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# Malin Head Offshore Wind Farm Foreshore Licence Application for Site Investigation Works

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## *Natura Impact Statement*

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## Document Control

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## List of Abbreviations

AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
AIS	Automatic Identification System
API	American Petroleum Institute
BH	Borehole
CPOD	Cetacean Passive Acoustic Network
CPT	Cone Penetration Test
DAHG	Department of Arts, Heritage and the Gaeltacht
DEHLG	Department of Environment, Heritage and Local Government
DHPLG	Department of Housing, Planning and Local Government
DHLGH	Department of Housing, Local Government and Heritage
DTTAS	Department of Transport, Tourism and Sport
EC	European Commission
EIAR	Environmental Impact Assessment Report
EMODnet	The European Marine Observation and Data Network
EPA	Environmental Protection Agency
EPS	European Protected Species
EU	European Union
FCS	Favourable Conservation Status
GSI	Geological Survey of Ireland
IMO	International Maritime Organization
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IROPI	Imperative Reasons of Overriding Public Interest
ISO	International Organization for Standardization
IWDDS	Interactive Web Data Delivery System
JNCC	Joint Nature Conservation Committee
LiDAR	Light Detection and Ranging
MARPOL	The International Convention for the Prevention of Pollution from Ships
MBES	Multibeam echosounder
MI	Marine Institute
MAP	Maritime Area Planning
MU	Management Unit
NIS	Natura Impact Statement
NM	Nautical Mile
NMS	National Monuments Database
NPWS	National Parks and Wildlife Service
NRW	Natural Resources Wales
OWF	Offshore Wind Farm
PTS	Permanent Threshold Shift
QI	Qualifying Interests
SAC	Special Areas of Conservation
SCI	Special Conservation Interest

SPA	Special Protection Areas
SPL	Sound Pressure Level
SSS	Side Scan Sonar
TTS	Temporary Threshold Shift
UK	United Kingdom
UXO	Unexploded Ordnance
VC	Vibrocore
WWTP	Wastewater Treatment Plant

## Glossary of Terms

Acoustic Doppler Current Profiler (ADCP)	An Acoustic Doppler Current Profiler is a hydroacoustic current meter similar to a sonar, used to measure water current velocities over a depth range using the Doppler effect of sound waves scattered back from particles within the water column.
Appropriate Assessment (AA)	An Appropriate Assessment (AA) is an assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas. These Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are protected by both National and European Law.
Aquaculture Sites	Aquaculture sites include shellfish, finfish and seaweed production areas as monitored for licensing purposes.
Array Investigation Area	Area where site investigations will take place to determine the suitability of that area as an offshore wind farm
Benthic Ecology	Benthic ecology is the study of organisms that make up bottom communities (sediments, seagrass communities and rock outcrops) in lakes, streams, estuaries and oceans, to determine environmental health and conduct environmental appraisals.
Coastal Lagoons	Lagoons are expanses of coastal salt water, of varying salinity, which are wholly or partially separated from the sea by sand banks or shingle, or less frequently, by rocks.
Designated Shellfish Waters	Designated Shellfish Waters under the European Union Shellfish Waters Directive are sites designed to protect the aquatic habitat of bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams.
Dredge Fishing	A fishing dredge, also known as a scallop dredge or oyster dredge, is type of fishing gear which is towed along the bottom of the sea by a fishing boat in order to collect a targeted bottom-dwelling species.
Drift Lines	Drift lines occur on sandy or shingle substrate at the upper part of the strand, around the high tide mark. Water-borne material including organic matter is deposited on the shore and provides nutrients and a seed source for vegetation.
Ecology	Ecology is a branch of biology concerning the spatial and temporal patterns of the distribution and abundance of organisms, including the causes and consequences.
Environmental Receptors	Environmental receptors are any organism, habitat or natural resource which could be adversely affected by an activity.
Estuaries	Estuaries are coastal inlets with a significant freshwater influence. They are diverse, dynamic habitats that help maintain the health of coastal ecosystems. They are a significant resource for bird and mammal species for feeding, breeding, and resting, and depending on their geomorphology and hydrology support a mosaic of other habitats, including Annex I habitats such as mudflats.

Favourable Conservation Status		The EU Habitats Directive requires EU Member States to achieve FCS of natural habitats and species, defined with respect to species by Article 1 (i) of the Directive as below: “conservation status will be taken as ‘favourable’ 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.”
Fish Nursery Grounds		Nursery grounds are habitats that enhance the growth and survival of juvenile fish.
Fish Spawning Grounds		Spawning grounds are areas where fish congregate to lay and fertilise their eggs.
Foreshore		The foreshore of Ireland is classed as the land and seabed between the high water of ordinary or medium tides (shown HWM on Ordnance Survey maps) and the twelve-mile limit (12nm = 22.224km). The foreshore also covers the tidal reaches of rivers.
Foreshore Application Area	Licence	Within this report: The area within the 12nm limit of the high-water mark of ordinary tides for which a Foreshore Licence Application is submitted to the Department of Housing, Local Government and Heritage for a licence under Section 3 of the Foreshore Act to undertake site investigation activities.
Geophysical Surveys		Geophysical surveys are ground-based physical sensing techniques that produce a detail image or map of an area. Ground-based surveys may include: Seismic surveys - vibrations are recorded with geophones to provide information about the properties of rocks.
Geotechnical investigation and evaluation	and	Geotechnical investigation and evaluation include methods to acquire and evaluate subsurface information, including drilling and sampling, laboratory testing, cone penetration testing, and pressure meter testing.
Grab Samples		A grab sample is a sample of sediment taken from the seabed.
LiDAR		LiDAR is a method for measuring distances by illuminating the target with laser light and measuring the reflection with a sensor. Differences in laser return times and wavelengths can then be used to make digital 3-D representations of the target. It has terrestrial, airborne, and mobile applications.
Magnetometer		A magnetometer is a device that measures magnetism—the direction, strength, or relative change of a magnetic field at a particular location.
MARPOL		MARPOL is the main international convention aimed at the prevention of pollution from ships caused by operational or accidental causes. It was adopted at the International Maritime Organization (IMO) in 1973. The Protocol of 1978 was adopted in response to a number of tanker accidents in 1976–1977.
Metoccean		Metoccean conditions refer to the combined wind, wave, and climate conditions as found on a certain location. They are most often presented as

		statistics, including seasonal variations, scatter tables, wind roses and probability of exceedance.
Mudflats		Tidal mudflat habitat is comprised of the intertidal section of the coastline where muds dominate.
Multibeam Echosounder (MBES)		An echosounder uses sound waves to measure water depth. A transducer mounted under a vessel emits a pulse which travels through the water to the seafloor and bounces back to a receiver. The time it takes for the signal to return is measured, and because the speed of sound through water is known, the water depth under the boat is measured. This is the basic principle of hydrography and seafloor mapping. A multibeam echosounder (MBES) measures multiple echoes at a time.
Natura Statement	Impact	A Natura Impact Statement (NIS) is the statement prepared following Appropriate Assessment (AA) of Natura 2000 sites as required under the EU Habitats Directive which presents information on the assessment and the process of collating data on a project and its potential significant impacts on Natura 2000 site(s).
Pollution Event		A 'pollution incident' includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.
Pot Fishing		Pots and traps are used in commercial fishing to catch crustaceans such as lobster, crab, and shrimp.
Cable Investigation Area		Area where site investigations will take place to determine the suitability of that area as a route for the export electricity cable from the wind farm to land.
Foreshore Application Area	Licence	Area for which an application for a Foreshore Licence under Section 3 of the Foreshore Act 1933, as amended is sought to undertake site investigations to determine its suitability for both the offshore wind farm and the route for the export cable from the wind farm to shore.
Receiving Environment		The receiving environment is the environment upon which a proposed activity might have effects.
Reefs		Reefs are marine features with hard substrate available for colonisation by plants and animals. In Irish waters they range from the intertidal to depths of 4,500m and more than 400km from the coast.
Sandbanks		Sandbanks are distinct banks that arise from horizontal or sloping plains of sediment that ranges from gravel to fine sand. They are primarily composed of sandy sediments permanently covered by water, at depths of less than 20m below chart datum.
Sandflats		Tidal sandflat habitat is comprised of the intertidal section of the coastline where sands dominate.
Side Scan Sonar (SSS)		Side-scan uses a sonar device that emits conical or fan-shaped pulses down toward the seafloor across a wide-angle perpendicular to the path of the sensor through the water, which may be towed from a surface vessel or submarine or mounted on the ship's hull.
Special Conservation (SAC)	Areas of	These are prime wildlife conservation areas considered to be important on a European as well as national level. The EU Habitats Directive lists certain habitats and species that must be protected within SACs.

Special Protection Areas (SPA)	Ireland is required under the terms of the EU Birds Directive (2009/147/EC) to designate Special Protection Areas (SPAs) for the protection of: Listed rare and vulnerable species; regularly occurring migratory species and wetlands, especially those of international importance.
Sub-Bottom Profiler	A sub-bottom profiler is a type of sonar system that produces a 2-dimensional stratigraphic cross section by using acoustic energy to image sub-surface features in an aquatic environment.
Sea Cliffs	A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal or subtidal zone. Hard cliffs, composed of hard rock such as basalt, are at least 5m high, while soft cliffs, composed of softer substrates such as shale or boulder clay, are at least 3m high.
Vibrocore	Vibrocoreing is a sediment sampling methodology for retrieving continuous, undisturbed cores. Vibrocorers can work in a variety of water depths and can retrieve core samples at different lengths depending on sediment lithology and project objectives.
Water Courses	Natural or artificial channels through which water flows.
Wave Buoy	Wave buoys are used to measure the movement of the water surface as a wave train. The wave train is analysed to determine wave characteristics such as the significant wave height and period, and wave direction.

## 1 Executive Summary

This Natura Impact Statement has examined and analysed, considering the best scientific knowledge available with respect to the Natura 2000 European sites screened in for a Stage 2 Appropriate Assessment and the potential impact sources and pathways, how Malin Head Offshore Wind Farm site investigation activities could impact on the sites' Qualifying Interests and whether the predicted impacts would adversely affect the integrity of European sites.

The SISAA document accompanying this Foreshore Licence Application identified the likely significant effects on the SACs, SPAs and QIs (i.e. Natura 2000 sites and features) resulting from the proposed site investigation activities. Sixteen Natura 2000 sites were screened in for the Stage 2 AA described in this Natura Impact Statement.

This Natura Impact Statement has concluded that the potential impacts from the proposed site investigation activities are not likely to result in significant effects (alone or in-combination) on the Conservation Objectives of any Natura 2000 site and will not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European site either alone or in combination with other plans or projects.

## 2 Introduction

Malin Array Limited proposes to investigate the feasibility of developing an offshore wind farm, Malin Head Offshore Wind Farm (OWF), off the coast of County Donegal.

Malin Array Limited has prepared this report in support of an application for a Foreshore Licence under Section 3 of the Foreshore Act 1933, as amended, to carry out site investigation activities to determine the suitability of the Foreshore Licence Application Area for the development of an offshore wind farm.

Malin Array Limited intends to undertake a survey campaign at the proposed Foreshore Licence Application Area to inform the location and design of the proposed offshore wind farm and cable route to shore. The marine surveys will include geophysical, geotechnical, environmental and metocean marine surveys.

### 2.1 Aim of This Report

This report is part of the Foreshore Licence Application to the Foreshore Unit of the Department of Housing, Planning and Local Government and constitutes the Natura Impact Statement which forms part of the Appropriate Assessment process as required under the Habitats Directive (92/43/EEC).

This report aims to support the application process and provide the necessary information to the competent authorities to assist them in making an informed decision on the likely impact of this project on the receiving environment including the likely impact on Special Protection Areas, Special Areas of Conservation and their designated Annex I and Annex II species.

### 2.2 Structure of the Report

This report is structured into the following chapters to include information relating to the receiving environment, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Qualifying Interests (QIs), the potential impacts and Appropriate Assessment (AA) process and other environmental receptors. Specifically, the chapters of this report are as follows:

- Chapter 1: Executive Summary
- Chapter 2: Introduction (this chapter)
- Chapter 3: Habitats Directive (92/43/EEC) (outlines key aspects of the process)
- Chapter 4: Summary of information in Support of Appropriate Assessment Screening (Stage 1 Screening)
- Chapter 5: Stage 2 Natura Impact Statement

### 2.3 Foreshore License Application Area

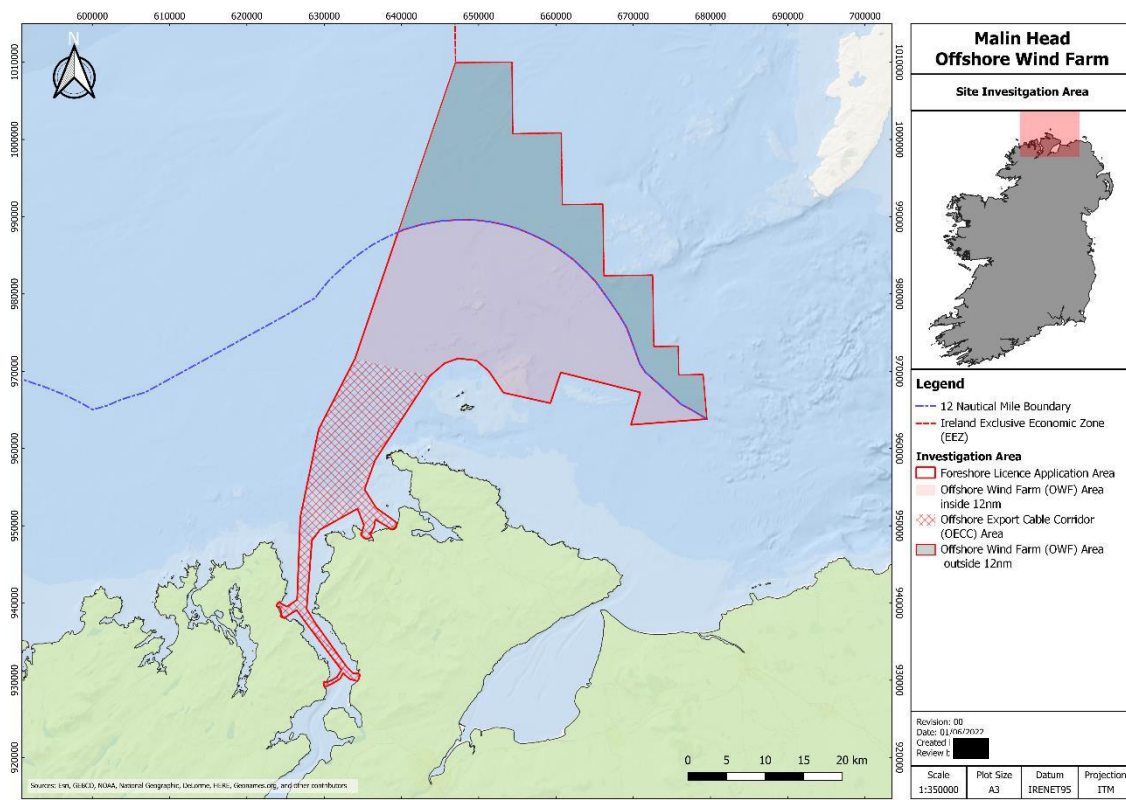
The Foreshore License Application Area is situated off the coast of county Donegal (Figure 2-1).

Malin Array Limited acknowledges that it is only possible at this time to obtain a Site Investigation Licence for that area situated within the 12nm boundary. Malin Array Limited is not proposing at this time to undertake any intrusive surveys outside the 12nm limit regulated under the Foreshore Act 1933, as amended.

This Foreshore Licence Application seeks consent to conduct site investigation activities within the 12nm boundary to establish the potential for offshore wind farm development off the coast of County Donegal. If the Foreshore Licence Application Area investigation activities, together with desktop studies and stakeholder engagement, indicates the feasibility of developing a wind farm, the project will be progressed at that point in accordance with the National Marine Planning Framework and other relevant legislation including the new consenting regime for offshore renewable energy being legislated for through the Maritime Area Planning Act 2021 (MAPA).

The Foreshore Licence Application Area is situated north of Malin Head, in the Atlantic Sea off the coast of County Donegal, and it measures approximately 835.25 km<sup>2</sup> in total. This report addresses the Offshore Export Cable Corridor (OECC) Area, measuring approximately 225.22 km<sup>2</sup> and the Offshore Windfarm (OWF) Area, measuring approximately 610.03 km<sup>2</sup>. The north/north-eastern boundary of the Foreshore Licence Application Area is adjoined by the 12 NM boundary. The OWF area is, at its closest point, 11.14 km from shore at Carrickaveol headland, approximately 9 km from Malin Head. The OECC Area extends to the mean high-water mark at 6 locations along the Donegal coastline at Pollan Strand, Tullagh strand, Buncrana beach, Kinnegar beach, Ballymastocker beach and Portsalon.

The Foreshore Licence Application Area, OWF Area within the 12nm boundary and OECC Area are shown in Figure 2-1. The coordinates of the Foreshore Licence Application Area are provided in the Foreshore License Application Form and Schedule of Works submitted as part of this Foreshore License Application.



**Figure 2-1 Malin Head OWF and OECC Area (red, OECC area hatched) including the OWF Area outside 12 nm (grey) for information. Note Foreshore Licence Application Area is all within 12 nm.**

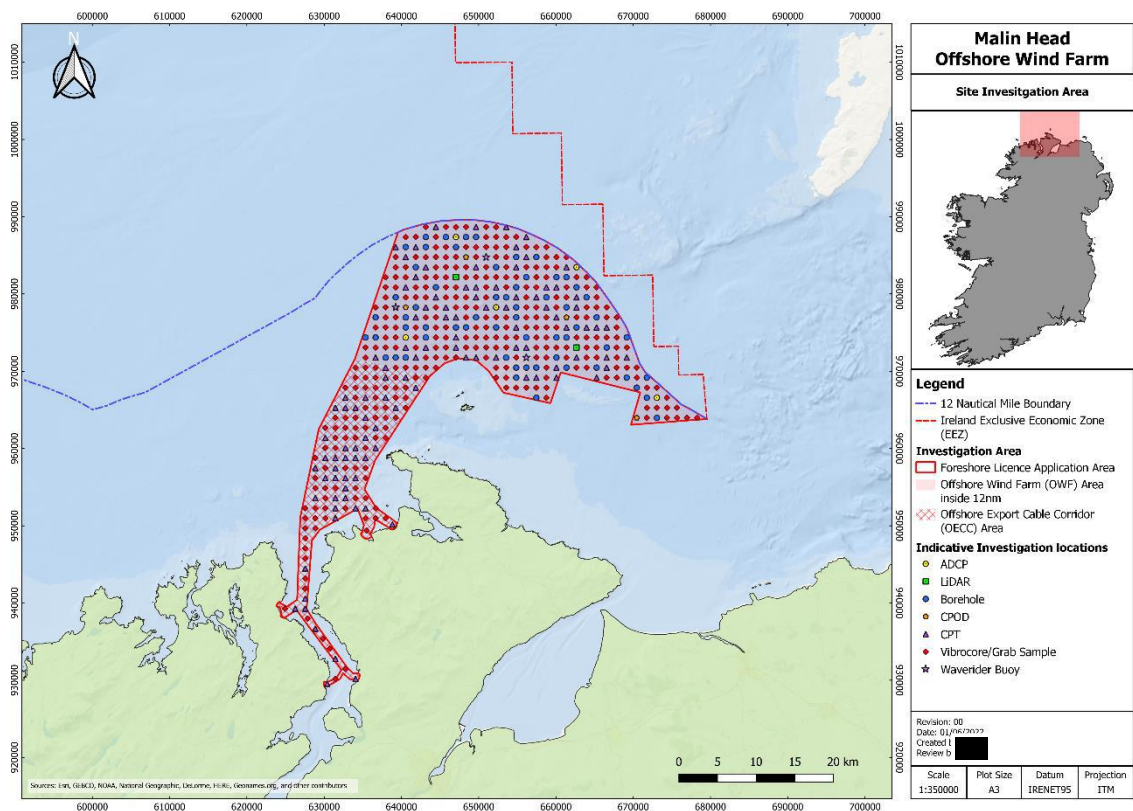
## 2.4 Site investigation activities

The objective of the proposed Malin Head OWF survey campaign is to determine environmental conditions and seafloor and subsurface geological characteristics within the Foreshore Licence Application Area.

The proposed programme of site investigations to be undertaken within the Foreshore Licence Application Area is discussed in detail in the Schedule of Works document accompanying this Application. Indicative seafloor contacting Site Investigation locations are shown in Figure 2-2. Note seafloor-contacting Site Investigation location distribution across the OWF area will be informed by geophysical data. OECC Site Investigation locations will be distributed every 1km along the proposed OECC route.

The exact technical specifications of the equipment to be used will not be known until the survey contract has been awarded. However, a description of the typical equipment and survey parameters is described in the Schedule of Works document accompanying this Application.

All efforts will be made to follow survey recommendations outlined in the Guidance on Marine Baseline Ecological Assessments & Monitoring Activities for Offshore Renewable Energy Projects Part 1 and 2 (DCCAE, April 2018), where the specific timeframes are indicated for the survey provision.



**Figure 2-2 Indicative Site Investigation Locations Malin Head Offshore Wind Farm**

### 3 Habitats Directive (92/43/EEC)

The purpose of this report is to inform the Appropriate Assessment process as required under the Habitats Directive (92/43/EEC). The Appropriate Assessment Screening contained in the accompanying Malin Head OWF SISAA document has determined whether the proposed surveys, both alone and in combination with other planned activities under the remit of this project and others, are likely to have a significant effect on any Natura 2000 or its qualifying interests. This document sets out the Stage 2 Natura Impact Statement of the Appropriate Assessment process.

This report has been prepared in accordance with the following guidance:

- 1 Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (Department of Environment, Heritage and Local Government, 2010 revision)
- 2 Appropriate Assessment under Article 6 of the Habitats Directive; Guidance for Planning Authorities. Circular NPW 1/10 and PSSP 2/10
- 3 Guidance to Manage the Risk to Marine Mammals from Manmade Sound Sources in Irish Waters. Prepared by National Parks and Wildlife Service, DAHG (2014).
- 4 Guidelines for Good Practice: Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011);
- 5 Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document. Prepared by National Parks and Wildlife Service, DAHG (2012).
- 6 Managing Natura 2000 Sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission - 21 November 2018)
- 7 Office of the Planning Regulator – Practice Note 01 – PN01 (March 2021)

#### 3.1 Legislative Background

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) adopted in 1992, transposed into Irish Law in 1997 and subsequently amended and consolidated aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. It provides a framework for the legal protection to ensure the conservation of a wide range of rare, threatened, or endemic animal and plant species throughout the European Union. The Birds Directive (Conservation of Wild Birds Directive (79/409/EEC) aims to protect all of the 500 wild bird species naturally occurring in the European Union. The Habitats Directive, along with the Birds Directive forms the cornerstone of Europe's nature conservation policy. Together they form a coherent network of protected areas (Special Areas of Conservation and Special Protection Areas), called Natura 2000, safeguarded against potentially damaging developments.

The requirement for "Appropriate Assessment" is set out in Articles 6(3) and 6(4) of the Habitats Directive (92/43/EEC). If a project is likely to have a significant effect on a Natura 2000 site, either alone or in combination with other plans or projects, it must undergo an appropriate assessment (AA). According to Article 6(3) of the Habitats Directive:

“Any plan or project not directly connected with or necessary to the management of the site (Natura 2000 site) but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site's conservation objectives”

In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public.

Article 6(4) states: “If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

### 3.2 The Appropriate Assessment Process

The European Commission’s methodological guidance (EC, 2002) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage (Figure 3-1). An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The four stages are summarised diagrammatically below, and the steps and procedures involved in completing each stage follows. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

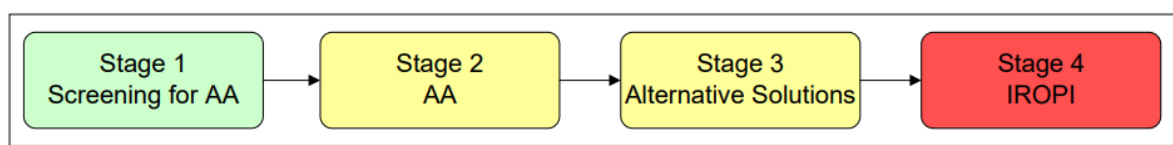


Figure 3-1 Stages in the AA process (Source: DEHLG, 2009)

#### Stage 1. Screening for Appropriate Assessment

Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i. whether a plan or project is directly connected to or necessary for the management of the site, and
- ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

## **Stage 2. Appropriate Assessment**

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 4, or the plan or project should be abandoned. The AA is carried out by the competent authority and is supported by the NIS.

## **Stage 3. Alternative Solutions:**

This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a Natura 2000 site. The process must return to Stage 2 as alternatives will require appropriate assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, is necessary to progress to Stage 4.

## **Stage 4. Imperative Reasons of Overriding Public Interest (IROPI)/Derogation**

Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. The extra protection measures for Annex I priority habitats come into effect when making the IROPI case. Compensatory measures must be proposed and assessed. The Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable, and they must be approved by the Minister for Housing, Planning and Local Government.

## **3.3 Methodology for the preparation of this report**

This document forms part of a series of documents taken together to support Stages 1 and 2 (Screening and Natura Impact Statement - if required) of the Appropriate Assessment process, as detailed in section 3.2 above, and has been prepared in accordance with the guidance numbered 1 to 7 in the first paragraphs of section 3 above.

**As the proposed works are not directly connected to or necessary for the management of a Natura 2000 site, this document focuses on assessing whether the works, alone or in combination with other plans and projects, are likely to have significant effects on any Natura 2000 site in view of its conservation objectives.**

This report has been informed by a review of the publicly available datasets and the available literature that allowed the characterisation of the receiving environment and supported the identification and assessment of potential impacts and their significance. The sources of the information used are cited throughout the report and listed in the References section.

The examination, analysis and evaluation of the relevant information that supported the Appropriate Assessment process conducted and documented in this report followed the precautionary principle throughout.

The report methodology followed the steps below, corresponding to the chapters which constitute the structure of the report:

- Description of the proposed project (see chapter 1 and SISAA)
- Description of legislative background, of the Appropriate Assessment process and Methodology for the preparation of the report (this chapter)
- Identification and description of the potential direct and indirect effects on the Natura 2000 sites (see SISAA document)
- Identification of the relevant Natura 2000 sites and their Qualifying Interests (QIs), and their AA Screening (Stage 1) against the identified potential impacts (see SISAA document and chapter 4)
- Natura Impact Statement (Stage 2) including detailed characterisation of the sites or species screened in for Stage 2 of the AA Process (see chapter 5)

This report has been prepared by [REDACTED] BSc. Hons Earth Science, MSc., Coastal and Marine Environments: Physical Processes, Policy and Practice. [REDACTED]; an environmental scientist with experience of offshore survey practices and has additional experience with coastal dune monitoring assessment surveys. The report was reviewed by [REDACTED] BSc. (Hons) Biology, MSc. Applied Science (75% Environmental Science, 25% Civil Engineering), and who is a Chartered Environmentalist. [REDACTED] is an experienced professional within the offshore wind sector, who previously held scientific and regulatory roles within the Scottish Government Directorate of Marine Scotland. He has undertaken multiple environmental assessments under both the Habitats and Environmental Impact Assessment Directives as a regulator with Marine Scotland and for multiple applicants for licences in Ireland under the Foreshore Act 1933, as amended.

## 4 Supporting Information for a Stage 2 Appropriate Assessment (Natura Impact Statement)

### 4.1 Outcome of Screening for Appropriate Assessment

Table 3-1 lists the sites and their Qualifying Interests that are screened in for further assessment in under a Stage 2 AA, together with the Impacts that may result in “Likely Significant Effects” to conservation objectives in the absence of mitigation measures. The screening process is described in full in the SISAA document.

**Table 4-1 Summary of SACs and designated QIs screened in for Stage 2 Appropriate Assessment**

Designated Site	Qualifying Interests	Impact
Lough Swilly SAC (IE0002287)	Lutra Lutra (Otter) [1355]	Disturbance from underwater noise associated with Surveys
North Inishowen Coast SAC (IE0002012)	Lutra Lutra (Otter) [1355]	Disturbance from underwater noise associated with Surveys
Mulroy Bay SAC (IE0002159)	Lutra lutra (Otter) [1355]	Disturbance from underwater noise associated with Surveys
Leannan River SAC (IE0002176)	Lutra lutra (Otter) [1355]	Disturbance from underwater noise associated with Surveys
Horn Head and Rinclevan SAC (IE000147)	Halichoreus grypus (Grey Seal) [1364]	Disturbance from underwater noise associated with Surveys
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC (IE000190)	Halichoreus grypus (Grey Seal) [1364]	Disturbance from underwater noise associated with Surveys
The Maidens (UK0030384)	Halichoreus grypus (Grey Seal) [1364]	Disturbance from underwater noise associated with Surveys
South-East Islay Skerries (UK0030067)	Halichoreus grypus (Grey Seal) [1364]	Disturbance from underwater noise associated with Surveys
Rutland Island and Sound SAC (IE0002283)	Phoca vitulina (Harbour Seal) [1365]	Disturbance from underwater noise associated with Surveys
Lower River Shannon SAC (IE0002165)	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise associated with Surveys

Designated Site	Qualifying Interests	Impact
Mers Celtique – Talus du Golfe de Gascogne SAC (FR5302015)	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise associated with Surveys
Duvillaun Islands SAC (IE000495)	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise associated with Surveys
Slyne Islands Head SAC (IE000328)	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise associated with Surveys
Slyne Head Peninsula SAC (IE0002074)	Tursiops truncatus (Common Bottlenose Dolphin) [1349]	Disturbance from underwater noise associated with Surveys
Skerries and Causeway SAC (UK0030383)	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise associated with Surveys
Inner Hebrides and the Minches SAC (UK0030393)	Phocoena phocoena (Harbour Porpoise)	Disturbance from underwater noise associated with Surveys

## 4.2 Conservation Objectives for Qualifying Interests

Conservation objectives for all sites screened in for Stage 2 AA (NIS) are set out in Appendix I to this report.

## 5 Impact Assessment

The impact of the proposed survey on marine mammals is as a result of disturbance from underwater noise associated with the proposed geophysical survey activities and also from shipping noise associated with the survey. The conservation objectives for each species impacted by these activities will be summarised in this section while also outlining the measures that will be imposed to mitigate for the impacts identified and outlined above.

### 5.1 Grey Seal (*Halichoerus grypus*) [1364]

The conservation objectives to maintain the favourable conservation condition of the Grey seal (*Halichoerus grypus*) at Horn Head and Rinclevan SAC, Slieve Tooley/Tormore Island/Loughros Beg Bay SAC, South-East Islay Skerries SAC and the Maidens SAC which are outlined in Appendix I. The conservation objectives can be summarised as:

- access to suitable habitat not being restricted by artificial barriers;
- breeding, moulting and resting sites should be conserved in a natural condition;
- the seal population should contain adult, juvenile and pup cohorts annually;
- human activities should not occur at levels that adversely affect the grey seal population at the site.

The proposed survey will not affect any of the conservation objectives for the grey seal, as listed above and in Appendix I. However, the species may be affected by disturbance from underwater noise associated with the proposed survey. Grey seals hear in the low frequency range (75-75,000 Hz) (Southall et al., 2007) and therefore, are susceptible to effects from noise generated by shipping and SBP. These activities have the potential to be within the hearing threshold of grey seals. There is also a risk of injury due to collision (survey vessels/sampling equipment).

**Mitigation:** The proposed works are temporary in nature and of short duration. The protocol 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (DAHG, 2014) will be followed at all times to include the use of the visual observation techniques during daytime hours and the 'soft-start' procedure. These measures will ensure that any adverse effect due to disturbance caused by underwater noise will be mitigated for. In addition, the survey vessels will be slow moving (c. 5 knots) and therefore any risk due to collision is mitigated for. The proposed survey will not restrict the species range in any way or impact on the breeding, haul-out or breeding sites of the species. (Please see Appendix II to this document for detail relating to compliance with the NPWS 2014 Guidance referenced above).

In addition, should Malin Array Limited identify that a temporal overlap is likely between this project and those identified in Section 5.4 as having the potential to cause in-combination effects to marine mammals, Malin Array Limited will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on marine mammals are mitigated for.

Therefore, the conservation objectives for the grey seal population at Horn Head and Rinclevan SAC, Slieve Tooley/Tormore Island/Loughros Beg Bay SAC, South-East Islay Skerries SAC and The Maidens SAC will not be adversely affected and the integrity of both of these sites will be maintained.

## 5.2 Common seal (*Phoca vitulina*) [1365]

The conservation objectives to maintain the favourable conservation condition of common seal in Rutland island and Sound SAC are defined as follows:

- access to suitable habitat should not be restricted by artificial barriers,
- breeding, moulting and resting sites should be conserved in a natural condition,
- human activities should not occur at levels that adversely affect the common seal population at the site.

Further details of the conservation objectives are available in Appendix I.

The proposed survey will not affect on any of the conservation objectives for the common seal, as listed above and in Appendix I. However, the species may be affected by disturbance from underwater noise associated with the proposed survey. Common seals hear in the low frequency range in water (75-75,000 Hz) (Southall et al., 2007) and therefore may be affected by noise generated by shipping, SBP. These activities have the potential to be within the hearing threshold of common seal.

**Mitigation:** The proposed works are temporary in nature and of short duration. The protocol 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (DAHG, 2014) will be followed at all times to include visual observations during daylight hours and the use of the 'soft-start' procedure. These measures will ensure that any adverse effect due to disturbance caused by underwater noise will be mitigated for. In addition, the survey vessels will be slow moving (c. 5 knots) and therefore any risk due to collision is mitigated for. The proposed survey will not restrict the species range in any way or impact on the breeding, haul-out or breeding sites of the species. (Please see Appendix V to this document for detail relating to compliance with the NPWS 2014 Guidance referenced above).

In addition, should Malin Array Limited identify that a temporal overlap is likely between this project and those identified in Section 5.4 as having the potential to cause in-combination effects to marine mammals, Malin Array Limited will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on marine mammals are mitigated for.

Therefore, the conservation objectives for the common seal population at Rutland Island and Sound SAC will not be adversely affected and the integrity of the site will be maintained.

## 5.3 Common Bottlenose Dolphin (*Tursiops truncatus*) [1349]

The conservation objectives to maintain the favourable conservation condition of the bottlenose dolphin (*Tursiops truncatus*) [1349] at the Lower River Shannon SAC, Duvillaun Islands SAC, Slyne Islands Head SAC, Slyne Head Peninsula SAC and Mers Celtique – Talus du Golfe de Gascogne SAC are listed in Appendix I. They can be summarised as follows: The population maintains itself on a long-term basis as a viable component of its natural habitat. Important elements include population size, structure, production, and condition of the species within the site. As part of this objective, it should be noted that for bottlenose dolphin contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression. The species population within the site is such that the natural range of the population is not being reduced or likely to be reduced for the foreseeable future. As part of this objective, it should be noted that for bottlenose dolphin their range within the SAC and adjacent inter-connected areas is not constrained

or hindered, there are appropriate and sufficient food resources within the SAC and beyond, and the sites and amount of supporting habitat used by these species are accessible and their extent and quality is stable or increasing.

The proposed site investigation activities will not affect on any of the conservation objectives for the bottlenose dolphin, as listed in Appendix I and above. However, the species may be affected by disturbance from underwater noise associated with the proposed site investigation activities. Bottlenose dolphin hear in the mid frequency range (150 - 160,000 Hz) (DAHG, 2014). The greatest impact on this species from the proposed site investigation activities would be from SBP. These survey methods have the potential to be within the hearing threshold of bottlenose dolphins.

**Mitigation:** The proposed activities will be short in duration and of a temporary nature and compliant with DAHG (2014) (Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters) which will ensure that the proposed site investigation activities will have no significant effect on bottlenose dolphin. This to include visual observation during daylight hours and the use of 'soft-start' procedures. These measures will ensure that any adverse effect due to disturbance caused by underwater noise will be mitigated for. In addition, the survey vessels will be slow moving (c. 5 knots) and therefore any risk due to collision is mitigated for. The proposed site investigation activities will not restrict the species range in any way or effect the population size, range or habitat quality of the site. (Please see Appendix II to this document for detail relating to compliance with the NPWS 2014 Guidance referenced above).

In addition, should Malin Head Limited identify that a temporal overlap is likely between this project and those identified in Section 5.4 as having the potential to cause in-combination effects to marine mammals, Malin Head Limited will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on marine mammals are mitigated for.

Therefore, the conservation objectives for the bottlenose dolphin population at Lower River Shannon SAC, Duvillaun Islands SAC, Slyne Islands SAC, Slyne Head Peninsula SAC and Mers Celtique – Talus du Golfe de Gascogne SAC will not be adversely affected and the integrity of this site will be maintained.

#### 5.4 Harbour Porpoise (*Phocoena phocoena*) [1351]

The conservation objectives to maintain the favourable conservation condition of harbour porpoise (*Phocoena phocoena*) in Skerries and Causeway SAC and Inner Hebrides and the Minches SAC (are listed in Appendix I and can be summarised as follows: Ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for harbour porpoise in UK waters. In the context of natural change, this will be achieved by ensuring that: harbour porpoise is a viable component of the site; there is no significant disturbance of the species; and the condition of supporting habitats and processes, and the availability of prey is maintained.

The conservation objectives to maintain the favourable conservation condition of harbour porpoise (*Phocoena phocoena*) are listed in Appendix I.

The proposed site investigation activities will not effect any of the conservation objectives for the harbour porpoise, as listed above and in Appendix I. However, the species may be effected by disturbance from underwater noise associated with the proposed site investigation activities. Harbour porpoise (*Phocoena phocoena*) hear in the high frequency range (200-180,000Hz) (DAHG, 2014). The greatest potential effect on this species from the proposed site investigation activities would be from

geophysical site investigation activities depending on the equipment and frequencies used. These activities have the potential to be within the hearing threshold of harbour porpoise. There is also a risk of injury due to collision (survey vessels/sampling equipment).

**Mitigation:** The proposed activities will be short in duration and of a temporary nature and compliant with DAHG (2014) (Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters) which will ensure that the proposed site investigation activities will have no adverse effect on harbour porpoise. This to include visual observation during daylight hours and the use of 'soft-start' procedures. These measures will ensure that any adverse effect due to disturbance caused by underwater noise will be mitigated for. In addition, the survey vessels will be slow moving (c. 5 knots) and therefore any risk due to collision is mitigated for. (Please see **Appendix II** to this document for detail relating to compliance with the NPWS 2014 Guidance referenced above).

In addition, should Malin Array Limited identify that a temporal overlap is likely between this project and those identified in Section 5.4 as having the potential to cause in-combination effects to marine mammals, Malin Array Limited will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on marine mammals are mitigated for.

Therefore, the conservation objectives for the harbour porpoise at Skerries and Causeway SAC and Inner Hebrides and the Minches SAC will not be adversely affected and integrity of the sites will be maintained.

#### **Note on the soft-start procedure**

The soft-start procedure is included in the protocol 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (DAHG, 2014) and is considered sufficient by NPWS, the competent authority for marine environmental protection to ensure that even the most sensitive of marine mammal species (i.e. harbour porpoise) is protected from being significantly affected by anthropogenic noise sources. While not specifically aimed at other species (such as twaite or allis shad) it may also be used to ensure that these species are not significantly affected by the emittance of noise into the marine environment.

Soft-start refers to the method by which the intensity of sound emitted by survey equipment increases slowly over a given time period (generally 20-40 minutes), increasing in intensity in specified intervals (e.g. every 5 minutes). The exact time period for the ramp up of intensity as well as the increments by which the intensity is ramped up is dependent on the survey parameters and may be different depending on equipment used. Soft-start procedures for specific survey activities are designed in conjunction with an experienced marine ecologist once the survey parameters are known.

### **5.5 Otter (*Lutra lutra*)**

The conservation objectives to maintain the favourable conservation status of the otter (*Lutra lutra*) [1355] in Lough Swilly SAC, North Inishowen Coast SAC, Leannan River SAC and Mulroy Bay SAC are defined as follows:

- No significant decline in distribution,
- No significant decline in the extent of their marine, freshwater, and terrestrial habitat,
- Couching sites and holts are maintained
- No significant decline in fish biomass availability
- No significant increase in barriers to connectivity

Further details of the conservation objectives are outline in Appendix I.

The proposed survey will not impact on any of the conservation objectives for the otter as defined in Appendix I. However, the species may be affected by disturbance from vibration and underwater noise associated with the proposed site investigation activities as well as disturbance from the site investigation activities generally. The otter is not known to be very sensitive to noise in the water however the site investigation activities, with hearing in the low frequency range in water (75-75,000Hz) (Southall et al., 2007), which could impact on the species if they enter the site investigation activities area with the noise generated from shipping, drilling and SBP. There is also a risk of injury due to collision with survey vessels and sampling equipment.

**Mitigation:** The proposed activities will be short in duration and of a temporary nature and compliant with DAHG (2014) (Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters) which will ensure that the proposed site activities will have no adverse effect on the otter. This is to include visual observations during daylight hours and the use of 'soft start' procedures. These measures will ensure that any adverse effect due to the disturbance caused by underwater noise will be mitigated for. In addition, the survey vessels will be slow moving (c. 5 knots) and therefore any risk due to collision is mitigated for. The proposed survey will not restrict the species range in any way or impact the breeding sites of the species. Details on these mitigation measures relating to compliance with the NPWS 2014 Guidance can be found in Appendix II.

Therefore, the conservation objectives for Lough Swilly SAC, North Inishowen Coast SAC, Leannan River SAC and Mulroy Bay SAC will not be adversely impacted, and the integrity of this site will be maintained.

## 5.6 In-combination effects

### 5.6.1 Assessment of In-Combination Effects with Other Plans and Projects

Plans from other projects were examined as part of the SISAA Screening Report. However, there were no other projects or proposed projects close to the proposed Malin Head Offshore Wind Farm location where there would be the potential for activities or developments to overlap. Therefore, for this proposed Foreshore Licence Application Area site development location and site investigation activities, likely in-combination effects were not identified and not required for this section of the report.

## 6 Appropriate Assessment Conclusion

The SISAA document accompanying this Foreshore Licence Application identified the likely significant effects on the SACs, SPAs and QIs (Natura 2000) resulting from the proposed site investigation activities. Sixteen Natura 2000 sites were screened in for a Stage 2 AA (NIS).

This NIS has examined and analysed, considering the best scientific knowledge available with respect to the sites screened in for a Stage 2 AA and the potential impact sources and pathways, how these activities could impact on the sites' Qualifying Interests and whether the predicted impacts would adversely affect the integrity of the European site. Implementing mitigation measures set out in Section 5 will ensure that any adverse effects on the conservation objectives of the sites assessed will be avoided during the activities proposed and that the integrity of the sites assessed will be maintained.

It is therefore concluded that the potential impacts from the proposed surveys are not likely to result in significant effects (alone or in-combination) on the Conservation Objectives of any Natura 2000 site and will not pose a risk of adversely affecting (either directly or indirectly) the integrity of any European site either alone or in combination with other plans or projects.

## References

- BEIS (2019). Offshore Oil & Gas Licensing 31<sup>st</sup> Seaward Round. Habitats Regulations Assessment. Appropriate Assessment: Moray Firth. Department for Business, Energy & Industrial Strategy (BEIS), 100pp.
- Bogdanova MI, Butler A, Wanless S, Moe B, Anker-Nilssen T, Frederiksen M, Boulinier T, Chivers LS, Christensen-Dalsgaard S, Descamps S, Harris MP, Newell M, Olsen B, Phillips RA, Shaw D, Steen H, Strøm H, Thórarinnsson TL & Daunt F (2017). Multi-colony tracking reveals spatio-temporal variation in carry-over effects between breeding success and winter movements in a pelagic seabird. *Marine Ecology Progress Series* 578: 167-181.
- Carter MID, Cox SL, Scales KL, Bicknell AWJ, Nicholson MD, Atkins KM, Morgan G, Morgan L, Grecian JW, Patrick SC & Votier SC (2016). GPS tracking reveals rafting behaviour of northern gannets (*Morus bassanus*): implications for foraging ecology and conservation. *Bird Study* 63: 83-95.
- Cleasby IR, Owen E, Wilson LJ, Bolton M (2018) Combining habitat modelling and hotspot analysis to reveal the location of high-density seabird areas across the UK: Technical Report. RSPB Research Report no. 63, 135pp.
- Cleasby IR, Wakefield ED, Bearhop S, Bodey TW, Votier SC & Hamer KC (2015). Three-dimensional tracking of a wide-ranging marine predator: flight heights and vulnerability to offshore wind farms. *Journal of Applied Ecology* 52: 1474-1482.
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. OJ L 206, 22.7.1992, p. 7–50. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043>
- Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds. OJ L 103, 25.4.1979, p. 1–18. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31979L0409>
- Crowe, O. (2005). Ireland's Wetlands and their Waterbirds: Status and Distribution. Birdwatch Ireland, Newcastle, Co. Wicklow.
- DAERA (2022). Skerries and Causeway SAC. [Skerries and Causeway SAC | Department of Agriculture, Environment and Rural Affairs \(daera-ni.gov.uk\)](https://www.daera-ni.gov.uk/skerries-and-causeway-sac) [Accessed 24/06/2022].
- DAHG (2012). Marine Natura Impact Statements in Irish Special Areas of Conservation – A Working Document. April 2012. Prepared by the National Parks and Wildlife Service of the DAHG.
- DAHG (2014). Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters. January 2014. Prepared by the National Parks and Wildlife Service, DAHG.
- DEHLG (2009). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. Department of Environment, Heritage and Local Government.
- DEHLG (2010). Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. Department of Environment, Heritage and Local Government, 2010 revision.
- EMODnet (2019) European Marine Observation Data Network Map Viewer. <http://www.emodnet.eu/>
- European Commission Environment Directorate-General (2001). Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodical Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC
- European Commission (2002). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities 2002

European Commission (2007). Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC CLARIFICATION OF THE CONCEPTS OF: ALTERNATIVE SOLUTIONS, IMPERATIVE REASONS OF OVERRIDING PUBLIC INTEREST, COMPENSATORY MEASURES, OVERALL COHERENCE, OPINION OF THE COMMISSION.

European Commission (2018). Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Communities (2002). Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

Hawkins, A. D., & Johnstone, A. D. F. (1978). The hearing of the Atlantic salmon, *Salmo salar*. Journal of Fish Biology, 13, 655–673.

JNCC (2020). Inner Hebrides and the Minches SAC. <https://sac.jncc.gov.uk/site/UK0030393> [Accessed on 20/06/2022].

JNCC (2022). The Maidens SAC. <https://sac.jncc.gov.uk/site/UK0030384> [Accessed on 20/06/2022].

JNCC (2022a). South-East Islay Skerries SAC. <https://sac.jncc.gov.uk/site/UK0030067> [Accessed on 20/06/2022].

King, J. J.; Roche, W. K. (2008). Aspects of anadromous Allis shad (*Alosa alosa* Linnaeus) and Twaite shad (*Alosa fallax* Lacepede) biology in four Irish Special Areas of Conservation (SACs): status, spawning indications and implications for conservation designation. Hydrobiologia 602, 145–154.

Langston RHW, Teuten E & Butler A (2013). Foraging ranges of northern gannets *Morus bassanus* in relation to proposed offshore wind farms in the UK: 2010-2012. RSPB document produced as part of the UK Department of Energy and Climate Change's offshore energy Strategic Environmental Assessment programme, 74pp

Maas, J.; Stevens, M.; Breine, J. (2008). Poor water quality constrains the distribution and movements of Twaite shad *Alosa fallax fallax* (Lacepede, 1803) in the watershed of river Scheldt. Hydrobiologia 602, 129 - 143

Mackey, M., Ó Cadhla, O., Kelly, T.C., Aguilar, A., de Soto, N. and Connolly, N. (2004). Cetaceans and Seabirds of Ireland's Atlantic Margin. Volume I – Seabird distribution, density & abundance. Report on research carried out under the Irish Infrastructure Programme (PIP): Rockall Studies Group (RSG) projects 98/6 and 00/13, Porcupine Studies.

Maitland PS & Hatton-Ellis TW (2003). Ecology of the Allis and Twaite Shad. Conserving Natura 2000 Rivers Ecology Series No. 3. English Nature, Peterborough.

Marine Atlas 2021, <https://atlas.marine.ie/#?c=53.9043;-15.9082;6>

Marine Institute, VMS Fisheries Data for 2015-2019, obtained from Marine Institute and mapped by DP Energy, 2021

Marine Traffic (2021), <https://www.marinetraffic.com/en/ais/home/centerx:-6.2/centery:52.5/zoom:9>

NOAA (2016). Ocean Noise Strategy Roadmap. <https://cetsound.noaa.gov/road-map>

Nowacek, D.B., Thorne, L.H., Johnston, D.W., and Tyack, P.L. (2007). Response of cetaceans to anthropogenic noise. Mammal Review 37 (2): 81-115.

NPWS (2013). Duvillaun Islands SAC 000495. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000495.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000495.pdf) [Accessed on 13/06/2022].

NPWS (2014). Horn Head to Rinclevan SAC 000147. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000147.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000147.pdf) [Accessed on 13/06/2022].

NPWS (2015). Horn Head to Rinclevan SAC 000147. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000147.pdf> [Accessed on 13/06/2022].

NPWS (2019). Leannan River SAC 002176. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002176.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002176.pdf) [Accessed on 13/06/2022].

NPWS (2015). Leannan River SAC 002176. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002176.pdf> [Accessed on 13/06/2022].

NPWS (2012). Lower River Shannon SAC 002165. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002165.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002165.pdf) [Accessed on 13/06/2022].

NPWS (2013). Lower River Shannon SAC 002165. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002165.pdf> [Accessed on 13/06/2022].

NPWS (2011). Lough Swilly SAC 002287. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002287.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002287.pdf) [Accessed on 13/06/2022].

NPWS (2016). Lough Swilly SAC 002287. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002287.pdf> [Accessed on 13/06/2022].

NPWS (2012a). Mulroy Bay SAC 002159. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002159.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002159.pdf) [Accessed on 13/06/2022].

NPWS (2019b). Mulroy Bay SAC 002159. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002159.pdf> [Accessed on 13/06/2022].

NPWS (2014a). North Inishowen Coast SAC 002012. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002012.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002012.pdf) [Accessed on 13/06/2022].

NPWS (2014b). North Inishowen Coast SAC 002012. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY002012.pdf> [Accessed on 13/06/2022].

NPWS (2013a). Rutland Island and Sound SAC 002283. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002283.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002283.pdf) [Accessed on 13/06/2022].

NPWS (2013b). Rutland Island and Sound SAC 002283. Site Synopsis. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002283.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002283.pdf) [Accessed on 13/06/2022].

NPWS (2015a). Slieve Tooley/Tormore Island/Loughros Beg Bay SAC 000190. Conservation Objectives Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000190.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000190.pdf) [Accessed on 13/06/2022].

NPWS (2021). Slieve Tooney/Tormore Island/Loughros Beg Bay SAC 000190. Site Synopsis. Version 1. Available at: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000190.pdf> [Accessed on 13/06/2022].

NPWS (2015b). Slyne Head Peninsula SAC 002074. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO002074.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002074.pdf) [Accessed on 13/06/2022].

NPWS (2012). Slyne Head Islands SAC 000328. Conservation Objectives. Version 1. Available at: [https://www.npws.ie/sites/default/files/protected-sites/conservation\\_objectives/CO000328.pdf](https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000328.pdf) [Accessed on 13/06/2022].

Office of the Planning Regulator, March 2021 OPR Practice Note PN01

Popper, A. N. (2003). Effects of Anthropogenic Sound on Fishes. *Fisheries*, 28:10,24-31, DOI: 0.1577/1548-8446(2003)28[24:EOASOF] 2.0.CO;2

Popper, A. N., Dennis T.T. Plachta, Mann, D A., and Higgs, D. (2004) Response of clupeid fish to ultrasound: a review, *ICES Journal of Marine Science*, Volume 61, Issue 7, Pages 1057–1061.

Popper, AN and Hawkins, AD. (2019). An overview of fish bioacoustics and the impacts of anthropogenic sounds on fish. *J Fish Biol.*; 94: 692– 713. <https://doi.org/10.1111/jfb.13948>

Putland, RL, Montgomery, JC and Radford, CA. (2018). Ecology of fish hearing. *J Fish Biol.*; 95: 39– 52. <https://doi.org/10.1111/jfb.13867>

Richardson, W.J.; Greene Jr., C.R.; Malme, C.I.; Thomson, D.H. (1995). *Marine mammals and noise*. Academic Press: San Diego. ISBN 0-12-588441-9

S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011. <http://www.irishstatutebook.ie/eli/2011/si/477/made/en/print>

Schoeman R.P., Patterson-Abrolat C. and Plön S. (2020) A Global Review of Vessel Collisions With Marine Animals. *Front. Mar. Sci.* 7:292. doi: 10.3389/fmars.2020.00292

SNCB (2017). Joint SNCB Interim Displacement Advice Note. Statutory Nature Conservation Bodies: Natural Resources Wales, Department of Agriculture, Environment and Rural Affairs (Northern Ireland), Natural England, Scottish Natural Heritage and Joint Nature Conservation Committee (UK).

Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene., C. R. Jr., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P. E., Richardson, W. J., Thomas, J. A., and Tyack, P. L. (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals* 33(4): 411-521.

Southall, Brandon, Finneran, James, Reichmuth, Colleen, Nachtigall, Paul, Ketten, Darlene, Bowles, Ann, Ellison, William, Nowacek, Douglas, Tyack, Peter (2019). Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects. *Aquatic Mammals*. 45. 125-232. 10.1578/AM.45.2.2019.125.

Thaxter CB, Lascelles B, Sugar K, ASCP Cook, Roos S, Bolton M, Langston RHW & Burton NHK (2012). Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. *Biological Conservation* 156: 53–61.

Thaxter CB, Ross-Smith VH, Clark NA, Conway GJ, Johnston A, Wade HM, Masden EA, Bouten W & Burton NHK (2014). Measuring the interaction between marine features of Special Protection Areas with offshore windfarm development sites through telemetry: final report. Report for the Department of Energy and Climate Change.

Thaxter CB, Scragg ES, Clark NA, Clewley G, Humphreys EM, Ross-Smith VH, Barber L, Conway GJ, Harris SJ, Masden EA, Bouten W and Burton NHK (2018). Measuring the interaction between Lesser Black-backed Gulls and Herring Gulls from the Skokholm and Skomer SPA and Morecambe Bay SPA

and offshore wind farm development sites: final report. BTO Research Report No. 702, 162pVotier SC,

Wakefield ED, Cleasby IR, Bearhop S, Bodey TW, Davies R, Miller PI, Newton J, Votier SC & Hamer KC (2015). Long-term individual foraging site fidelity – why some gannets don't change their spots. *Ecology* 96: 3058–3074.

Wakefield ED, Owen E, Baer J, Carroll MJ, Daunt F, Dodd SG, Green JA, Guilford T, Mavor RA, Miller PI, Newell MA, Newton SF, Robertson GS, Shoji A, Soanes LM, Votier SC, Wanless S & Bolton M (2017). Breeding density, fine-scale tracking and large-scale modelling reveal the regional distribution of four seabird species. *Ecological Applications* 27: 2074-2091.

Wang, C., Lyons, S. B., Corbett, J. J., and Firestone, J. (2007). Using Ship Speed and Mass to Describe Potential Collision Severity with Whales: an Application of the Ship Traffic, Energy and Environment Model (STEEM) [Report by the University of Delaware].

Woodward, I., Thaxter, C.B., Owen, E., and Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening. BTO research report number 724

## Appendix I

### Specific Conservation Objectives for Qualifying Interests

#### Horn Head to Rinclevan SAC (IE000147) (NPWS, 2014)

Conservation Objectives for: Horn Head to Rinclevan SAC			
Grey Seal ( <i>Halichoerus grypus</i> ) [1364]			
To maintain the favourable conservation condition of the Grey Seal in Horn Head to Rinclevan SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	See marine supporting document for further details
Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, a preliminary survey in 2003 (Cronin and Ó Cadhla 2004; Cronin et al., 2007) and unpublished NPWS records including those reported by suppers (1983) and Lyons (2004). See marine supporting document for further details.
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition	Attribute target based on background knowledge of Irish populations, on review of data from Lyons (2004), a national moult survey (Ó Cadhla and Strong, 2007) and unpublished NPWS records. See marine supporting document for further details.
Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data from Lyons (2004), Cronin et al. (2004) and unpublished NPWS records. See marine supporting document for further details.
Population composition	Number of cohorts	The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually.	Attribute and target based on review of data from Lyons (2004), Ó Cadhla et al. (2007), Ó Cadhla and Strong (2007) and unpublished NPWS records. See marine supporting document for further details.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site	See marine supporting document for further details.

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### Slieve Tooley/Tormore Island/Loughros Beg Bay SAC (IE000190) (NPWS, 2015a)

Conservation Objectives for: Slieve Tooley/Tormore Island/Loughros Beg Bay SAC (IE000190)			
Grey Seal ( <i>Halichoerus grypus</i> ) [1364]			
To maintain the favourable conservation condition of Grey Seal at Slieve Tooley/Tormore Island/Loughros Beg Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the SAC should not be restricted by barriers to site use.	See marine supporting document for further details.
Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, a preliminary survey in 2003 (Cronin and Ó Cadhla, 2004; Cronin et al., 2007), comprehensive breeding surveys in 2005 (Ó Cadhla et al., 2008) and 2012 (Ó Cadhla et al., 2013) unpublished NPWS records including those reported by Summers (1983) and Lyons (2004). See marine supporting document for further details.
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Attribute and target based on background knowledge of Irish populations, on review of data from Keily (1998) and Lyons (2004), a national moult survey (O Cadhla & Strong, 2007) and unpublished NPWS records.
Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review data from Lyons (2004), Cronin et al. (2004), Duck and Morris (2013) and unpublished NPWS records. See marine supporting document for further details.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the SAC	See marine supporting document for further details.

### The Maidens (UK0030384) (JNCC, 2022)

Conservation Objectives for: The Maidens SAC (UK0030384)	
Grey Seal ( <i>Halichoerus grypus</i> ) [1364]	
To avoid deterioration of the habitats of the Grey Seal or significant disturbance to the Grey Seal, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK Grey Seal. To ensure for Grey Seal that: subject to natural change, the following attributes are maintained or restored in the long term	
Attribute	Target
Species is a viable component of the site	Maintained or restored in the long term – subject to natural change
Disturbance	No significant disturbance of the species
Habitats and processes	Habitats and processes relevant to Grey Seal and its prey are maintained or restore in the long term – subject to natural change

### South-East Islay Skerries (UK0030397) (JNCC, 2022a)

Conservation Objectives for: The Maidens SAC (UK0030384)	
Grey Seal ( <i>Halichoerus grypus</i> ) [1364]	
To avoid deterioration of the habitats of the Grey Seal or significant disturbance to the Grey Seal, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK Grey Seal. To ensure for Grey Seal that: subject to natural change, the following attributes are maintained or restored in the long term	
Attribute	Target
Species is a viable component of the site	Maintained or restored in the long term – subject to natural change
Disturbance	No significant disturbance of the species
Habitats and processes	Habitats and processes relevant to Grey Seal and its prey are maintained or restore in the long term – subject to natural change

### Rutland Island and Sound SAC (IE0002283) (NPWS, 2013a)

Conservation Objectives for: Rutland Island and Sound SAC (IE0002283)			
Common/Harbour seal ( <i>Phoca vitulina</i> ) [1365]			
To maintain the favorable conservation condition of common seal in Rutland Island and Sound SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.	See marine supporting document for further details

Breeding behavior	Breeding sites	The breeding sites should be maintained in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, review of data summarised by Summers et al. (1980), Warner (1983), Harrington (1990), Lyons (2004) and unpublished NPWS data records.
Moulting behavior	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition.	Attribute and target based on background knowledge of Irish populations, review of data from Lyons (2004), Cronin et al. (2004) and unpublished NPWS data records.
Resting behavior	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on background knowledge of Irish populations and the review of ancillary data provided by unpublished NPWS data.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the common seal population at the site.	See marine supporting document for further details

### Lower River Shannon SAC (IE0002165) (NPWS, 2012)

Conservation Objectives for: Lower River Shannon SAC (IE0002165)			
Common Bottlenose Dolphin ( <i>Tursiops truncatus</i> ) [1349]			
To maintain the favorable conservation condition of the Common Bottlenose Dolphin in the Lower River Shannon SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Targets	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by	

		artificial barriers to site use.	
Habitat use: critical areas	Location and hectares	Critical areas, representing habitat used preferentially by bottlenose dolphin, should be maintained in a natural condition	Attribute and target based on Ingram and Rogan (2002), Englund et al. (2007), Englund et al. (2008), Berrow (2009), (Berrow et al. (2010) and review of data from other studies. See marine supporting document for further details.
Disturbance	Level of Impact	Human activities should occur at levels that do not adversely affect the bottlenose dolphin population at the site.	

**Slyne Head Peninsula SAC (0002074) (note site specific conservation objectives are not available for Bottlenose Dolphin) (NPWS, 2015)**

Conservation Objectives for: Slyne Head Peninsula SAC (002074)			
Bottlenose Dolphin [1349]			
To maintain the favourable conservation condition of the bottlenose dolphin in Slyne Head Peninsula SAC, which is defined by the following list of attributes and targets: Grey Seal as example			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	
Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, a preliminary survey in 2003 (Cronin and Ó Cadhla 2004; Cronin et al., 2007) and unpublished NPWS records including those reported by suppers (1983) and Lyons (2004).
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition	Attribute target based on background knowledge of Irish populations, on review of data from Lyons (2004), a national moult

			survey (Ó Cadhla and Strong, 2007) and unpublished NPWS records.
Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data from Lyons (2004), Cronin et al. (2004) and unpublished NPWS records.
Population composition	Number of cohorts	The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually.	Attribute and target based on review of data from Lyons (2004), Ó Cadhla et al. (2007), Ó Cadhla and Strong (2007) and unpublished NPWS records.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site	
<b>In relation to the Bottlenose dolphin for Slyne Head Peninsula SAC: to maintain the favourable conservation condition through access to suitable habitat not restricted by barriers, habitat use maintained and minimizing disturbance from human activities that do not adversely impact the bottlenose dolphin population.</b>			

**Slyne Head Islands SAC (000328) (note site specific conservation objectives are not available for Bottlenose Dolphin) (NPWS, 2012)**

Conservation Objectives for: Slyne Head Islands SAC [000328]			
Grey Seal ( <i>Halichoerus grypus</i> ) [1364] as example for bottlenose dolphin			
To maintain the favourable conservation condition of the Grey Seal in Slyne Head Islands SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	
Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, a preliminary survey in 2003 (Cronin and Ó Cadhla 2004; Cronin et al., 2007) and unpublished NPWS records including those reported by suppers (1983) and Lyons (2004).
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition	Attribute target based on background knowledge of Irish populations, on review of data from Lyons (2004), a national moult survey (Ó Cadhla and Strong, 2007) and unpublished NPWS records.

Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data from Lyons (2004), Cronin et al. (2004) and unpublished NPWS records.
Population composition	Number of cohorts	The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually.	Attribute and target based on review of data from Lyons (2004), Ó Cadhla et al. (2007), Ó Cadhla and Strong (2007) and unpublished NPWS records.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site	
<b>In relation to the Bottlenose dolphin for Slyne Head Islands SAC: to maintain the favourable conservation condition through access to suitable habitat not restricted by barriers, habitat use maintained and minimizing disturbance from human activities that do not adversely impact the bottlenose dolphin population.</b>			

**Duvillaun Islands SAC (000495) (note site specific conservation objectives are not available for Bottlenose Dolphin) (NPWS, 2013)**

Conservation Objectives for: Duvillaun Islands SAC [000495]			
Grey Seal ( <i>Halichoerus grypus</i> ) [1364] as example for bottlenose dolphin			
To maintain the favourable conservation condition of the Grey Seal in Duvillaun Islands SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	
Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition.	Attribute and target based on background knowledge of Irish breeding populations, a preliminary survey in 2003 (Cronin and Ó Cadhla 2004; Cronin et al., 2007) and unpublished NPWS records including those reported by suppers (1983) and Lyons (2004).
Moulting behaviour	Moult haul-out sites	Conserve the moult haul-out sites in a natural condition	Attribute target based on background knowledge of Irish populations, on review of data from Lyons (2004), a national moult survey (Ó Cadhla and Strong, 2007) and unpublished NPWS records.
Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data from Lyons (2004), Cronin et al. (2004) and unpublished NPWS records.
Population composition	Number of cohorts	The grey seal population occurring	Attribute and target based on review of data from Lyons (2004), Ó

		within this site should contain adult, juvenile and pup cohorts annually.	Cadhla et al. (2007), Ó Cadhla and Strong (2007) and unpublished NPWS records.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population at the site	
<b>In relation to the Bottlenose dolphin for Duvillaun Islands SAC: to maintain the favourable conservation condition through access to suitable habitat not restricted by barriers, habitat use maintained and minimizing disturbance from human activities that do not adversely impact the bottlenose dolphin population.</b>			

## Mers Celtique – Talus du Golfe de Gascogne (FR530215)

Conservation Objectives for French Common Bottlenose Dolphin SAC: Mers Celtique – Talus du Golfe de Gascogne (FR530215)
Common Bottlenose Dolphin ( <i>Tursiops truncatus</i> )
To maintain the favorable conservation condition of the Common Bottlenose Dolphin at Mers Celtique – Talus du Golfe de Gascogne SAC, which is defined by the following:
<b>To maintain or restore species of Community interest and their functional habitats to a favourable conservation status. This objective is a commitment of the Habitats Directive. The aim is to monitor the evolution of the populations of these species, limit their disturbance and maintain their functional habitats in a state of conservation favourable to their ecological requirements.</b>

## Lough Swilly SAC (IE0002287) (NPWS, 2011)

Conservation Objectives for: Lough Swilly SAC (IE0002287)			
Otter ( <i>Lutra lutra</i> ) [1355]			
To maintain the favourable conservation condition of the Otter at Lough Swilly SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique, FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range in north-west estimated at 65% (Bailey and Rocheford, 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 95.7Ha above high water mark (HWM); 44.0ha along riverbanks/around pools	No field survey. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Length mapped and calculated as 839.5ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Area mapped and calculated as 15.5km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary to headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 83,7ha	No field survey. Lagoons have been included with other freshwater habitats as they are low/medium salinity. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)

Couching sites and holts	Number	No significant decline	Otters need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 1991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish, in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling in coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant increase	Otters will regularly commute across stretches of open water up to 500m. e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed.

### North Inishowen Coast SAC (IE0002012) (NPWS, 2014a)

Conservation objectives for: North Inishowen Coast SAC (IE0002012)			
Otter ( <i>Lutra lutra</i> ) [1355]			
To maintain the favourable conservation condition of the otter at North Inishowen Coast SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 146.6ha above high water mark (HWM); 61.3ha along river banks/ around ponds	No field survey. Areas mapped include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)
Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 1099.2 ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 30.9km	No field survey. River length calculated on the basis that otters will utilize freshwater habitats

			from estuary headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 2.7ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPWS, 2007)
Couching sites and holts	Number	No significant decline	Otters tend to need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 19991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006; Reid et al., 2013) and wrasse and rockling coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant decline	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed.

### Mulroy Bay SAC (IE0002159) (NPWS, 2012a)

Conservation objectives for: Mulroy Bay SAC (IE0002159)			
Otter ( <i>Lutra lutra</i> ) [1355]			
To restore the favourable conservation condition of the otter at Mulroy Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 65% (Bailey and Rochford, 2006)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 32.4ha above high water mark (HWM); 0.9ha along river banks	No field survey. Areas mapped include 10m terrestrial buffer along shoreline (above HWM and along river banks) identified as critical for otters (NPWS, 2007)

Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 800ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (HWM) (NPWS, 2007; Kruuk, 2006)
Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 0.5km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary headwaters (Chapman and Chapman, 1982)
Couching sites and holts	Number	No significant decline	Otters tend to need lying up areas throughout their territory where they are secure from disturbance (Kruuk, 2006; Kruuk and Moorhouse, 19991)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006) and wrasse and rockling coastal waters (Kingston et al., 1999)
Barriers to connectivity	Number	No significant decline	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed.

### Leannan River SAC (IE0002176) (NPWS, 2019)

Conservation objectives for: Leannan River SAC (IE0002159)			
Otter ( <i>Lutra lutra</i> ) [1355]			
To restore the favourable conservation condition of the otter at Mulroy Bay SAC, which is defined by the following list of attributes and targets:			
Attribute	Measure	Target	Notes
Distribution	Percentage positive survey sites	No significant decline	Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)
Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 138ha along river banks/lake shoreline/around ponds	No field survey. Areas mapped include 10m terrestrial buffer identified as critical for otters (NPWS, 2007), along rivers and water bodies

Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 0.5km	No field survey. River length calculated on the basis that otters will utilise freshwater habitats from estuary headwaters (Chapman and Chapman, 1982)
Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 191ha	No field survey. Area mapped based on evidence that otters tend to forage within 80m of the shoreline (NPW, 2007)
Couching sites and holts	Number	No significant decline	Otters tend to need lying up areas throughout their territory where they are secure from disturbance (Kruuk and Moorhouse, 19991; Kruuk, 2006)
Fish biomass available	Kilograms	No significant decline	Broad diet that varies locally and seasonally, but dominated by fish in particular salmonids, eels and sticklebacks in freshwater (Bailey and Rochford, 2006)
Barriers to connectivity	Number	No significant decline	Otters will regularly commute across stretches of open water up to 500m e.g. between the mainland and an island; between two islands; across an estuary (De Jongh and O'Neill, 2010). It is important that such commuting routes are not obstructed.

### Inner Hebrides and the Minches SAC (UK0030393) (JNCC, 2020)

Conservation Objectives for: Inner Hebrides and the Minches SAC (UK0030393)			
Harbour Porpoise ( <i>Phocoena phocoena</i> ) [1351]			
<p>The conservation status for the Inner Hebrides and Minches SAC currently is <b>favourable</b>. To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that: subject to natural change, the following attributes are maintained or restored in the long term</p>			
Attribute	Target	Sensitivity	Objectives
Species is a viable component of the site	Maintained or restored in the long term – subject to natural change	Removal of non-target species (i.e. entanglement of harbour porpoises in fishing gears and removal of their prey species).  Contaminants (e.g. through effects on water quality and bioaccumulation of contaminants that in turn	Ensure the SAC continues to make an appropriate contribution to harbour porpoise remaining at favourable conservation status.
Disturbance	No significant disturbance of the species		To maintain the integrity of the SAC environment for the
Habitats and processes	Habitats and processes relevant to harbour porpoise and its prey are maintained or restore in the long term – subject to natural change		

		<p>affects the survival and productivity rates of harbour porpoises)</p> <p>Underwater noise (e.g. from acoustic surveys)</p> <p>Death or injury by collision (fast moving commercial vessels or personal leisure craft)</p>	<p>Harbour Porpoise by ensuring that</p> <p>A) the species is not at risk of injury or killing</p> <p>B) the distribution of the species is maintained by avoiding significant disturbance</p> <p>C) the conditions of supporting habitats for prey is maintained</p>
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### Skerries and Causeway SAC (UK0030383) (DAERA, 2017)

Conservation Objectives for: Skerries and Causeway SAC (UK0030383)				
Harbour Porpoise ( <i>Phocoena phocoena</i> ) [1351]				
<p>The conservation status for the Skerries and Causeway SAC currently is <b>favourable</b>. To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that: subject to natural change, the following attributes are maintained or restored in the long term</p>				
Attribute	Measure	Target	Sensitivity	Objectives
Species a viable component of the site	N/A	Maintained or restored in the long term – subject to natural change	<p>Removal of non-target species (i.e. entanglement of harbour porpoises in fishing gears and removal of their prey species).</p> <p>Contaminants (e.g. through effects on water quality and bioaccumulation of contaminants that in turn affects the survival and productivity rates of harbour porpoises)</p>	<p>Ensure the SAC continues to make an appropriate contribution to harbour porpoise remaining at favourable conservation status.</p>
Disturbance	N/A	No significant disturbance of the species		
Habitats and processes	N/A	Habitats and processes for the species are maintained or restore in the long term – subject to natural change		<p>To maintain the integrity of the SAC environment for the Harbour Porpoise by ensuring that</p> <p>A) the species is not at risk of injury or killing</p> <p>B) the distribution of the</p>
Mean abundance of adults within the SAC	Maintain and enhance the population as appropriate	Sightings rate from land based watches not less than 0.314 harbour		

		<p>porpoise per hour (based at Ramore Head)</p> <p>Comments: (Data generated by ongoing DAERA marine and fisheries division survey. A recent report (Nykanen et al., 2017) examining the land based Harbour porpoise watch data for Northern Ireland suggested an effort watch of 11 watches per month (DAERA - Conservation objectives, 2017)</p>	<p>Underwater noise (eg from acoustic surveys)</p> <p>Death or injury by collision (fast moving commercial vessels or personal leisure craft)</p>	<p>species is maintained by avoiding significant disturbance</p> <p>C) the conditions of supporting habitats for prey is maintained</p>
Presence/absence of young	Maintain and enhance the population as appropriate	<p>N/A</p> <p>Comments: At the time of designation approximately 30.6% of the total numbers counted were young (all ages i.e. young, juveniles and calves)</p>		

Conservation Objectives for:	
1351 Harbour Porpoise ( <i>Phocoena phocoena</i> )	
To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained, and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that: subject to natural change, the following attributes are maintained or restored in the long term	
Attribute	Target
Species is a viable component of the site	Maintained or restored in the long term – subject to natural change
Disturbance	No significant disturbance of the species
Habitats and processes	Habitats and processes relevant to harbour porpoise and its prey are maintained or restore in the long term – subject to natural change



## Appendix II

### 1 Mitigation Measures to prevent harm to Annex II Species assessed in the Supporting Information Provided for Stage 2 Appropriate Assessment

In line with best practice guidelines ‘Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters’ from DAHG (2014) which are now being incorporated into the standard operating procedures of all noise emitting surveys in Irish waters, the measures detailed below will be applied to where possible prevent and if not reduce injury and disturbance to Annex II species during all noise emitting site investigation activities. While these are not specifically aimed at twaite or allis shad, the mitigation proposed includes the soft-start procedure, will also be relevant to twaite and allis shad.

Disturbance to any of the species assessed in Chapter 7 will be of a temporary nature. As previously stated, the protocol ‘Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters’ (DAHG, 2014) will be followed at all times. This protocol is considered sufficient by the competent authority (NPWS) to mitigate for disturbance to marine mammal species. Again while the protocol is not aimed at twaite or allis shad, they are known to be less sensitive to underwater noise (refer Section 4.2.2) than harbour porpoise and as the protocol is sufficient to address disturbance to this most sensitive of marine mammal species it can also be considered sufficient to address disturbance to twaite or allis shad.

In addition, the proposed works will be short in duration and of a temporary nature and survey vessels will be slow moving (c. 5 knots), therefore any risk due to collision is unlikely.

#### 1.1.1 Marine Mammal Monitoring

A qualified and experienced Marine Mammal Observer (MMO) will be appointed to monitor for marine mammals and to log all relevant events using standardised data forms provided by the DAHG. During daylight hours the MMO(s) will carry out visual observations to monitor for the presence of marine mammals before the soft-start commences and will recommend delays in the commencement of the site investigations should any species be detected within the relevant monitored zone as per the NPWS 2014 guidance (see below).

#### Pre-start monitoring

Visual (MMO) will be conducted for a pre-soft-start search of 30 minutes i.e. prior to the commencement of marine operations (MBES, SSS, sub-bottom profiling, geotechnical seabed sampling). This will involve a visual observation (during daylight hours) to determine if any marine mammals are within the relevant zone of the activities as per the NPWS 2014 Guidance.

#### Monitored zone

Should any marine mammal species be detected within a radial distance of the relevant zone of the survey vessel (as per the NPWS 2014 Guidance), commencement of site investigation activities will be delayed until their passage, or the transit of the vessel, results in the cetaceans being of sufficient distance from the vessel to satisfy the NPWS 2014 Guidance. In both cases, there will be a 30-minute delay from the time of the last sighting within the relevant zone of the survey vessel (as per the NPWS 2014 Guidance) to the commencement / recommencement of the operations. The MMO will use a distance measuring stick or reticule binoculars to ascertain distances to marine mammals. *Note: once started site investigations will not cease should marine mammals approach the survey vessel.*

## Soft start

A soft start is the gradual ramping of power over a set period of time, to give any Annex IV species adequate time to leave the area.

Once the soft start commences, there is no requirement to halt or discontinue the procedure at night-time, if weather or visibility conditions deteriorate, or if marine mammal species enter the monitored zone (as per the NPWS 2014 Guidance for monitored zones – activity dependent).

In commencing a seismic survey operation, including any testing of seismic sound sources, where the output peak sound pressure level exceeds 170 dB re: 1 $\mu$ Pa @1m, the following ramp up procedure will be undertaken in line with the DAHG (2014) guidance:

- Energy output will commence from a low energy start-up and be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes (the exact time period will be dependent on survey parameters and equipment and will be designed in consultation with an experienced marine ecologist).
- This controlled build-up of energy output will occur in consistent stages to provide a steady and gradual increase over the ramp-up period.
- If marine mammals enter or are detected within the monitored zone while the ramp-up procedure is under way but incomplete, the energy output will not be increased until the marine mammals are no longer within the monitored zone.

## Line changes

Where the duration of a survey line or station change is greater than 40 minutes, the activity will, on completion of the line/station being surveyed, either cease (i.e., shut down) or preferably undergo a reduction in energy output to a lower state where the peak sound pressure level from any operating source is  $\leq 170$  dB re 1  $\mu$ Pa @ 1 m. Prior to the start of the next line/station, if the power was shut down, all pre-survey monitoring measures and soft start procedures will be followed as for start-up. If there has been a reduction in power, a soft start will be undertaken gradually from the lower output level. The latter sound reduction measure will be applied to line changes at night-time or in daytime conditions of poor visibility. Where the duration of a survey line/station change is less than 40 minutes the activity will continue as normal (i.e. under full output).

## Breaks in survey periods

If there is a break in sound output from survey equipment for a period greater than 10 minutes (e.g., due to equipment failure, shut-down, survey line/station change) then all pre-start monitoring measures and ramp-up procedures will recommence prior to re-starting.

## Reporting

All recordings of marine mammal species will be made using standardised data forms provided by the NPWS. Full reporting on operations and mitigation will be provided to the NPWS to facilitate reporting under Article 17 of the EC Habitats Directive and future improvements to guidance (DAHG, 2014). The report will also include feedback on how successful the measures were. This requirement will be communicated to the MMOs at project start up meetings and at crew change.

### Survey vessel speed and course

The project survey vessels will be moving at a maximum speed of approximately 5 knots during surveys to allow marine mammal species to move away from the vessel should they be disturbed by the vessel presence or noise emissions. During transit times, the survey vessels will be travelling at speeds greater than 5 knots. However, these movements are not considered to deviate from normal vessel traffic in the Foreshore Licence Application Area. Should a marine mammal species be found to be in the direct path of a survey vessel, during or outside of survey times, the survey vessel will slow down or, if possible, alter course to avoid collision.