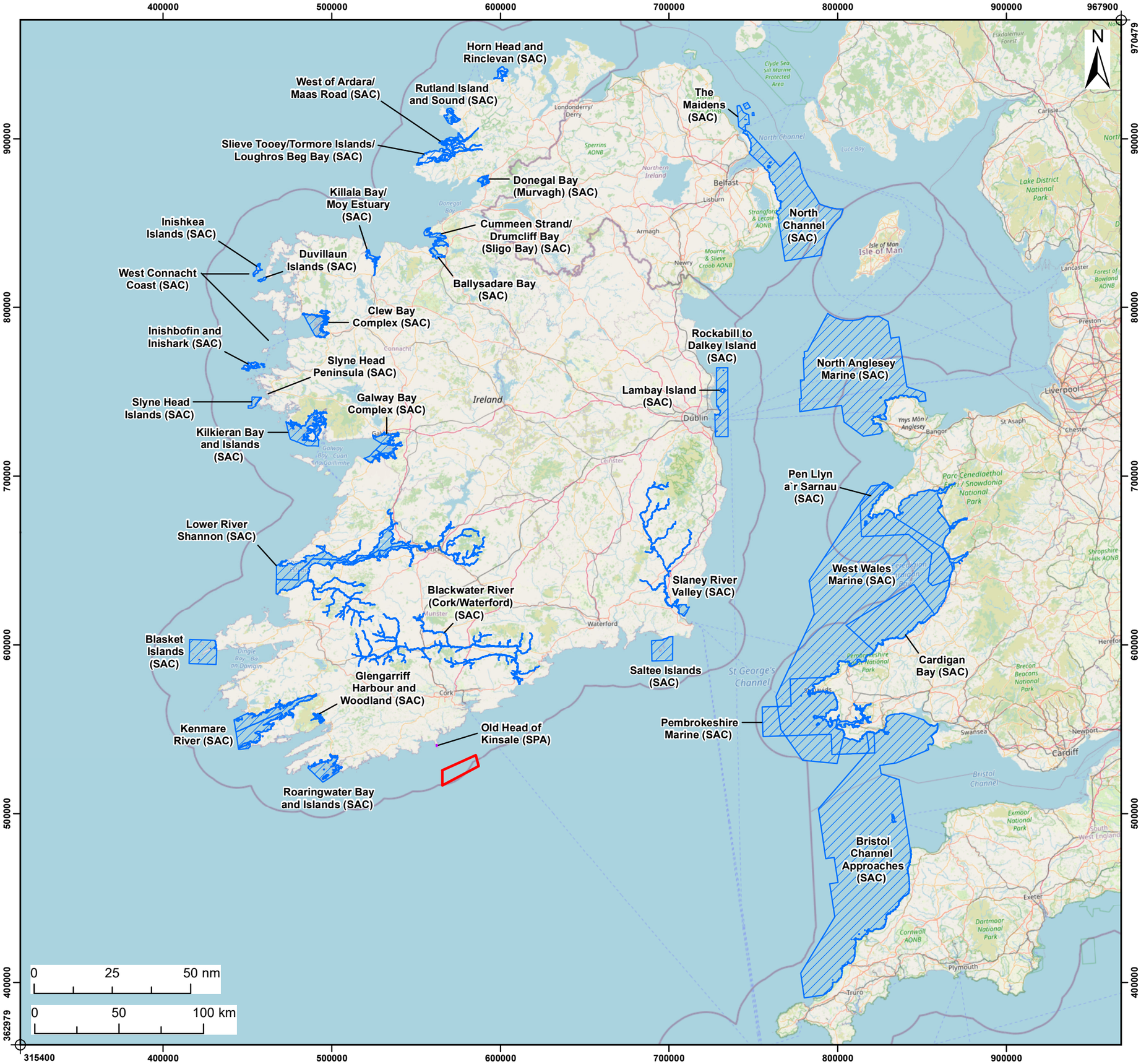
Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
		[1351]		
Cardigan Bay/ Bae Ceredigion SAC	Wales	Bottlenose dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364] Sea lamprey *Petromyzon marinus* [1095] River lamprey *Lampetra fluviatilis* [1099] Sandbanks which are slightly covered by sea water all the time [1110] Reefs [1170] Submerged or partially submerged sea caves [8330]	233	UK0012712
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 maritimi [1410] 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	239	IE002165

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
		truncatus Dolphin [1349] Otter Lutra lutra [1355]		
Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC	Wales	Mudflats and sandflats not covered by seawater at low tide [1140] Salicornia and other annuals colonizing mud and sand [1310] Atlantic salt meadows *Glauco-Puccinellietalia maritimae* [1330] Submerged or partially submerged sea caves [1365] Otter *Lutra lutra* [1355] Bottlenose dolphin *Tursiops truncates* [1349] Grey seal *Halichoerus grypus* [1364]	263	UK0013117
Rockabill and Dalkey SAC	Republic of Ireland	Reefs [1170] Harbour Porpoise *Phocoena phocoena* [1351]	267	IE003000
Lambay Island SAC	Republic of Ireland	Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Grey Seal *Halichoerus grypus* [1364] Harbour Seal *Phoca vitulina* [1365]	293	IE000204
North Anglesey Marine SAC/ Gogledd Môn Forol	Wales	Harbour porpoise *Phocoena phocoena* [1351]	294	UK0030398
Kilkieran Bay and Islands SAC	Republic of Ireland	Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365] Slender Naiad *Najas flexilis* [1833]	319	IE0001195
Slyne Head Islands SAC	Republic of Ireland	Common Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	330	IE0002298
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] 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	334	IE000268

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
		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]		
Inishbofin and Inishark 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]	352	IE000278
North Channel SAC	Northern Ireland	Harbour porpoise *Phocoena phocoena* [1351]	375	UK0030399
Clew Bay Complex SAC	Republic of Ireland	Geyer's whorl snail *Vertigo geyeri* [1013] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365]	395	IE0000440
Duvillaun Islands SAC	Republic of Ireland	Common Bottlenose Dolphin *Tursiops truncatus* [1349] Grey Seal *Halichoerus grypus* [1364]	405	IE000495
Inishkea Islands SAC	Republic of Ireland	Machairs * in Ireland [21A0] Grey Seal *Halichoerus grypus* [1364] Petalwort *Petalophyllum ralfsii* [1395]	409	IE000507
The Maidens SAC	Republic of Ireland	Sandbanks which are slightly covered by sea water all the time [1110] Reefs [1170] Grey Seal *Halichoerus grypus* [1364]	456	UK0030384
Killala Bay 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]	495	IE000458

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
		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] Sea Lamprey Petromyzon marinus [1095] Harbour Seal *Phoca vitulina* [1365]		
Cummeen Strand / Drumcliff 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] River Lamprey *Lampetra fluviatilis* [1099] Harbour Seal *Phoca vitulina* 1365]	524	IE000627
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]	529	IE0002296
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	529	IE000622

Designated SAC	Country	Qualifying Interest	Distance km	SAC EU Code
		Vertigo angustior [1014] Harbour Seal *Phoca vitulina* 1365]		
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] Salmon *Salmo salar* [1106] Otter *Lutra lutra* [1355] Harbour Seal *Phoca vitulina* [1365] Petalwort Petalophyllum ralfsii [1395] Slender Naiad *Najas flexilis* [1833]	550	IE0002998
Rutland Island and Sound SAC	Republic of Ireland	Harbour Seal *Phoca vitulina* [1365]	560	IE0002250
Donegal Bay (Murvagh) SAC	Republic of Ireland	Harbour Seal *Phoca vitulina* [1365]	564	IE0000595
Horn Head and Rinclevan SAC	Republic of Ireland	Geyer's whorl snail *Vertigo geyeri* [1013] Grey Seal *Halichoerus grypus* [1364] Petalwort *Petalophyllum ralfsii* [1395] Slender Naiad *Najas flexilis* [1833]	597	IE0000147



Legend:

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

Client:	Project:
Kinsale Offshore Wind Limited	Kinsale Offshore Wind Farm

Title:

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

Figure: 14 | Drawing No: PC1509-RHD-ZZ-XX-DR-Z-0185

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
01	01/12/2021	[redacted]	[redacted]	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**. Following establishing 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 Celtic and 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 Kinsale Project are considered to have the potential for cumulative effects.

Given the location of the foreshore licence survey area, which lies approximately 13km off the coast, and that potential effects relate to the marine environment only, it is considered that there is no potential for the site investigation 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, 2021 – document reference PC1509-RHD-ZZ-XX-RP-Z-0007) during the implementation of the site investigation 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:

- Emerald Offshore Windfarm (Simply Blue/Shell) – Site investigations to inform the design of a possible deep-water offshore wind power generation project off Kinsale
    - Summer 2020 for five years

- Inis Ealga Marine Energy Park (DP Energy/Iberdrola) – Site investigations (geophysical, geotechnical, environmental, archaeological and ecological) to assess suitability for cable routing and other electrical infrastructure associated with the Site. The results of these surveys will also provide baseline data for environmental appraisal, Environmental Impact Assessment and subsequent Environmental Impact Assessment Report (EIAR).
    - Geophysical (summer 2020 together with benthic sampling)
    - Geotechnical (summer 2022)
    - Wind Resource Monitoring (summer 2020 for 12-36 months)
    - Metocean Monitoring (summer 2020 for 3 months)
    - Birds and Mammals (spring 2020 - 2 years seasonal).

- Celtic Interconnector - Site investigations to determine the most suitable landing point for the “Celtic Interconnector”, a 500KW electricity cable connecting the Irish and French electricity grids.
    - As of August 2021, the project is at step five, the planning process. This is expected to continue until 2022.
    - Step six, construction and energisation is scheduled to take place from 2022-2026

- Kinsale Gas fields Decommissioning - Decommissioning of certain facilities of the Kinsale Head, including Southwest Kinsale, and Ballycotton gas fields (‘Kinsale Head gas fields’) and an application from PSE Seven Heads Limited for the decommissioning of certain facilities of the Seven Heads gas field. The application in relation to the Kinsale Head gas fields covers the following activities:
    - The leaving in situ of all infield pipelines and umbilicals associated with the Kinsale Head gas fields
    - The leaving in-situ of the 24” export pipeline (offshore and onshore section) and the filling of the onshore section with grout
    - The use of engineering materials (Rock Placement) to protect the pipelines and umbilicals in situ.
        - Finish decommissioning 2023

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 fully known. The Schedule of Works outlined for this project is considered representative of other site investigation (SI) works (such as Emerald and Inis Ealga) 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 Kinsale 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, 2021a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0006.

The Celtic Interconnector is due to be constructed between 2022-2026. The landing point at Claycastle Beach on the edge of Youghal harbour is approximately 40km east of the Kinsale Project. Cable laying activities would take place over 40km from the foreshore licence survey area and would not generate significant levels of underwater noise or suspended sediment. Any effects would be localised, temporary and transient. Therefore, the potential for effect from the Celtic Interconnector has been screened out of in-combination assessment.

The Kinsale Gas Fields Decommissioning, while having the potential to overlap with the Kinsale surveys, would not generate significant levels of underwater noise, using methods such as water jetting, and would not be expected to have the potential for any cumulative effect with the surveys at the Kinsale site. Therefore, the potential for effect on marine mammal species from the Kinsale Gas Fields Decommissioning has been screened out of in-combination assessment.

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 site investigation surveys. In combination effects have been considered throughout the screening process. Projects and plans taken into consideration are listed in **Section 7.**

8.1 Site Investigation Survey Effects

The site investigation methods proposed (as outlined in Schedule of Works: Kinsale Foreshore Licence Application (Royal HaskoningDHV, 2021b – document reference PC1509-RHD-ZZ-XX-RP-Z-0007) 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) both 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 to, 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 surveys to have a likely significant effect (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; and

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 surveys such as physical disturbance to the seabed, or effects on physical processes mean that the effects are localised.

There are no direct potential impacts on the European sites designated for benthic habitats as the surveys will not overlap with a European site. There are no sites designated for benthic habitats within the ZoI of the foreshore licence survey area (considered to be the distance that sediment could be carried over a tidal cycle (see below)). Any effect will be localised and temporary and in the immediate vicinity of the sediment sampling location and therefore there is no pathway by which the effect of the activity could impact the features of interest of a European site.

Indirect impacts on benthic features of Natura 2000 sites have also been considered. The surveys will not affect sediment supply, any disturbance to the sediment from grab samples, CPT and boreholes will be filled in naturally with only temporary minor impressions in the seabed visible. Bedload sediment transport changes are typically restricted to areas local to each grab/borehole and there is very little effect at distance.

No impacts are expected as a result of suspended sediment dispersion and smothering, due to the small scale of the sediment disturbance from benthic sampling. Any smothering would be a very small thin layer within the vicinity of the sample locations due to the small volumes of sediment removed during sampling. Even for the

construction of offshore wind farms the majority of disturbed sand will typically settle within short distances, for example 500m with very small levels of smothering (Ørsted, 2018). The sediment displaced from the surveys will be negligible in comparison to the sediment transport in the area and will be within levels of natural variability.

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

No likely significant effect for the project alone or in combination with other projects and plans (see **Section 7** for details of other projects considered) on the conservation objectives of the designated benthic features of SACs. It is concluded and no further assessment is required.

8.3 Connectivity with migratory fish associated with a SAC

The source/pathway/receptor approach was undertaken to identify the mechanisms that the site investigation surveys 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 proposed Kinsale Project offshore 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 Celtic Sea. The following section outlines the potential for the site investigation surveys to have a LSE on the features of interest of the sites either alone or in combination with other plans and projects.

The site investigation 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 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 to the survey site is the Blackwater River (Cork/Waterford) SAC which is approximately 49km from the foreshore licence survey area. The Blackwater River (Cork/Waterford) 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 8.28.2**). The Blackwater River (Cork/Waterford) SAC is well 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. 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. Therefore, they 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 Blackwater River (Cork/Waterford) SAC, only Atlantic salmon and twaite shad are known to be sensitive to noise[8].

The site investigation 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) at a distance of 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 & 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 the Schedule of Works (Royal HaskoningDHV, 2021b – document reference PC1509-RHD-ZZ-XX-RP-Z-0007). This underwater noise

[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 170km from the survey area which is considered too far from the survey area to have any impact on the species*

could potentially effect fish sensitive to noise and act as a barrier that could impede migration pathways. Due to the distance of the Blackwater River (Cork/Waterford) SAC to the survey site it is highly unlikely that the 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.

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 likely significant effect is predicted** for the Blackwater River (Cork/Waterford) SAC. All other European sites designated for fish species are located at further distances, therefore **no likely significant effect 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 an 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, 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 their relevant MUs as noted in **Section 6.1**. The following sections outline the potential for the 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 surveys to be undertaken at the foreshore licence survey area are outlined in the Schedule of Works (Royal HaskoningDHV, 2021b – document reference PC1509-RHD-ZZ-XX-RP-Z-0007). 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.

[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*

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, Thompson *et al.,* 2010).

High exposure levels from underwater noise sources can cause auditory injury or hearing impairment taking the form of a permanent loss of hearing sensitivity (Permanent Threshold Shift (PTS)) or a temporary loss 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 (e.g. Southall *et al.,* 2007[11]).

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 would be a small level. 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 represents a relatively important factor determining the density of harbour porpoise in the Celtic and Irish 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).

Taking into account that not all surveys would be taking place at the same time, and the relatively high number of vessels already using the area, there is unlikely to be the potential for significant disturbance to marine mammals as the increase in number of vessels present as a result of the surveys would be small. The number

[11] *While the DAHG (2014) guidance refers to the Southall et al., (2007) thresholds for noise impacts, it is considered the assessment in this report (using the NMFS (2018) and Southall et al., (2019) thresholds) indicates that the proposed measures, in line with the guidance, is appropriate, however the most recent guidance will be used at the time of the surveys will be used.*

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 surveys have been screened out of further assessment.

Survey Noise Sources

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 (SPL) levels are not at a level that is thought to cause a disturbance or injury to marine mammals (e.g. Erbe & McPherson, 2017).

Therefore, of the surveys to be undertaken, only geophysical surveys have the potential to emit significant levels of underwater noise (potential noise levels identified in Section 1.2 of the Schedule of Works (Royal HaskoningDHV, 2021 – document reference PC1509-RHD-ZZ-XX-RP-Z-0007)). 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 the **potential for LSE 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 are a result of collision risk**.

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 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 167km^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 surveys itself.**

8.4.1.5 Potential disturbance at haul out sites

Hauled-out seals are sensitive to disturbance, particularly if they are in their 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 (13.5km to the nearest grey seal haul-out site, and 38km to the nearest 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 will be considered in the underwater noise assessment. The distance between the foreshore licence survey area and both grey and harbour seal haul-out sites is considerably more than the reported disturbance distances for both species. In addition, any vessels travelling between the foreshore licence survey area and Port of Cork would use existing shipping channels and routes and considering the already busy nature of the area with regard to shipping, it is **not considered that there would be any potential for LSE for seals as a result of disturbance at seal haul-out sites**.

8.4.1.6 Potential changes in water quality

During the potential 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.

During the potential survey 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 survey works and 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 effects 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 Kinsale 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.

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		✓

Effect Pathway	Screened in for potential LSE	Screened out for potential LSE
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 Celtic and Irish Sea MU (see **Figure 4**). The closest designation to the survey area is the Roaringwater Bay and Islands SAC (61km from the foreshore licence survey area).

Roaringwater Bay and Islands SAC
Harbour porpoise in Irish waters are largely resident and observations have shown that they are regularly in the waters of Roaringwater Bay.

In surveys undertaken from June to September 2015 for the SAC, the number of harbour porpoise sightings per survey day ranged from 5 to 23 individuals with a total of 75 sightings of 141 individual porpoises overall (O'Brien & Berrow, 2015). Sightings of harbour porpoise were made throughout the SAC. Density estimates ranged from 0.76 - 3.03 / km² and this was equated overall to 2.02 / km² for the SAC as a whole (O'Brien & Berrow, 2015). The CV around the estimates were quite high (0.25-0.68) and 0.28 overall. Mean group size varied between 1.26-2.14 porpoises over the survey duration and showed a slight trend towards increasing group size over the June-September period. The overall pooled density estimates from all survey days combined gave an abundance estimate of 289±80 with 95% CI of 155-541 (O'Brien & Berrow, 2015).

The conservation objective for the Roaringwater Bay and Islands SAC *"To maintain the favourable conservation condition of harbour porpoise in Roaringwater Bay and 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 Roaringwater Bay and 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 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 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 West Wales Marine / Gorllewin Cymru Forol SAC, Blasket Islands SAC, Bristol Channel Approaches SAC, Rockabill and Dalkey SAC, North Anglesey Marine SAC/ Gogledd Môn Forol and the North Channel SAC.

For harbour porpoise, initially connectivity was determined to be possible between the project and any European site within the Celtic and Irish Sea MU (see **Figure 4**). As the population of the Celtic and Irish Sea is the most likely population to interact with the foreshore licence survey area, European sites outside the 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:

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

All other potential effects from the 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 considered based on known movements of coastal bottlenose dolphin populations (more information is provided in **Section 5.4.2.2**). Therefore, for bottlenose dolphin, only the Lower River Shannon SAC has been screened in for further assessment. The Lower River Shannon SAC is located 239km from the foreshore licence survey area.

Lower River Shannon SAC

While it is known that bottlenose dolphins use the Shannon Estuary throughout the year (e.g. Englund *et al.,* 2008), numbers have been shown to decrease during the winter (Ingram, 2000; Englund *et al.,* 2008). 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 group (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.,* 2018).

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.
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.

8.4.2.4 Summary of Screening for Bottlenose Dolphin

The only SAC designated for bottlenose dolphin with potential for LSE for bottlenose dolphin, due to the potential effects of underwater noise and in combination effects is the Lower River Shannon SAC. All other potential effects from the surveys as outlined in **Section 8.4.1** are considered to have no potential for LSE for the SAC 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, initial connectivity was determined to be possible between the survey area and any European site within the Republic of Ireland MU and the Wales MU (see **Figure 12**). The closest designated site is the Roaringwater Bay and Islands SAC (61km from the survey area).

Roaringwater Bay and Islands SAC

Grey Seal are present at the site throughout the year during all aspects of its annual life cycle which includes breeding, moulting, non-breeding, foraging and resting phases. A minimum population for all ages was estimated at 116-149 in 2005 (NPWS, 2014b). Aerial surveys of grey seal and harbour seal, undertaken from August to September 2012, recorded a total of 168 grey seal in Roaringwater Bay (Duck & Morris, 2013).

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

Table 8 Attributes and targets for grey and harbour seal at Roaringwater Bay & 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	The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually, subject to annual processes.

Other Grey Seal Designated SACs.

Other European sites designated for grey seal within the screening area are the Saltee Islands SAC, Pembrokeshire Marine/ Sir Benfro Forol SAC, Blasket Islands SAC, Cardigan Bay/ Bae Ceredigion SAC, Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, Lambay Island SAC, Slyne Head Islands SAC, Inishbofin and Inishark SAC, Duvillaun Islands SAC, Inishkea Islands SAC, The Maidens SAC, Slieve Tooey/Tormore Island/Loughros Beg Bay SAC and Horn Head and Rinclevan SAC.

For grey seal, initial connectivity was determined to be possible between the survey area and any European site within the Republic of Ireland MU and the Wales MU.

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:

- Roaringwater Bay and Islands SAC;
- Saltee Islands SAC;
- Pembrokeshire Marine/ Sir Benfro Forol SAC;
- Blasket Islands SAC;
- Cardigan Bay/ Bae Ceredigion SAC;
- Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC;
- Lambay Island SAC;
- Slyne Head Islands SAC;
- Inishbofin and Inishark SAC;
- Duvillaun Islands SAC;
- Inishkea Islands SAC;
- The Maidens SAC;
- Slieve Tooey/Tormore Island/Loughros Beg Bay SAC; and
- Horn Head and Rinclevan SAC.

All other potential effects from the surveys as outlined in **Section 8.4.1** are considered to have no potential for 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, initial connectivity was determined to be possible between the survey area and any European site within the Republic of Ireland MU (see **Figure 12**). The closest designated site for harbour seal to the foreshore licence survey area is the Kenmare River SAC (120km from the foreshore licence survey area).

Kenmare River SAC
Aerial surveys of grey seal and harbour seal, undertaken in 2017/2018, recorded a total of 419 grey seal in the Kenmare River SAC (Morris & Duck, 2019).

The Conservation Objectives for harbour seal at the Kenmare River SAC (NPWS, 2013b) are "*to maintain the favourable conservation condition of harbour seal Kenmare River SAC, which is defined by the following list of attributes and targets"* set out in **Table 9.**

Table 9 Attributes and targets for harbour seal at Kenmare River 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, Slaney River Valley SAC, Lambay Island SAC, Kilkieran Bay and Islands SAC, Galway Bay Complex SAC, Clew Bay Complex SAC, Killala Bay SAC, Cummeen Strand / Drumcliff Bay SAC, Ballysadare Bay SAC, West of Ardara/Maas Road SAC, Rutland Island and Sound SAC and Donegal Bay (Murvagh) SAC.

For harbour seal, initial connectivity was determined to be possible between the survey area and any European site within the Republic of Ireland MU. As this population is the most likely population to interact with the survey area, 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:

- Kenmare River SAC
- Glengarriff Harbour and Woodland SAC
- Slaney River Valley SAC;
- Lambay Island SAC;
- Kilkieran Bay and Islands SAC;
- Galway Bay Complex SAC;

- Clew Bay Complex SAC;
- Killala Bay SAC;
- Cummeen Strand / Drumcliff Bay SAC;
- Ballysadare Bay SAC;
- West of Ardara/Maas Road SAC;
- Rutland Island and Sound SAC; and
- Donegal Bay (Murvagh) SAC.

All other potential effects from the surveys as outlined in **Section 8.4.1** are considered to have no potential for 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 site investigation 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 site investigation surveys include:

- potential disturbance due to the presence of vessels;
- displacement may occur due to the presence of vessels;
- potential changes to prey availability; and
- potential changes in water quality, including accidental pollution events.

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 SAC is the Old Head of Kinsale SPA, designated for Kittiwake and Guillemot. This is the only SPA with a potential pathway and therefore the only SPA included in the screening.

The proposed site investigation surveys that involve the presence of a vessel are: sub-bottom profiling, geotechnical site investigations, SSS and MBES. The potential impacts due to this activity would be disturbance to seabirds owing to the presence of the vessels and underwater noise disturbance caused by acoustic signals emitted during sub-bottom profiling, SSS and MBES.

There is a lack of studies on the effects of underwater noise on water column feeders, however one study by Mardik & Camphuysen (2009) concluded that seismic air gun emissions caused no fatalities or affected bird abundance. 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. Vessels are likely to be slow moving and the area already experiences regular vessel traffic and seabirds are likely to be habituated to this activity.

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 in waters with regular vessel traffic 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 the food supply especially due to the abundance and prey availability, nor will the surveys create a barrier to connectivity. Given the potential for temporary and insignificant effects on fish species as described in **Sections 8.3**, and the ability of birds to feed on a wide range of prey and forage in large areas, it is considered that the effects on prey availability would be *de minimus*.

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 displaced 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.

The Old Head Of Kinsale is 14km from the foreshore licence survey area and not designated for species sensitive to disturbance (with the closest SPA to have divers as a designation is the Courtmacsherry Bay SPA, which is approximately 19km away).

Therefore, the foreshore licence survey area is beyond the maximum displacement distance of divers as well as seaducks (the most sensitive to disturbance and displacement), meaning that any potential displacement effects will not give rise to a likely significant effect on any SPAs. In addition, due to the temporary, short duration and small-scale and nature of the works there will be no direct or indirect likely significant effects 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 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 likely significant effect on the conservation objectives on the Old Head of Kinsale SPA or any other SPA alone and in combination with other plans and projects is concluded** (See **Section 7** for other plans and projects considered).

8.6 Appropriate Assessment Screening for all European sites Summary

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

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

European site	Relevant Qualifying Interests	Potential Effects	Assessment of Effect	LSE Decision
Roaringwater Bay and Islands SAC	Harbour Porpoise [1351] *Phocoena phocoena* Grey Seal *Halichoerus grypus* [1364]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the site investigation 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 likely significant effect 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 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 site investigation 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 Effects	Assessment of Effect	LSE Decision
Saltee 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Slaney River Valley SAC	Harbour Seal *Phocavitulina* [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 site investigation 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. 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 Slaney River Valley 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. 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.	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 Effects	Assessment of Effect	LSE Decision
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 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 site investigation 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 for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation 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 for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In

European site	Relevant Qualifying Interests	Potential Effects	Assessment of Effect	LSE Decision
Pembrokeshire Marine/Sir Benfro Forol 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 site investigation 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 for without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation 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 likely significant effect 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 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 site investigation 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 Effects	Assessment of Effect	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 site investigation 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 likely significant effect 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 survey area.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Cardigan Bay/ Bae Ceredigion 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 site investigation 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.	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 Effects	Assessment of Effect	LSE Decision
Pen Llyn a'r Sarnau / Lleyn Peninsula and the Sarnau 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Rockabill and Dalkey SAC	Harbour Porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the site investigation 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 likely significant effect 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 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 Effects	Assessment of Effect	LSE Decision
Lambay Island SAC	Grey Seal *Halichoerus grypus* [1364] Harbour Seal *Phoca vitulina* [1365]	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 site investigation 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 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 site investigation 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.	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/ Gogledd Môn Forol	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the site investigation 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 likely significant effect cannot be discounted.	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 Effects	Assessment of Effect	LSE Decision
		The presence of an additional vessel at the site will also not be significant as vessels currently fish or transit in proximity of the survey area.		
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 site investigation 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.	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	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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation 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	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 Effects	Assessment of Effect	LSE Decision
		start-up.		
Inishbofin and Inishark 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
North Channel SAC	Harbour porpoise *Phocoena phocoena* [1351]	The Harbour porpoise is wide ranging. Any disturbance due to the underwater noise generated by the site investigation 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 likely significant effect 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 survey area.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation surveys, especially sub-bottom profiling, side scan sonar and multi beam will be very local and temporary.	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 Effects	Assessment of Effect	LSE Decision
		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.		
Duvillaun 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Lower River Shannon SAC	Common Bottlenose Dolphin *Tursiops truncatus* [1349]	Bottlenose dolphins are wide-ranging. Any disturbance due to underwater noise generated by site investigation 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.		
The Maidens 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 site investigation 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	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 Effects	Assessment of Effect	LSE Decision
		area prior to start-up.		
Killala 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
Cummeen Strand/Drumcliff 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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
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 site investigation 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.	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 Effects	Assessment of Effect	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 site investigation 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.	LSE are not considered likely, however, cannot be discounted without further assessment. Potential effect possible.	LSE cannot be excluded Screened In
West of Ardara/Maas Road 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 site investigation 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 Effects	Assessment of Effect	LSE Decision
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 site investigation 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.	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 site investigation 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.	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 site investigation 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.	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 Effects	Assessment of Effect	LSE Decision
Old Head of Kinsale 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 survey sites location in open offshore waters and limited nature of the works in both area and temporal extent. Due to the limited sensitivity of designated species to disturbance, 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. Also, the SPA is outside reported disturbance levels for more sensitive diving species (Burger et al., 2019; Mendel et al., 2019; Fliessbach et al., 2019).	No effect predicted	No Likely Significant Effect predicted Screened Out

9 Appropriate Assessment Screening Conclusions

AA screening of the proposed works, using the precautionary principle and the Source/Pathway/Receptor to link 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 (without the use of any mitigation measures) (**Table 10**).

All European Sites were included in screening whereby a pathway of effect was identified, noting that no pathway was identified for benthic features. 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:

- Old Head of Kinsale SPA
- Blackwater River (Cork/Waterford) SAC

Considering the precautionary principle, LSE cannot be ruled out (without the use of mitigation measures) to cetaceans or pinnipeds through noise disturbance and changes to water quality for the following European sites which will be taken forward into the NIS assessment (**Table 11**) (Royal HaskoningDHV, 2021a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0006):

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

European Sites	Species
Roaringwater Bay and Islands SAC	Screened in for harbour porpoise and grey seal
Saltee Islands SAC	Screened in for grey seal
Kenmare River SAC	Screened in for harbour seal
Glengarriff Harbour and Woodland SAC	Screened in for harbour seal
Slaney River Valley SAC	Screened in for harbour seal
Pembrokeshire Marine SAC	Screened in for grey seal
West Wales Marine / Gorllewin Cymru Forol SAC	Screened in for harbour porpoise
Blasket Islands SAC	Screened in for harbour porpoise and grey seal
Bristol Channel Approaches SAC	Screened in for harbour porpoise
Cardigan Bay SAC	Screened in for grey seal
Lower River Shannon SAC	Screened in for bottlenose dolphin
Pen Llyn a`r Sarnau SAC	Screened in for grey seal
Rockabill to Dalkey Island SAC	Screened in for harbour porpoise

European Sites	Species
Lambay Island SAC	Screened in for grey seal and harbour seal
North Anglesey Marine SAC	Screened in for harbour porpoise
Kilkieran Bay and Islands SAC	Screened in for harbour seal
Slyne Head Islands SAC	Screened in for grey seal
Galway Bay Complex SAC	Screened in for harbour seal
Inishbofin and Inishshark SAC	Screened in for grey seal
North Channel SAC	Screened in for harbour porpoise
Clew Bay Complex SAC	Screened in for harbour seal
Duvillian Islands SAC	Screened in for grey seal
Inishkea Islands SAC	Screened in for grey seal
The Maidens SAC	Screened in for grey seal
Killala Bay/Moy Estuary SAC	Screened in for harbour seal
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	Screened in for harbour seal
Slieve Tooey/Tormore Island/Loughros Beg Bay SAC	Screened in for grey seal
Ballysadare Bay SAC	Screened in for harbour seal
West of Ardara/Maas Road SAC	Screened in for harbour seal
Rutland Island and Sound SAC	Screened in for harbour seal
Donegal Bay (Murvagh) SAC	Screened in for harbour seal
Horn Head and Rinclevan SAC	Screened in for grey seal

9.1 AA Screening Assessment

The AA screening identified the potential for likely significant effects on the interest features of European sites with connectivity to the site investigation works and survey area. Following the screening exercise, 32 European sites were identified where a likely significant effect 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 32 European sites. A NIS has been prepared in support of the foreshore licence application (Royal HaskoningDHV, 2021a – document reference: PC1509-RHD-ZZ-XX-RP-Z-0006).

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