North Irish Sea Array Windfarm Ltd.

NISA Maritime Usage Licence Application for Site Investigation Works

Natura Impact Statement

7th February 2024

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DISCLAIMER

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List of Abbreviations

AA	Appropriate Assessment
AIMU	Assessment of Impact on the Maritime Usage
CESS	Cumulative Effects Spatial Scope
CETC	Cumulative Effect Temporal Scope
CPT	Cone Penetration Test
DAHG	Department of Arts, Heritage and the Gaeltacht
DEHLG	Department of Environment, Heritage and Local Government
DHLGH	Department of Housing, Local Government and Heritage
EC	European Commission
EPS	European Protected Species
EU	European Union
FCS	Favourable Conservation Status
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
MI	Marine Institute
MAP	Maritime Area Planning
MARA	Maritime Area Regulatory Authority
MUL	Maritime Usage Licence
MU	Management Unit
NIS	Natura Impact Statement
NISA	North Irish Sea Array
NPWS	National Parks and Wildlife Service
NRW	Natural Resources Wales
OWF	Offshore Wind Farm
QI	Qualifying Interests
SAC	Special Areas of Conservation
SCI	Special Conservation Interest
SISAA	Supporting Information for Screening for Appropriate Assessment
SPA	Special Protection Areas
cSPA	Candidate Special Protection Area

Glossary of Terms

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.
Array Investigation Area	Area where site investigations will take place to determine the suitability of that area as an offshore wind farm
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.
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."
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	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.
Maritime Usage Licence Area	Within this report: The areas within the outer limit of the State's continental shelf and high water mark for which a Maritime Usage Licence Application is submitted to MARA for a licence under the Maritime Area Planning Act 2021.
Metocean	Metocean 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.
Natura Impact Statement	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).

Receiving Environment	The receiving environment is the environment upon which a proposed activity might have effects.
Special Areas of Conservation (SAC)	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.

1 INTRODUCTION

North Irish Sea Array Windfarm Limited (NISA Ltd), (a joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S.) has prepared this report in support of an application for a Maritime Usage Licence under the Maritime Area Planning (MAP) Act 2021, to carry out site investigation activities to inform the development of the NISA offshore windfarm (OWF) and export cable, off the coasts of counties Dublin, Meath and Louth.

The Licence Application Area (outlined in red) comprises the proposed OWF site boundary (pink/red area below) with an area of 88.53 km^2 and the proposed cable corridor (crosshatched below) with an area of 36.45 km^2 (Figure 1-1).

NISA Ltd intends to undertake survey campaigns within the proposed Licence Area to inform the location and design of the proposed offshore wind farm and export cable. The site investigation activities will include marine geophysical, hydrographic, geotechnical, benthic subtidal and intertidal ecology surveys, environmental, metocean and archaeological surveys, water quality monitoring.

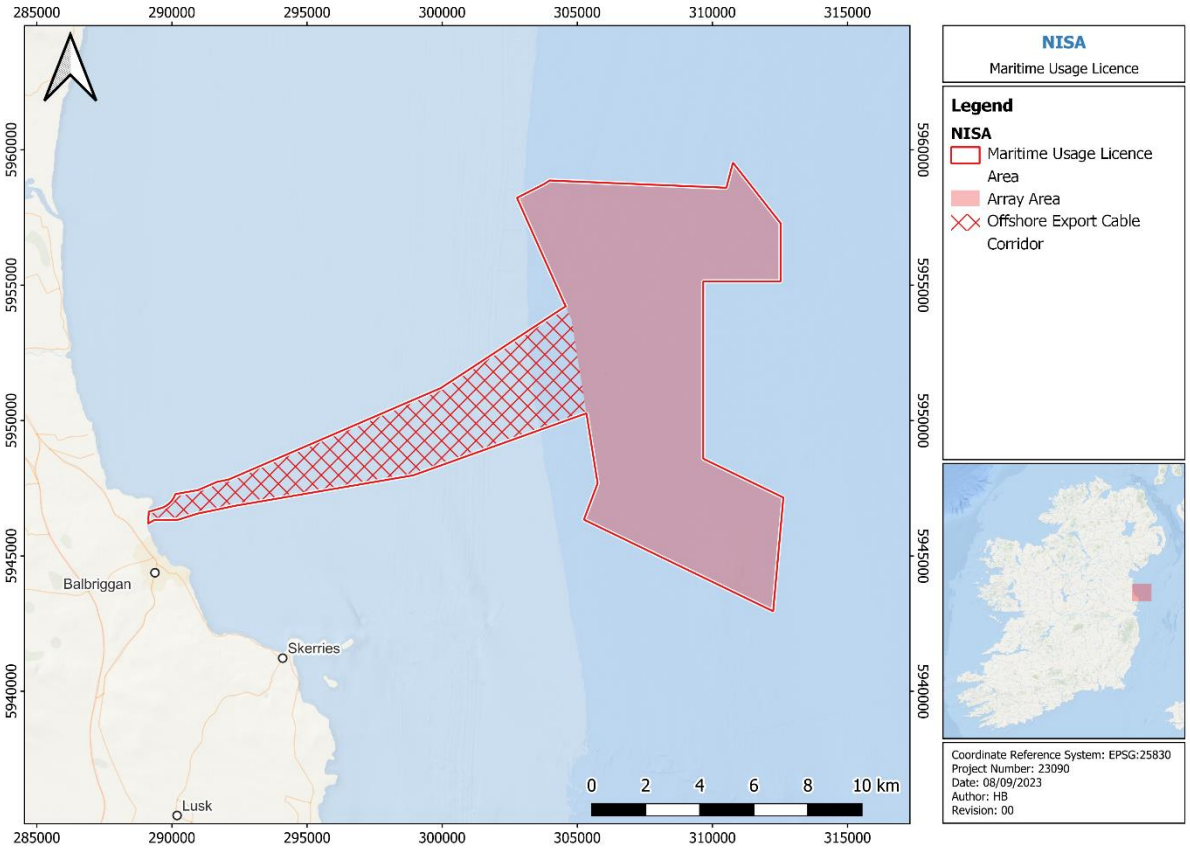

Figure 1-1 Proposed NISA Licence Application Area

1.1 AIM OF THIS REPORT

This report is part of the Maritime Usage Licence (MUL) Application to the Maritime Area Regulatory Authority (MARA) and constitutes the Natura Impact Statement (NIS) which forms part of the Appropriate Assessment (AA) 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 significant effect of this project on the receiving environment including on Special Protection Areas (SPAs) and Special Areas of Conservation (SACs).

1.2 STRUCTURE OF THE REPORT

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

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

1.3 LICENCE AREA

This MUL Application seeks consent to conduct site investigation activities to inform development of an offshore wind farm and a cable corridor off the coast of counties Dublin, Meath and Louth.

The Licence Area covers a total area of 124.99 km^2 and is comprised of the offshore wind farm area and cable corridor (Figure 1-2). The coordinates of the Licence Area are provided in Table 1-1.

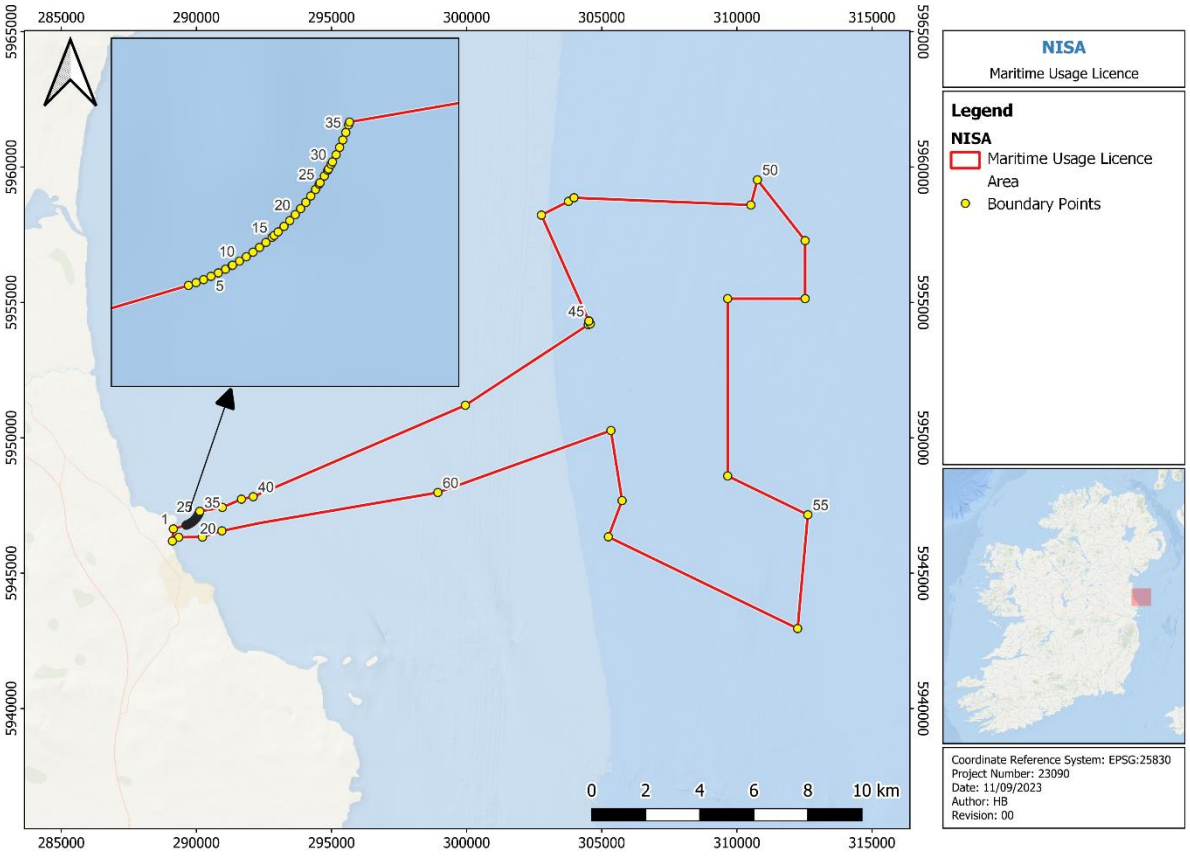

Figure 1-2 Licence Area

Table 1-1 Coordinates

Id	Latitude (degrees decimal minutes)	Longitude (degrees decimal minutes)	Id	Latitude (degrees decimal minutes)	Longitude (degrees decimal minutes)
1	53°37.557'N	6°11.319'W	33	53°37.887'N	6°10.485'W
2	53°37.643'N	6°10.897'W	34	53°37.900'N	6°10.477'W
3	53°37.648'N	6°10.875'W	35	53°37.913'N	6°10.469'W
4	53°37.654'N	6°10.854'W	36	53°37.926'N	6°10.462'W
5	53°37.660'N	6°10.834'W	37	53°37.931'N	6°10.460'W
6	53°37.666'N	6°10.813'W	38	53°38.028'N	6°9.710'W
7	53°37.673'N	6°10.794'W	39	53°38.209'N	6°9.082'W
8	53°37.680'N	6°10.775'W	40	53°38.268'N	6°8.691'W
9	53°37.680'N	6°10.774'W	41	53°40.271'N	6°1.705'W
10	53°37.688'N	6°10.755'W	42	53°41.977'N	5°57.694'W
11	53°37.696'N	6°10.736'W	43	53°41.997'N	5°57.627'W
12	53°37.704'N	6°10.718'W	44	53°42.052'N	5°57.673'W
13	53°37.713'N	6°10.700'W	45	53°42.050'N	5°57.677'W
14	53°37.721'N	6°10.682'W	46	53°44.118'N	5°59.422'W
15	53°37.731'N	6°10.665'W	47	53°44.415'N	5°58.531'W
16	53°37.734'N	6°10.660'W	48	53°44.491'N	5°58.350'W

17	53°37.740'N	6°10.649'W	49	53°44.492'N	5°52.393'W
18	53°37.750'N	6°10.633'W	50	53°44.997'N	5°52.208'W
19	53°37.760'N	6°10.617'W	51	53°43.827'N	5°50.522'W
20	53°37.770'N	6°10.602'W	52	53°42.672'N	5°50.444'W
21	53°37.781'N	6°10.588'W	53	53°42.610'N	5°53.047'W
22	53°37.792'N	6°10.574'W	54	53°39.082'N	5°52.806'W
23	53°37.803'N	6°10.561'W	55	53°38.373'N	5°50.063'W
24	53°37.814'N	6°10.548'W	56	53°36.103'N	5°50.254'W
25	53°37.824'N	6°10.538'W	57	53°37.774'N	5°56.723'W
26	53°37.826'N	6°10.536'W	58	53°38.506'N	5°56.314'W
27	53°37.838'N	6°10.524'W	59	53°39.890'N	5°56.786'W
28	53°37.848'N	6°10.516'W	60	53°38.512'N	6°2.505'W
29	53°37.850'N	6°10.513'W	61	53°37.561'N	6°9.689'W
30	53°37.858'N	6°10.507'W	62	53°37.421'N	6°10.333'W
31	53°37.862'N	6°10.503'W	63	53°37.396'N	6°11.128'W
32	53°37.875'N	6°10.494'W	64	53°37.315'N	6°11.333'W

1.4 SITE INVESTIGATION ACTIVITIES

The objective of the proposed NISA site investigation campaigns is to determine the environmental conditions and seafloor and subsurface geological characteristics within the Licence Area.

The proposed programme of site investigations to be undertaken within the Licence Area is described in section 2.2 and 2.3 of the Assessment of Impacts on the Maritime Usage (AIMU) report accompanying this Application. Table 2-2 of the AIMU describes the proposed investigations to be undertaken, and Table 2-3 gives typical durations for each survey type. The exact technical specifications of the equipment to be used will not be known until the survey contracts have been awarded. However, a description of typical equipment and surveys is provided in the Programme of Works, Appendix A to the AIMU.

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).

1.5 SURVEY SCHEDULE

The intention is to begin survey activities as soon as feasible in Q1 2024 following licence award, with a phased programme of multiple survey campaigns to be undertaken over the duration of the licence. This phased approach will progress the overall development towards detailed design stage.

The exact mobilisation dates will not be known until the process of procuring a contractor is complete, but the approximate duration of each Site Investigation activity is provided in Table 2-3 in Section 2.2 of the AIMU document accompanying this application.

Timing of the site investigation activities is dependent on many factors including weather, tidal flows, availability of vessels and the grant of a licence. The granting of a licence will have a direct effect on the timing of site investigation activities.

2 HABITATS DIRECTIVE (92/43/EEC)

The purpose of this report is to inform the AA process as required under the Habitats Directive (92/43/EEC). The AA Screening contained in the accompanying Supporting Information for Screening for Appropriate Assessment (SISAA) document has assessed whether the proposed surveys, both alone and cumulatively/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 sites or their Qualifying Interests. This document sets out the Stage 2 NIS of the AA 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)
8. Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC (European Commission (2021)).
9.

2.1 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, and transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended) (the Habitat Regulations), 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 (2009/147/EC) 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."*

2.2 THE APPROPRIATE ASSESSMENT PROCESS

The European Commission's methodological guidance (EC, 2021) promotes a three-stage process to complete the AA and outlines the issues and tests at each stage. The three stages are summarised in the SISAA document which accompanies this MUL application.

2.3 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) of the AA process, as detailed in section 2.2 above, and has been prepared in accordance with the guidance numbered 1 to 8 in the first paragraphs of this section.

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 cumulatively 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 AA 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. Earth Science, MSc. Coastal and Marine Environments: Physical Processes, Policy and Practice). [redacted] is an Environmental Scientist with experience in marine licence application preparation, Environmental Impact Assessment Scoping report preparation and has experience with environmental mapping.

This report has been checked and reviewed by [redacted] (BSc. Hons Geological Science, MSc. Geochemistry) and [redacted] (BSc. Hons Marine Science, MSc. Engineering in the Coastal Environment). [redacted] is a Senior Environmental Scientist with extensive experience as an environmental consultant, undertaking various multi-disciplinary projects within consulting engineering. [redacted] is a Marine Ecologist with coastal engineering expertise and extensive experience of offshore benthic survey and Marine Protected Area monitoring who has undertaken multiple environmental assessments under the Habitats Directive for GDG and as a statutory adviser to the UK government and its devolved administrations with the Joint Nature Conservation Committee.

3 SUPPORTING INFORMATION FOR A STAGE 2 APPROPRIATE ASSESSMENT (NATURA IMPACT STATEMENT)

3.1 OUTCOME OF SCREENING FOR APPROPRIATE ASSESSMENT

A robust screening process informs those Natura 2000 sites and their qualifying interests that have been screened in for further assessment under Stage 2 AA. This is described in full in the SISAA document. Table 3-1 and Table 3-2 list those Natura 2000 sites and their Qualifying Interests screened in, together with the Impacts identified as relevant for each site and QI that may result in "Likely Significant Effects" to conservation objectives in the absence of mitigation measures.

Table 3-1 Summary of SACs and designated QIs screened in for Stage 2 Appropriate Assessment

Site name	Qualifying Interest	Distance to MUL (km)	Impact
Rockabill to Dalkey Island SAC (003000)	**Harbour Porpoise *(Phocoena phocoena*)**	2.64	Disturbance due to underwater noise associated with surveys
Lambay Island SAC (000204)	**Grey Seal (*Halichoerus grypus*)** **Harbour Seal (*Phoca vitulina*)**	14.82	Disturbance due to underwater noise associated with surveys
Slaney River Valley SAC (000781)	**Harbour Seal (*Phoca vitulina*)**	145.59	Disturbance due to underwater noise associated with surveys
Saltee Islands SAC (000707)	**Grey Seal (*Halichoerus grypus*)**	174.14	Disturbance due to underwater noise associated with surveys
Horn Head and Rinclevan SAC (000147)	**Grey Seal (*Halichoerus grypus*)**	304.53	Disturbance due to underwater noise associated with surveys
Slieve Tooey/ Tormore Island/Loughros Beg Bay SAC (000190)	**Grey Seal (*Halichoerus grypus*)**	375.12	Disturbance due to underwater noise associated with surveys
Roaringwater Bay And Islands SAC (000101)	**Grey Seal (*Halichoerus grypus*)** **Harbour Porpoise *(Phocoena phocoena*)**	387.83	Disturbance due to underwater noise associated with surveys
Blasket Islands SAC (002172)	**Harbour Porpoise *(Phocoena phocoena*)**	503.93	Disturbance due to underwater noise associated with surveys
UK SACs			
North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398)	**Harbour Porpoise *(Phocoena phocoena*)**	35.35	Disturbance due to underwater noise associated with surveys
Murlough (UK0016612)	**Harbour Seal (*Phoca vitulina*)**	41.52	Disturbance due to underwater noise associated with surveys
Strangford Lough SAC (UK0016618)	**Harbour Seal (*Phoca vitulina*)**	67.71	Disturbance due to underwater noise associated with surveys

Site name	Qualifying Interest	Distance to MUL (km)	Impact
North Channel SAC (UK0030399)	**Harbour Porpoise *(Phocoena phocoena*)**	74.26	Disturbance due to underwater noise associated with surveys
West Wales Marine SAC (UK0030397)	**Harbour Porpoise *(Phocoena phocoena*)**	103.40	Disturbance due to underwater noise associated with surveys
Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC (UK 0013117)	**Grey Seal (*Halichoerus grypus*) Bottlenose dolphin (*Tursiops truncates)***	106.82	Disturbance due to underwater noise associated with surveys
The Maidens SAC (UK 0030384)	**Grey Seal (*Halichoerus grypus*)**	135.57	Disturbance due to underwater noise associated with surveys
Cardigan Bay/ Bae Ceredigion SAC (UK0012712)	**Grey Seal (*Halichoerus grypus*) Bottlenose dolphin (*Tursiops truncates)***	161.94	Disturbance due to underwater noise associated with surveys
Pembrokeshire Marine SAC (UK0013116)	**Grey Seal (*Halichoerus grypus*)**	186.02	Disturbance due to underwater noise associated with surveys
South-East Islay Skerries (UK0030067)	**Harbour Seal (*Phoca vitulina*)**	221.22	Disturbance due to underwater noise associated with surveys
Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK 0030396)	**Harbour Porpoise (*Phocoena phocoena*)**	246.78	Disturbance due to underwater noise associated with surveys
Lundy SAC (UK0013114)	**Grey Seal (*Halichoerus grypus)***	281.33	Disturbance due to underwater noise associated with surveys
Treshnish Isles (UK0030289)	**Grey Seal (*Halichoerus grypus)***	322.25	Disturbance due to underwater noise associated with surveys
Isles of Scilly Complex SAC (UK0013694)	**Grey Seal (*Halichoerus grypus)***	401.56	Disturbance due to underwater noise associated with surveys
French SACs			
Mers Celtiques - Talus du golfe de Gascogne FR5212016	**Harbour Porpoise (*Phocoena phocoena*)**	499.93	Disturbance due to underwater noise associated with surveys
Abers - Côte des legends FR5300017	**Harbour Porpoise (*Phocoena phocoena*)**	569.02	Disturbance due to underwater noise associated with surveys
Ouessant-Molène FR5310072	**Harbour Porpoise (*Phocoena phocoena*)**	570.17	Disturbance due to underwater noise associated with surveys
Nord Bretagne DH FR2502022	**Harbour Porpoise (*Phocoena phocoena*)**	528.65	Disturbance due to underwater noise associated with surveys
Cote de Granit Rose-Sept Iles FR5310011	**Harbour Porpoise (*Phocoena phocoena*)**	577.04	Disturbance due to underwater noise associated with surveys

Site name	Qualifying Interest	Distance to MUL (km)	Impact
Tregor Goëlo FR5310070	**Harbour Porpoise (*Phocoena phocoena*)**	599.97	Disturbance due to underwater noise associated with surveys
Côtes de Crozon FR5302006	**Harbour Porpoise (*Phocoena phocoena*)**	607.97	Disturbance due to underwater noise associated with surveys
Chaussée de Sein FR5302007	**Harbour Porpoise (*Phocoena phocoena*)**	618.96	Disturbance due to underwater noise associated with surveys
Récifs du talus du golfe de Gascogne FR5302016	**Harbour Porpoise (*Phocoena phocoena*)**	634.98	Disturbance due to underwater noise associated with surveys
Récifs et landes de la Hague FR2500084	**Harbour Porpoise (*Phocoena phocoena*)**	665.42	Disturbance due to underwater noise associated with surveys
Anse de Vauville FR2502019	**Harbour Porpoise (*Phocoena phocoena*)**	666.65	Disturbance due to underwater noise associated with surveys
Cap d'Erquy-Cap Fréhel FR5300011	**Harbour Porpoise (*Phocoena phocoena*)**	668.00	Disturbance due to underwater noise associated with surveys
Baie de Saint-Brieuc – Est FR5300066	**Harbour Porpoise (*Phocoena phocoena*)**	669.00	Disturbance due to underwater noise associated with surveys
Banc et récifs de Surtainville FR2502018	**Harbour Porpoise (*Phocoena phocoena*)**	670.83	Disturbance due to underwater noise associated with surveys
Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard FR5300012	**Harbour Porpoise (*Phocoena phocoena*)**	693.97	Disturbance due to underwater noise associated with surveys
Chausey FR2510037	**Harbour Porpoise (*Phocoena phocoena*)**	692.53	Disturbance due to underwater noise associated with surveys
Estuaire de la Rance FR5300061	**Harbour Porpoise (*Phocoena phocoena*)**	708.36	Disturbance due to underwater noise associated with surveys
Baie du Mont Saint Michel FR2510048	**Harbour Porpoise (*Phocoena phocoena*)**	718.06	Disturbance due to underwater noise associated with surveys

Table 3-2 Summary of SPAs and designated SCIs[1] screened in for Stage 2 Appropriate Assessment

Site Name	Species	Distance to MUL (km^2)	Impact
North-west Irish Sea cSPA (004236)	**Common Scoter (*Melanitta nigra*)** **Red-throated Diver (*Gavia stellata*)** **Great Northern Diver (*Gavia immer*)** **Fulmar (Fulmarus glacialis)** **Manx Shearwater (*Puffinus puffinus*)** **Shag (*Phalacrocorax aristotelis*)** **Cormorant (*Phalacrocorax carbo*)** **Little Gull (*Larus minutus*)** **Kittiwake (*Rissa tridactyla*)** **Black-headed Gull (Chroicocephalus ridibundus)** **Common Gull (*Larus canus*)** **Lesser Black-backed Gull (*Larus fuscus*)** **Herring Gull (*Larus argentatus*)** **Great Black-backed Gull (*Larus marinus*)** **Little Tern (*Sterna albifrons*)** **Roseate Tern (*Sterna dougallii*)** **Common Tern (*Sterna hirundo*)** **Arctic Tern (*Sterna paradisaea*)** **Puffin (*Fratercula arctica*)** **Razorbill (*Alca torda*)** **Guillemot (*Uria aalge*)**	Direct Overlap	Physical disturbance marine benthic communities and habitat loss associated with site investigation activities (Indirect) on foraging grounds supporting habitats for foraging birds and roosting grounds supporting habitats for roosting birds.

[1] Note North-West Irish Sea cSPA, which was publicly advertised in July 2023, is not a designated SPA but is included as sites are legally protected once they are publicly advertised (NPWS, 2012).

3.2 CONSERVATION OBJECTIVES FOR QUALIFYING INTERESTS

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

4 IMPACT ASSESSMENT

Disturbance from airborne and underwater noise associated with the proposed survey activities has been identified as a likely significant effect mobile species QIs of SACs within the zone of influence of the proposed activities.

Species QI specific impacts, conservation objectives and mitigation measures for the species QIs of screened-in SACs which could be impacted by airborne or underwater noise are summarised in Sections 4.1 to 4.5 below.

Physical disturbance to marine benthic communities and habitat loss from seabed contacting site investigation activities has been identified as causing an indirect likely significant effect on the QIs of the North-West Irish Sea cSPA, by impacting the foraging and roosting grounds used by the proposed seabird QIs of the cSPA.

The proposed North-West Irish Sea cSPA QI species share the same Conservation Objective (i.e. depending on current status, either to maintain or restore favourable conservation status) and attributes. The indirect effects identified as possible impacts on the North-West Irish Sea cSPA QIs all relate to the "Forage spatial distribution, extent, abundance and availability" and "Disturbance across the site" attributes of these QIs and are further assessed at the cSPA level in Section 4.5 below.

4.1 GREY SEAL (*HALICHOERUS GRYPUS*) [1364]

The conservation objective for grey seal (*Halichoerus grypus*) at the SACs listed below is to maintain the grey seal QI of these SACs in favourable condition:

- Lambay Island SAC (000204)
- Saltee Islands SAC (000707)
- Horn Head and Rinclevan SAC (000147)
- Slieve Tooey/ Tormore Island/Loughros Beg Bay SAC (000190)
- Roaringwater Bay And Islands SAC (000101)
- Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC (UK 0013117)
- The Maidens SAC (UK 0030384)
- Cardigan Bay/ Bae Ceredigion SAC (UK0012712)
- Pembrokeshire Marine SAC (UK0013116)
- Lundy SAC (UK0013114)
- Treshnish Isles (UK0030289)
- Isles of Scilly Complex SAC (UK0013694)

The measures identified to achieve the conservation objective are:

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

The conservation objectives for the grey seal population at Llyen Peninsula SAC, Pembrokeshire Marine SAC, the Maidens SAC, Isles of Scilly Complex SAC and Lundy SAC in the UK are defined in different ways to the above SACs. The term "indicative condition assessment" is used for Pembrokeshire Marine and the parameters defined are population and range. Both parameters were assessed as favourable in 2017 and 2005/2006. For Cardigan Bay, the conservation objective for grey seal is that the population maintains itself on a long-term basis as a viable component of its natural habitat. Important elements supporting this include population size, structure, production, and condition of the species within the site. Similar terms are used to describe the conservation objectives for The Maidens SAC, Lundy SAC, Isles of Scilly Complex SAC and Leyn Peninsula SAC. Further details of the conservation objectives are available in Appendix A.

The proposed survey will not affect any of these measures or the conservation objective for the grey seal at these SACs. However, the species may be affected by disturbance from underwater noise associated with the proposed works. 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 Sub Bottom Profiling (SBP). These activities have the potential to be within the hearing threshold of grey seals.

Mitigation: The proposed activities will be short in duration and of a temporary nature. 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 grey seals during all noise emitting site investigation activities.

Mitigation will include visual observation during daylight hours and acoustic monitoring during hours of darkness and/or poor visibility, and the use of 'soft-start' procedures. These measures, which are summarised in Appendix B, will ensure that any adverse effect due to disturbance caused by underwater noise will be 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.

In addition, should NISA Ltd. identify that a temporal overlap is likely between this project and those identified in Section 4.6 as having the potential to cause cumulative effects to grey seals, NISA Ltd will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on grey seals are mitigated for.

Therefore, the conservation objectives for the grey seal population at the below sites will not be adversely affected and the integrity of these sites will be maintained.

- Lambay Island SAC (000204)
- Saltee Islands SAC (000707)
- Horn Head and Rinclevan SAC (000147)
- Slieve Tooey/ Tormore Island/Loughros Beg Bay SAC (000190)
- Roaringwater Bay And Islands SAC (000101)
- Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC (UK 0013117)
- The Maidens SAC (UK 0030384)
- Cardigan Bay/ Bae Ceredigion SAC (UK0012712)
- Pembrokeshire Marine SAC (UK0013116)
- Lundy SAC (UK0013114)
- Treshnish Isles (UK0030289)
- Isles of Scilly Complex SAC (UK0013694)

4.2 COMMON SEAL (*PHOCA VITULINA*) [1365]

The conservation objective for the common/harbour seal (*Phoca vitulina*) at Lambay Island SAC (000204), Slaney River Valley SAC (000781), Murlough (UK0016612), and Strangford Lough SAC (UK0016618) is to maintain the favourable conservation condition of this QI of these SACs. The measures identified to achieve the conservation objective are:

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

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

The proposed survey will not affect any of these measures or the conservation objective for the common seal at these SACs. 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 and SBP. These activities have the potential to be within the hearing threshold of common seal.

Mitigation: The proposed activities will be short in duration and of a temporary nature. 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 common seals during all noise emitting site investigation activities.

Mitigation will include visual observation during daylight hours and acoustic monitoring during hours of darkness and/or poor visibility, and the use of 'soft-start' procedures. These measures, which are summarised in Appendix B, will ensure that any adverse effect due to disturbance caused by

underwater noise will be 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.

In addition, should NISA Ltd. identify that a temporal overlap is likely between this project and those identified in Section 4.6 as having the potential to cause cumulative effects to common seals, NISA Ltd. will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on common seals are mitigated for.

Therefore, the conservation objectives for the common seal population at Lambay Island SAC (000204), Slaney River Valley SAC (000781), Murlough (UK0016612) and Strangford Lough SAC (UK0016618) will not be adversely affected and the integrity of these sites will be maintained.

4.3 BOTTLENOSE DOLPHIN (*TURSIOPS TRUNCATUS*) [1349]

The conservation objectives for the bottlenose dolphin (*Tursiops truncatus*) [1349] at SACs listed below is to maintain the common bottlenose dolphin QI of these SACs in favourable conditions (Appendix A):

- Pen Llyn a`r Sarnau/ Lleyn Peninsula and the Sarnau SAC (UK 0013117)
- Cardigan Bay/ Bae Ceredigion SAC (UK0012712)

The measures identified to achieve the conservation objectives are:

- Ensure the population can maintain itself on a long-term basis as a viable component of the habitat.
- Ensure the natural range of the population is not reduced or likely to be reduced in the near future.
- Ensure the presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and population dynamics of the species within the site and population beyond the site is stable or increasing.

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

The proposed site investigation activities will not affect on any of the conservation objectives for the bottlenose dolphin, as listed in Appendix A 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 effect on this species from the proposed site investigation activities would be from SBP. This survey method has the potential to be within the hearing threshold of bottlenose dolphins depending on equipment used and survey parameters.

Mitigation: The proposed activities will be short in duration and of a temporary nature. 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 bottlenose dolphins during all noise emitting site investigation activities.

Mitigation will include visual observation during daylight hours and acoustic monitoring during hours of darkness and/or poor visibility, and the use of 'soft-start' procedures. These measures, which are summarised in Appendix B, will ensure that any adverse effect due to disturbance caused by underwater noise will be 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.

Should NISA Ltd. identify that a temporal overlap is likely between this project and those identified in Section 4.6 as having the potential to cause cumulative effects to bottlenose dolphins, NISA Ltd. will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on bottlenose dolphins are mitigated for.

Therefore, the conservation objectives for the bottlenose dolphin population at at the SACs listed above will not be adversely affected and the integrity of these sites will be maintained.

4.4 HARBOUR PORPOISE (*PHOCOENA PHOCOENA*) [1351]

The conservation objective for harbour porpoise (*Phocoena phocoena*) in the following sites is to maintain the harbour porpoise QI of these SACs in favourable condition:

- Rockabill to Dalkey Island SAC (003000)
- Roaringwater Bay And Islands SAC (000101)
- Blasket Islands SAC (002172
- North Anglesey Marine / Gogledd Môn Forol SAC (UK0030398)
- North Channel SAC (UK0030399)
- West Wales Marine SAC (UK0030397)
- Bristol Channel Approaches / Dynesfeydd Môr Hafren SAC (UK 0030396)
- Mers Celtiques - Talus du golfe de Gascogne FR5212016
- Abers - Côte des legends FR5300017
- Ouessant-Molène FR5310072
- Nord Bretagne DH FR2502022
- Cote de Granit Rose-Sept Iles FR5310011
- Tregor Goëlo FR5310070
- Côtes de Crozon FR5302006
- Chaussée de Sein FR5302007
- Récifs du talus du golfe de Gascogne FR5302016
- Récifs et landes de la Hague FR2500084
- Anse de Vauville FR2502019
- Cap d'Erquy-Cap Fréhel FR5300011
- Baie de Saint-Brieuc – Est FR5300066

- Banc et récifs de Surtainville FR2502018
- Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard FR5300012
- Chausey FR2510037
- Estuaire de la Rance FR5300061
- Baie du Mont Saint Michel FR2510048

The measures identified to achieve the conservation objectives are:

- 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
- Ensure the species is a viable component of the site
- Ensure there is no significant disturbance of the species
- Ensure the condition of supporting habitats and processes, and availability of prey is maintained

More detailed information about the species conservation objectives is provided in Appendix A.

The proposed site investigation activities will not effect any of the conservation objectives for the harbour porpoise, as listed above and in Appendix A. 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 sub bottom profiling depending on the equipment and frequencies used. These activities have the potential to be within the hearing threshold of harbour porpoise.

Mitigation: The proposed activities will be short in duration and of a temporary nature. 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 harbour porpoise during all noise emitting site investigation activities.

Mitigation will include visual observation during daylight hours and acoustic monitoring during hours of darkness and/or poor visibility, and the use of 'soft-start' procedures. These measures, which are summarised in Appendix B, will ensure that any adverse effect due to disturbance caused by underwater noise will be 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.

Should NISA Ltd. identify that a temporal overlap is likely between this project and those identified in Section 4.6 as having the potential to cause cumulative effects to harbour porpoise, NISA Ltd. will engage with those projects to ensure that survey activities are sufficiently distanced to ensure that adverse effects on harbour porpoise are mitigated for.

Therefore, the conservation objectives for harbour porpoise at SACs listed above will not be adversely affected and integrity of the sites will be maintained.

4.5 NORTH-WEST IRISH SEA cSPA (004236)

The North-West Irish Sea candidate SPA (cSPA) covers an area of approximately 2,333 km^2 (NPWS, 2023). The proposed Qualifying Interests (QIs) include the following species:

- Common Scoter (*Melanitta nigra*)
- Red-throated Diver (*Gavia stellata*)
- Great Northern Diver (*Gavia immer*)
- Fulmar (*Fulmarus glacialis*)
- Manx Shearwater (*Puffinus puffinus*)
- Shag (*Phalacrocorax aristotelis*)
- Cormorant (*Phalacrocorax carbo*)
- Little Gull (*Larus minutus*)
- Kittiwake (*Rissa tridactyla*)
- Black-headed Gull (*Chroicocephalus ridibundus*)
- Common Gull (*Larus canus*)
- Lesser Black-backed Gull (*Larus fuscus*)
- Herring Gull (*Larus argentatus*)
- Great Black-backed Gull (*Larus marinus*)
- Little Tern (*Sterna albifrons*)
- Roseate Tern (*Sterna dougallii*)
- Common Tern (*Sterna hirundo*)
- Arctic Tern (*Sterna paradisaea*)
- Puffin (*Fratercula arctica*)
- Razorbill (*Alca torda*)
- Guillemot (*Uria aalge*)

The proposed site investigation activities include seabed sampling at 0.028% of the seabed within the proposed Maritime Usage Licence area and trial pit sampling of 90 m^2 of intertidal area (see Table 2-3 of the AIMU document accompanying this application). The area of seabed effected equates to 0.00015% of the seabed area of North-west Irish Sea cSPA while the intertidal area of the North-west Irish Sea cSPA spans 80 km from Dunany Point in Co. Louth to Dublin Bay in Co. Dublin. Given the small area affected by the proposed sampling and the overall area of foraging and roosting ground available within the cSPA, there will be no adverse indirect impacts to the "Forage spatial distribution, extent, abundance and availability" or "Disturbance across the site" Conservation Objective attributes of the proposed QIs of the North-west Irish Sea cSPA, and the integrity of the site will be maintained.

The proposed activities will be short in duration and of a temporary nature, however to ensure individual roosting species are not disturbed by the proposed intertidal site investigation activities the following mitigation is proposed.

Mitigation: Intertidal trial pit investigations will be observed and supervised by a qualified and competent ecologist. This measure will ensure that any adverse effect due to disturbance caused by the activities will be mitigated for.

4.6 IN-COMBINATION EFFECTS

4.6.1 ASSESSMENT OF IN-COMBINATION EFFECTS WITH OTHER PLANS AND PROJECTS

In-combination screening for cumulative effects has been undertaken following the approach outlined in the European Commission Notice Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive (EC, 2021).

Plans from other projects were examined as part of the SISAA report which accompanies this application (see 'NISA Maritime Usage Licence Application for Site Investigation Works Supporting Information for Screening for Appropriate Assessment' Section 5.6 – Screening for Cumulative Effects). Projects and proposed projects close or adjacent to the proposed Licence area, where potential for activities to overlap spatially and/or temporally and which may cause effects on Natura 2000 QIs, and likely cumulative effects were identified.

Geotechnical and geophysical survey activities outlined in this Maritime Usage Licence Application for site investigation works could cause potential cumulative effects with activities undertaken by the following projects: Lir (FS007392), Setanta (FS006973), Cooley Point (FS006852), Clogher Head (FSS006787), Statkraft North Irish Sea Array (NISA) Cable Route (FS007358), Statkraft North Irish Sea Array (NISA) Site Investigations Array Area (FS007031), Microsoft Ireland Operations Ltd (LIC230018) and Mares Connect Electricity Interconnector (FS007635).. Therefore, likely cumulative effects were identified for the proposed MUL Area and the proposed investigation activities.

It should be noted, that with the recent Government policy change to a plan-led approach for the development of offshore wind projects post Phase One, it is currently uncertain which of the offshore wind site investigation licences noted below will be progressed, if any.

4.6.2 MANAGING CUMULATIVE EFFECTS

Implementation of the mitigations outlined in Section 4, and close liaison with those proposed projects which have been identified as potentially contributing to cumulative effects on designated qualifying interests of SACs and SPAs in the Zone of Influence of the projects, will be implemented to manage cumulative effects and ensure the integrity of relevant Natura 2000 sites is maintained.

5 APPROPRIATE ASSESSMENT CONCLUSION

The SISAA document accompanying this Maritime Usage Licence Application identified the likely significant effects on the SACs, SPA and QIs resulting from the proposed site investigation activities.

41 Natura 2000 sites were screened in for a Stage 2 AA (NIS) and potential cumulative effects were considered from Lir (FS007392), Setanta (FS006973), Cooley Point (FS006852), Clogher Head (FSS006787), Statkraft North Irish Sea Array (NISA) Cable Route (FS007358), Statkraft North Irish Sea Array (NISA) Site Investigations Array Area (FS007031), Microsoft Ireland Operations Ltd (LIC230018) and Mares Connect Electricity Interconnector (FS007635).

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 and management of potential cumulative effects from identified relevant projects, as set out in Section 4, 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/cumulatively) 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 cumulatively with other plans or projects.

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Appendix A

Specific Conservation Objectives for Qualifying Interests

A.1 Rockabill to Dalkey SAC (IE003000)

Conservation Objectives for: Rockabill to Dalkey Island SAC			
Harbour Porpoise (*Phcoen phocena*) [1351]			
To maintain the favourable conservation condition of the harbour porpoise in Rockabill to Dalkey Island 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
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.

A.2 Lambay Island SAC (IE000204)

Conservation Objectives for: Lambay Island SAC (IE000204)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favourable conservation condition of grey seal at Lambay Island 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, review of data from Summers (1983), Kiely et al. (2000), Lidgard et al. (2001), Lyons (2004), a comprehensive breeding survey in 2005 (Ó Cadhla et al., 2008) and unpublished NPWS records.
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 research by Kiely et al. 2000), a national moult survey (Ó Cadhla and Strong, 2007) and unpublished NPWS records.

Conservation Objectives for: Lambay Island SAC (IE000204)			
Resting behaviour	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review data from Kielay et al. (2000), Lyons (2004), Cronin et al. (2004) 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	
Conservation Objectives for: Lambay Island SAC (IE000204)			
Harbour Seal (*Phoca vitulina*) [1365]			
To maintain the favourable conservation condition of Harbour Seal in Lambay Island SAC, which is defined by the following list of attributes and targets:			
Access	**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 the marine supporting document for further details
Breeding behaviour	Breeding site	The breeding sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish breeding populations and a review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Moulting behaviour	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of data from Cronin et al. (2004), data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Resting behaviour	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	See marine supporting document for further details

A.3 North Anglesey Marine SAC (UK0030398)

Conservation Objectives for: North Anglesey Marine SAC (UK0030398)	
Harbour porpoise [1351]	
To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise. Thus, to 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.	
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 harbour porpoise and its prey are maintained or restore in the long term – subject to natural change

A.4 West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)

Conservation Objectives for: West Wales Marine / Gorllewin Cymru Forol SAC (UK0030397)	
Harbour porpoise [1351]	
To 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.	
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 harbour porpoise and its prey are maintained or restore in the long term – subject to natural change

A.5 Llyen Peninsula and the Sarnau SAC (UK0013117)

Conservation Objectives for: Lylen Peninsula and the Sarnau SAC (UK0013117)		
Bottlenose Dolphin (*Tursiops truncatus*) [1349] **Grey Seal (*Halichoerus grypus*) [1364]**		
Annex II species present as a qualifying feature, but not a primary reason for site selection Ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Bottlenose Dolphin in UK waters. 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	**Objective**	Notes

Conservation Objectives for: Lylen Peninsula and the Sarnau SAC (UK0013117)		
Bottlenose Dolphin (*Tursiops truncatus*) [1349] Grey Seal (*Halichoerus grypus*) [1364]		
Population	The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.	Contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression
Range	The bottlenose dolphin and grey seal 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.	Their range within the SAC and adjacent inter-connected areas is not constrained or hindered. There are appropriate and sufficient food sources 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.
Habitat	The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and population dynamics of the species within the sit and population beyond the site is stable or increasing.	The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term. The management and control of activities or operations likely to adversely affect the species feature, is appropriate for maintaining it in favourable condition and is secure in the long term.

A.6 SLANEY RIVER VALLEY SAC (IE000781)

Conservation Objectives for: Slaney River Valley SAC (IE000781)			
Harbour Seal (*Phoca vitulina*) [1365]			
To maintain the favourable conservation condition of Harbour Seal in Slaney River Valley SAC, which is defined by the following list of attributes and targets:			
To maintain the favorable conservation condition of common seal in the Slaney River Valley 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, and review of data from unpublished National Parks & Wildlife Service records.

Moulting behavior	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition.	Attribute and target based on background knowledge of Irish populations, review of data from unpublished NPWS records
Resting behavior	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition.	Attribute and target based on background knowledge of Irish populations and unpublished NPWS records
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the common seal population at the site.	

A.7 NORTH CHANNEL SAC (UK0030399) (JNCC)

Conservation Objectives for: North Channel SAC (UK0030399)	
Harbour porpoise [1351]	
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.	
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 harbour porpoise and its prey are maintained or restore in the long term – subject to natural change

A.8 CARDIGAN BAY/BAE CEREDIGION SAC (UK00122712)

Conservation Objectives for: Cardigan Bay/Bae Ceredigion SAC (UK00122712)		
Bottlenose Dolphin (*Tursiops truncatus*) [1349]		
Ensure that the integrity of the site is maintained and that it makes the best possible contribution to maintaining Favourable Conservation Status (FCS) for Bottlenose Dolphin in UK waters.		
Attribute	**Objective**	Notes
Population	The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.	Contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression
Range	The bottlenose dolphin and grey seal species population within the site is such that the natural range of the population is not being reduced or likely	Their range within the SAC and adjacent inter-connected areas is not constrained or hindered. There are appropriate and

Conservation Objectives for: Cardigan Bay/Bae Ceredigion SAC (UK00122712)		
Bottlenose Dolphin (*Tursiops truncatus*) [1349]		
	to be reduced for the foreseeable future.	sufficient food sources 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.
Habitat	The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and population dynamics of the species within the sit and population beyond the site is stable or increasing.	The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term. The management and control of activities or operations likely to adversely affect the species feature, is appropriate for maintaining it in favourable condition and is secure in the long term.
Grey Seal (*Halichoerus grypus*) [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	Objective	Notes
Population	The population is maintaining itself on a long-term basis as a viable component of its natural habitat. Important elements are population size, structure, production, and condition of the species within the site.	Contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression.

A.9 SALTEE ISLANDS SAC (IE000707)

Conservation Objectives for: Saltee Islands SAC (IE000707)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Saltee 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.	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 from Kiely et al. (2000); Lidgard et al. (20001); Lyons (2004); a comprehensive breeding survey in

Conservation Objectives for: Saltee Islands SAC (IE000707)			
Grey Seal (*Halichoerus grypus*) [1364]			
			2005 (Ó Cadhla et al., 2007); unpublished National Parks and Wildlife Service 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; research by Kiely et al. (2000); a national moult survey (Ó Cadhla and Strong, 2007); and unpublished National Parks and Wildlife Service records.
Resting behavior	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data by Kiely (1998); Kiely et al (2000); Lyons (2004); Cronin et al. (2007); and unpublished National Parks and Wildlife Service 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 Kiely (1998), Kiely et al. (2000), Lyons (2004), Ó Cadhla et al. (2007); Ó Cadhla and Strong (2007);
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

A.10 PEMBROKESHIRE MARINE/SIR BENFRO FOROL SAC

Conservation Objectives for: Pembrokeshire Marine /Sir Benfro Forol SAC (UK13116)		
1364 Grey seal (*Halichoerus grypus*)		
To achieve favourable conservation status all the following, subject to natural processes, need to be fulfilled and maintained in the long-term. If these objectives are not met restoration measures will be needed to achieve favourable conservation status.		
Attribute	**Objective**	**Notes**
Population	Grey seals present within the site at any one time do not form a discrete population, but are centred (in terms of abundance) on the Pembrokeshire coast and are considered part of the SW England and Wales management unit. This population itself is not isolated but extends from SW Scotland to SW England and SE Ireland (individuals have been photographically recaptured among these regions and there are movements and exchanges with more distant populations (satellite tracked individuals have been tracked to/from France, west coast of Scotland and Ireland. Pup production from 1992 to 2008 in the Skomer MCZ remained fairly consistent with the	Contaminant burdens derived from human activity are below levels that may cause physiological damage, or immune or reproductive suppression. Populations should not be reduced as a consequence of human activity. An emerging phenomenon is the appearance of mortal spiral wounds thought to be caused by sudden traumatic events involving the strong rotational shearing force of a rotating blade. These injuries are consistent with the seals being drawn through a ducted propeller. The occurrence of 'corkscrew' injuries is a growing

Conservation Objectives for: Pembrokeshire Marine /Sir Benfro Forol SAC (UK13116)		
	expected natural fluctuations with an average of 208 pups. From 2009 to 2015 there has been a steady increase in pup production with the greatest increase being at the mainland sites, although in 2014 and 2015 increases at the island sites have also been recorded. Pup production for the past 3 years has shown the highest totals ever recorded with average production for 2013-15 at 357 pups.	concern in the UK and such occurrences have recently been reported in Wales. A range of viral, bacterial and parasitic diseases are known to be endemic within seal populations but appear to have limited effect on healthy, unstressed, adult seals.
Range	Seals are widely distributed withinand travel far beyond the Pembrokeshire Marine SAC. Pupping takes place throughout the site on open coast in suitable habitat (i.e. physically accessible, remote and/or undisturbed rocky coast beaches, coves and caves) and the high proportion of use of sea caves by the south-west Wales population is a particularly unusual variation in breeding behaviour. The overall distribution and extent of the habitat features within the site, and each of their main component parts is stable or increasing.The grey seal 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.	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. The sites and amount of supporting habitat used by these species are accessible and their extent and quality is stable or increasing.
Supporting Habitat and Species	The presence, abundance, condition and diversity of habitats and species required to support this species is such that the distribution, abundance and populations dynamics of the species within the site and population beyond the site is stable or increasing. Important considerations include distribution, extent, structure, function and quality of habitat and prey availability and quality. Moulting and resting haul-out sites are distributed throughout the site, though only a small number of sites are regularly used as haul-outs by large numbers of seals. Known winter moulting haul-outs and non-moulting / resting haul-outs are limited to offshore islands and remote, undisturbed and inaccessible rocky shores and beaches.	The abundance of prey species subject to existing commercial fisheries needs to be equal to or greater than that required to achieve maximum sustainable yield and secure in the long term. The management and control of activities or operations likely to adversely affect the species feature, is appropriate for maintaining it in favourable condition and is secure in the long term.

A.11 THE MAIDENS SAC (UK0030384) (JNCC, 2022)

Conservation Objectives for: The Maidens SAC (UK0030384)
Grey Seal (*Halichoerus grypus*) [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

Conservation Objectives for: The Maidens SAC (UK0030384)	
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

A.12 South-East Islay Skerries SAC (UK0030067) (JNCC, 2022)

Conservation Objectives for: South-East Islay Skerries SAC (UK0030067)	
Grey Seal (*Halichoerus grypus*) [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

A.13 Bristol Channel Approaches SAC (UK0030396)

Conservation Objectives for: Bristol Channel Approaches SAC (UK0030396)	
Harbour porpoise [1351]	
To 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.	
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 harbour porpoise and its prey are maintained or restore in the long term – subject to natural change

A.14 Lundy SAC (UK0013114)

Conservation Objectives for: Lundy SAC (UK0013114)
Grey Seal (*Halichoerus grypus*) [1364]
Annex II species present as a qualifying feature, but not a primary reason for site selection

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

A.15 TRESHNISH ISLES (UK0030289)

Conservation Objectives for: Treshnish Isles SAC (UK0030289)	
Grey Seal (*Halichoerus grypus*) [1364]	
Annex II species present as a qualifying feature, but not a primary reason for site selection 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

A.16 ISLES OF SCILLY COMPLEX SAC (UK0013694)

Conservation Objectives for: Isles of Scilly Complex SAC (UK0013694)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Saltee 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.	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 from Kiely et al. (2000); Lidgard et al. (20001); Lyons (2004); a comprehensive breeding survey in 2005 (Ó Cadhla et al., 2007); unpublished National Parks and Wildlife Service records.

Conservation Objectives for: Isles of Scilly Complex SAC (UK0013694)			
Grey Seal (*Halichoerus grypus*) [1364]			
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; research by Kiely et al. (2000); a national moult survey (Ó Cadhla and Strong, 2007); and unpublished National Parks and Wildlife Service 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 by Kiely (1998); Kiely et al (2000); Lyons (2004); Cronin et al. (2007); and unpublished National Parks and Wildlife Service 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 Kiely (1998), Kiely et al. (2000), Lyons (2004), Ó Cadhla et al. (2007); Ó Cadhla and Strong (2007);
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

A.17 BLASKET ISLANDS SAC (002172)

Conservation objectives for: BLASKET ISLANDS SAC (002172)			
1351 Harbour porpoise Phocoena phocoena			
To maintain the favourable conservation condition of Harbour Porpoise in Blasket 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.	
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	

Conservation Objectives for: BLASKET ISLANDS SAC (002172)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Blasket Islands SAC,** which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Access to suitable habitat	Number of artificial	Species range within the site should not be	See marine supporting document for further details

Conservation Objectives for: BLASKET ISLANDS SAC (002172)			
Grey Seal (*Halichoerus grypus*) [1364]			
	barriers	restricted by artificial barriers to site use.	
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, comprehensive breeding surveys in 1996 (Kiely, 1998; Kiely and Myers, 1998), 2003 (Cronin and Ó Cadhla, 2004; Cronin et al., 2007), and 2005 (Ó Cadhla et al., 2008) and 2011 (Ó Cadhla et al., 2013) and unpublished NPWS records including those reported by Lyons (2004).
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, on review of data from Kiely (1998) and Lyons (2004), a national moult survey (Ó Cadhla & Strong, 2007) and unpublished NPWS records.
Resting behavior	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.
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

A.18 HORN HEAD AND RINCLEVAN SAC (000147)

Conservation Objectives for: HORN HEAD AND RINCLEVAN SAC (000147			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Horn Head and 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 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 from Kiely et al. (2000); Lidgard et al. (20001); Lyons (2004); a comprehensive breeding survey in 2005 (Ó Cadhla et al., 2007);

Conservation Objectives for: HORN HEAD AND RINCLEVAN SAC (000147			
Grey Seal (*Halichoerus grypus*) [1364]			
			unpublished National Parks and Wildlife Service 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; research by Kiely et al. (2000); a national moult survey (Ó Cadhla and Strong, 2007); and unpublished National Parks and Wildlife Service records.
Resting behavior	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data by Kiely (1998); Kiely et al (2000); Lyons (2004); Cronin et al. (2007); and unpublished National Parks and Wildlife Service 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 Kiely (1998), Kiely et al. (2000), Lyons (2004), Ó Cadhla et al. (2007); Ó Cadhla and Strong (2007);
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

A.19 SLIEVE TOOEY/ TORMORE ISLAND/ LOUGHROS BEG BAY SAC (000190)

Conservation Objectives for: SLIEVE TOOEY/ TORMORE ISLAND/ LOUGHROS BEG BAY SAC (000190)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Horn Head and 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	The breeding sites should be maintained 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) and unpublished NPWS records including those reported by Summers (1983) and Lyons (2004)

Conservation Objectives for: SLIEVE TOOEY/ TORMORE ISLAND/ LOUGHROS BEG BAY SAC (000190)			
Grey Seal (*Halichoerus grypus*) [1364]			
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, on review of data from Kiely (1998) and Lyons (2004), a national moult survey (Ó Cadhla & Strong, 2007) and unpublished NPWS records.
Resting behavior	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.
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

A.20 ROARINGWATER BAY AND ISLANDS SAC (00101)

Conservation objectives for: Roaringwater Bay and Islands SAC (000101)			
1351 Harbour porpoise Phocoena phocoena			
To maintain the favourable conservation condition of Harbour Porpoise in Roaringwater Bay and 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.	
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	
Conservation Objectives for: Roaringwater Bay and Islands SAC (IE000707)			
Grey Seal (*Halichoerus grypus*) [1364]			
To maintain the favorable conservation condition of grey seal in **Roaring Bay and 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.	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 from Kiely et al. (2000); Lidgard et al. (20001); Lyons (2004); a

			comprehensive breeding survey in 2005 (Ó Cadhla et al., 2007); unpublished National Parks and Wildlife Service 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; research by Kiely et al. (2000); a national moult survey (Ó Cadhla and Strong, 2007); and unpublished National Parks and Wildlife Service records.
Resting behavior	Resting haul-out sites	Conserve the resting haul-out sites in a natural condition.	Attribute and target based on review of data by Kiely (1998); Kiely et al (2000); Lyons (2004); Cronin et al. (2007); and unpublished National Parks and Wildlife Service 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 Kiely (1998), Kiely et al. (2000), Lyons (2004), Ó Cadhla et al. (2007); Ó Cadhla and Strong (2007);
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

A.21 MURLOUGH SAC (UK0016612)

Conservation Objectives for: Murlough SAC (IE000204)			
Harbour Seal (*Phoca vitulina*) [1365]			
To maintain the favourable conservation condition of Harbour Seal in Lambay Island SAC, which is defined by the following list of attributes and targets:			
Access	**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 the marine supporting document for further details
Breeding behaviour	Breeding sites	The breeding sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish breeding populations and a review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Moulting behaviour	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of data from Cronin et al. (2004), data provided by Kiely et al. (2000), Lidgard et al.

Conservation Objectives for: Murlough SAC (IE000204)			
Harbour Seal (*Phoca vitulina*) [1365]			
			(2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Resting behaviour	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	See marine supporting document for further details

A.22 STRANGFORD LOUGH SAC (UK0016618)

Harbour Seal (*Phoca vitulina*) [1365]			
Annex II species present as a qualifying feature, but not a primary reason for site selection To maintain the favourable conservation condition of Harbour Seal in Strangford Lough SAC, which is defined by the following list of attributes and targets:			
Access	**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 the marine supporting document for further details
Breeding behaviour	Breeding sites	The breeding sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish breeding populations and a review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Moulting behaviour	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of data from Cronin et al. (2004), data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.
Resting behaviour	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition	Attribute and target based on background knowledge of Irish populations, review of ancillary data provided by Kiely et al. (2000), Lidgard et al. (2001), Ó Cadhla and Strong (2007), Ó Cadhla et al. (2008) and unpublished NPWS data.

Harbour Seal (*Phoca vitulina*) [1365]			
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	See marine supporting document for further details

A.23 FRENCH SACs

Conservation Objectives for French SACs	
Harbour Porpoise (*Phocoena phocoena*)	
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 population of these species, limit their disturbance and maintain their functional habitat in a state of conservation favourable to their ecological requirements.	
Site Code	**Site Name**
FR5212016	Mers Celtiques - Talus du golfe de Gascogne
FR5300017	Abers - Côte des légendes
FR5310072	Ouessant-Molène
FR5310073	Baie de Morlaix
FR2502022	Nord Bretagne DH
FR5310011	Cote de Granit Rose-Sept Iles
FR5310070	Tregor Goëlo
FR5302006	Côtes de Crozon
FR5302007	Chaussée de Sein
FR5302016	Récifs du talus du golfe de Gascogne
FR2500084	Récifs et landes de la Hague
FR2502019	Anse de Vauville
FR5300011	Cap d'Erquy-Cap Fréhel
FR5300066	Baie de Saint-Brieuc - Est
FR2502018	Banc et récifs de Surtainville
FR5300012	Baie de Lancieux, Baie de l'Arguenon, Archipel de Saint Malo et Dinard
FR2510037	Chausey
FR5300061	Estuaire de la Rance
FR2510048	Baie du Mont Saint Michel

A.24 NORTH-WEST IRISH SEA CSPA (004236)

Red Throated Diver (*Gavia stellata*) [A001]			
To maintain the favourable conservation condition of Red-throated Diver at the North-West Irish Sea cSPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	North-west Irish Sea SPA provides essential resources for adjacent seabird colonies. Red-throated diver is a Special Conservation Interest (SCI) for this site. During the non-breeding period divers (primarily great northern and red-throated divers) in the western Irish Sea are known to concentrate in the shallower coastal areas, with a clear preference for waters of 5-20m (Jessopp et al., 2018). One series of surveys focused on waters off Gormanstown, which overlaps with this SPA, found that the numbers of red-throated diver peaked in the February survey and estimated the population to be 2,140 (±95% confidence interval of 1,429 – 2,957) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 827 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Red-throated diver can be quite mobile and it is likely that there is interchange between the designated (e.g. Dundalk Bay SPA) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of this piscivorous diver is poorly known outside of the breeding season but one study from the German Bight indicates that red-throated diver is a generalist opportunistic feeder but pelagic schooling fish that have a high energetic value might be favoured (Kleinschmidt et al., 2019)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Great Northern Diver (*Gavia immer*) (A003)			
To maintain the favourable conservation condition of Northern Diver at the North-West Irish Sea cSPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	During the non-breeding period divers (primarily great northern diver and red-throated diver (Gavia stellata)) in the western Irish Sea are known to concentrate in the shallower coastal areas, with a clear preference for waters of 5-20m (Jessopp et al., 2018). One series of surveys focused on waters off

			Gormanstown, which overlaps with this SPA, found that the numbers of great northern diver peaked in the March survey and estimated the population to be 1,279 (±95% confidence interval of 676 – 2,084) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 176 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Great northern diver can be quite mobile and it is likely that there is interchange between the designated (e.g. Dundalk Bay SPA) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Largely piscivorous, foraging over the benthos as well as throughout the water column, but will also frequently eat marine invertebrates (Paruk et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution

Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Fulmar (*Fulmarus glacialis*) (A009)			
To restore the favourable conservation condition fulmar in the North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population size	Number	Long term SPA population trend is stable or increasing	Fulmar is present within the SPA throughout the year. Breeding fulmar is a SCI of Lambay Island SPA (004069), which declined by 36% over the period 1999-2015 to 375 pairs (Mitchell et al., 2000; and Cummins et al., 2019). These birds exploit the marine waters of the North-west Irish Sea SPA during the breeding season. As fulmar can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Power et al., 2021). Fulmar breeding at other colonies and non-breeding individuals may also use the North-west Irish Sea SPA during the breeding period. Fulmar winter at sea and Jessopp et al. (2018) showed a broad distribution in the winter survey. Based on Jessopp et al. (2018) data for summer, autumn and winter surveys of the western Irish Sea an estimated 214, 11,260 and 506 individuals occurred in the SPA respective

Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by fulmar. Jessopp et al. (2018) recorded fulmar throughout the western Irish Sea survey area showing a clear preference for deeper waters; a high aggregation was noted in the eastern half of the North-west Irish Sea SPA during the autumn survey. Based on several studies, Woodward et al. (2019) estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of fulmar foraging ranges from the nest site during the breeding season, which are 135; 542; and 2,736km respectively (see Power et al., 2021)
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The colonisation of Ireland and Britain by fulmar over the last two centuries has been largely attributed to their close association with fisheries, but contemporary dietary studies indicate they also feed on a wide variety of prey including sandeels, crustaceans and squid (Philips et al., 1999)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial

			distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities of fulmar performing these behaviours occurred within 2km of the breeding colony (McSorley et al., 2005)
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Fulmar require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Manx Shearwater (*Puffinus puffinus*) (A013)			
To maintain the favourable conservation condition of manx shearwater in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	No significant decline	Dean et al. (2015) identifies an area of marine waters near the Irish Sea front and the stratified waters of the western Irish Sea as being an important foraging resource for manx shearwater breeding in several colonies located around the periphery of the Irish Sea; the North-west Irish Sea SPA overlaps with this area. One summer aerial survey, conducted in 2016,

			estimated 13,010 individual manx shearwater within the SPA (Jessopp et al., 2018, NPWS unpublished data analysis). A follow up survey in September 2016 provides an estimate of 457 individuals occurring in the SPA
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by manx shearwater. Jessopp et al. (2018) noted that particularly during the summer survey manx shearwater were sighted throughout the survey area, but were not observed in the nearshore waters, instead generally being recorded at least 4km from the shore. Manx shearwaters had a clear preference for deeper waters in the survey area, with a marked absence of this species over shallow areas and sandbars with less than 20m water depth
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Primarily clupeiform fish, during the chick rearing period; outside of this period squid and other marine invertebrates may form a larger part of the manx shearwater's diet (Brooke, 1990)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the

			potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non sites-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Manx shearwater require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Cormorant (*Phlacrocorax carbo*) (A017)			
To restore the favourable conservation condition of cormorant in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	Long term population trend within the SPA is stable or increasing	Breeding cormorant is a SCI of Lambay Island SPA (004069), Ireland's Eye SPA (004117) and Skerries Islands SPA (004122). These breeding populations exploit the North-west Irish Sea SPA to varying degrees. Trend analysis over the period 1999-2015 show that the estimated population of Lambay Island decreased by 58% to 282 and the Ireland's Eye population is estimated to have increased by 39% to 424. Limited recent data exists for

			the Skerries Island SPA population but a minimum count of 125 in 2022 indicated that the population has decreased by 78% since 1999 (NPWS unpublished data). As cormorant can range some distance from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the populations of the aforementioned SPAs (Power et al., 2021). Conversely, cormorant breeding at other colonies and non-breeding individuals may also use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by cormorant. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate shag (Phalacrocorax aristotelis) and cormorant by eye and they were grouped together. There was a clear peak in the distribution of sightings over water depths around 10m indicating a preference for shallow waters, with very few observations occurring over water depths in excess of 20m
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The cormorant's diet consists predominantly of small benthic and pelagic fish which are captured by pursuit diving, typically over shallow (<10m) freshwater, estuarine and marine environments (Gremillet et al., 1998; Hatch et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) of cormorant foraging ranges from the nest site during the breeding season, which are 7, 26, and 35km respectively (see Power et al., 2021)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. display, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Cormorant require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

Shag (*Phalacrocorax aristotelis*) (A018)			
To restore favourable conservation condition of shag in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	Long term population trend within the SPA is stable or increasing	Breeding shag is a SCI of Lambay Island SPA (004069) and Skerries Islands SPA (004122). These breeding populations exploit, to varying degrees, the adjacent marine waters of this SPA. 2015 survey results show that the estimated population of Lambay Island decreased by 58% to 469 pairs since 1999 (Cummins et al., 2019). Limited recent data exists for the Skerries Island SPA population, but it is estimated that only a small number (<5 pairs) may persist from an estimated population of 100 pairs in 1999 (Mitchel et al., 2000; Cummins et al., 2019). As shag can range some distances from their nest sites during the breeding season, it is likely that the North-west Irish Sea does not contain all the relevant foraging resources for the populations of the aforementioned SPAs (Baer and Newton, 2012; Moss et al., 2016; Woodward et al., 2019). Conversely shag, breeding at other colonies and non-breeding individuals will use the North-west Irish Sea during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by shag. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate shag and cormorant by eye and they were grouped together. There was a clear peak in the distribution of sightings over water depths around 10m indicating a preference for shallow waters, with very few observations occurring over water depths in excess of 20m. Baer and Newton

			(2012) and Moss et al. (2016) provide telemetry based foraging information of this species relevant to this particular area
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of shag is almost exclusively fish, taken chiefly near sea bed or at intermediate depths, and principally of the families Ammodytidae (sandeels), Gadidae, Clupeidae, Cottidae and Labridae, but a wide range of species taken, perhaps opportunistically (Orta et al., 2021). Based on several studies, Woodward et al. (2019) provides provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for shag, which are 9, 13, and 46km respectively (see Power et al., 2021). Baer and Newton (2012) and Moss et al. (2016) provide telemetry based foraging information of this species relevant to this particular area
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)

Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Shag require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Common scoter (*Melanitta nigra*) (A065)			
To maintain the favourable conservation condition of common scoter at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	Common scoter utilise the shallow nearshore coastal waters of the wider North-west Irish sea region across the non-breeding period (Jessopp et al., 2018). One series of surveys focused on waters off Gormanstown, which overlaps with this SPA, found that the numbers of common scoter peaked in the second part of December and estimated the population to be 14,612 (±95% confidence interval of 1,038 – 39,694) individuals (HiDef, 2019); the North-west Irish Sea SPA overlaps with this area. A population of 14,567 individuals was estimated based on December 29th 2019 HiDef data (NPWS unpublished data analysis). Common scoter flocks can be quite mobile and it is likely the that there is interchange between the designated (e.g. Dundalk Bay

			SPA (004026)) and undesignated waters
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Common scoter is a diving duck that feed on prey species that live upon or within the upper few centimetres of the substratum. Common scoter diet primarily comprises of bivalve molluscs with other species (e.g. crabs, small fishes and gastropods) incorporated less frequently (Kaiser et al., 2006)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-

			breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Black-headed Gull (*Choicocephalus ridibundus*) (A179)			
To maintain the favourable conservation condition of the black-headed gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) undertook surveys across the western Irish Sea during summer, autumn and winter with black-headed gull occurring in all three seasons. Jessopp et al. (2018) noted that there was no association between black-headed gull and ocean depth profile. Based on Jessopp et al. (2018) it is estimated that 508 individuals occurred in the SPA in winter (NPWS unpublished data analysis). Nonbreeding black-headed gull are a SCI for Dundalk Bay SPA (004026) and North Bull Island SPA (004006)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations of this species were recorded in the second December survey and distribution patterns were coastal in all surveys, always south of Dundalk Bay
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Birds foraging in marine environments feed on fish and marine invertebrates (Moskoff et al., 2021).The diet of black-headed gull is extremely broad and opportunistic. Coastal birds may

			feed on marine invertebrates and to lesser extent on fish, sometimes following fishing vessels (Burger et al., 2020). HiDef aerial surveys showed the distribution patterns were coastal in all surveys, always south of Dundalk Bay
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

Common Gull (*Larus Canus*) (A182)			
To maintain the favourable conservation condition of the common gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) undertook aerial surveys during summer, autumn and winter of the western Irish Sea in 2016. Common and herring gulls could not be differentiated and were grouped together for the purposes of analysis. However, winter aerial surveys conducted by HiDef in a similar area did differentiate between species and indicates that while common gull numbers are significant in the winter herring gull (Larus argentatus) is the more abundant species. Based on Jessopp et al. (2018) and using HiDef to approximate the proportion of individual species populations it is estimated that 2,866 common gull individuals occurred in the SPA in the winter (NPWS unpublished data analysis). Non-breeding common gull is a SCI for Dundalk Bay SPA (004026)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations of this species were recorded in the second December survey and concentrations were mainly in coastal habitats
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Diet varies by location and season. Birds foraging in marine environments feed on fish and marine invertebrates (Moskoff et al., 2021). The diet of black-headed gull is extremely broad and opportunistic. Coastal birds may

			feed on marine invertebrates and to lesser extent on fish, sometimes following fishing vessels (Burger et al., 2020). HiDef surveys showed that concentrations of this species were mainly in coastal habitats
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Lesser Black-backed Gull (Larus fuscus) (A183)			
To maintain the favourable conservation condition of the lesser black-backed gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**

Breeding population size	Number	No significant decline	Breeding lesser black-backed gull is a SCI of Lambay Island SPA. This population exploits the surrounding marine waters of North-west Irish Sea SPA during the breeding season. The breeding lesser blackbacked gull population is estimated to have increased by 12% over the period 1999-2015 from 309 to 345 pairs (Mitchell et al., 2000; NPWS unpublished data). As lesser black-backed gull can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea SPA does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Moss et al., 2016; Power et al., 2021; Woodward et al., 2019). Conversely lesser black-backed gull, breeding at other colonies and nonbreeding individuals will use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by lesser black-backed gull. Sightings of black-backed gulls by Jessopp et al. (2018) were normally of single individuals with some larger groups observed. Black-backed gulls showed no clear water depth preference although relatively more observations of lesser black-backed gulls occurred over shallower depths
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of lesser black-backed gull is diverse and opportunistic. This species can forage over both terrestrial and aquatic habitats. Frequent prey items include small fish, aquatic invertebrates, birds' eggs and chicks, trawler discards, rodents and berries (Burger et al., 2020). Based on several studies, Woodward et al. (2019) provides

			provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for lesser black-backed gull, which are 43km, 127km, and 533km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Lesser black-backed gull require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological

			requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Herring Gull (Larus fuscus) (A184)			
To maintain the favourable conservation condition of the herring gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population size	Number	Long term SPA population trend is stable or increasing	Herring gull is present within the North-west Irish Sea SPA throughout the year. Breeding herring gull is a SCI for Lambay Island, Ireland's Eye and Skerries Islands SPAs. Over the period 1999-2015, the herring gull breeding population are estimated to have decreased by 50% to 906 pairs at Lambay and increased by 29% to 318 pairs on Ireland's Eye (Cummins et al., 2019). The population was estimated to be 300 pairs in 1999. As herring gull can range large distances from their nest sites during the breeding season it is likely that this SPA does not contain all relevant foraging resources for the aforementioned SPAs' breeding populations (Power et al., 2021). Herring gull, breeding at other colonies and non-breeding individuals will use the North-west Irish Sea SPA during the breeding period. Based on survey data of Jessopp et al. (2018) and by HiDef (2019) it is estimated that 6,893 herring gull individuals occurred in the SPA in the winter
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatio-temporal patterns of use of the habitats by herring gull. Jessopp et al. (2018) survey of the western Irish Sea did not distinguish between common gull and herring

			gull – these gulls occurred across the range of available water depths in the survey area but more observations were noted in depths less than 50m. Winter HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. This survey showed that herring gull was mainly concentrated along the coast south of Dundalk Bay
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Herring gull is a generalist and opportunistic feeder and can forage over both terrestrial and aquatic habitats. Its diet includes fish, fish offal, bivalves, gastropods, crustaceans, squid, insects, other seabirds, small landbirds, small mammals, terrestrial insects, earthworms, berries, carrion, and a wide variety of human refuse (Weseloh et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) of herring gull foraging ranges from the nest site during the breeding season, which are 15, 59, and 92km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine

			waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Herring gull require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Great Black-backed Gull (*Larus marinus*) (A187)			
To maintain the favourable conservation condition of the great black-backed gull at North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) undertook an aerial survey of the western Irish Sea in 2016. Not all sightings of great black-backed gulls and lesser black-backed gulls (Larus fuscus) could be differentiated and were grouped together for the purposes of analysis. However, winter aerial surveys conducted by HiDef (2019) in a similar area did differentiate between species and indicates that great black-backed gull was significantly more abundant than lesser blackbacked gull in the winter. Based on Jessopp et al. (2018) and using HiDef to

			approximate the proportion of individual species populations it is estimated that 2,096 great black-backed gull individuals occurred in the SPA in the winter (NPWS unpublished analysis)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the wintering population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population. Sightings of black-backed gulls by Jessopp et al. (2018) were normally of single individuals with some larger groups observed. HiDef aerial surveys (2018, 2019) were conducted from December to March and the survey area overlaps with the SPA. Peak observations for great blackbacked gull were recorded in early December, the spatial distribution was varied in surveys in December and January but more concentrated in the north of the survey area in February and March
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The great black-backed gull is a generalist predator that feeds on fish, both pelagic and intertidal marine invertebrates, mammals, insects, seabirds and waterfowl as well as their eggs and chicks. Great black-backed gulls also scavenge on fish, carrion, human refuse and will follow fishing vessels in search of fisheries discard. Great black-backed gulls will forage in widely scattered groups at sea and join other groups when concentrations of prey are located (Good, 2020). HiDef surveys detected more concentrated numbers of this species the north of the survey area in February and March
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of

		levels that do not significantly impact the achievement of targets for population size and spatial distribution	targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity and site use	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Kittiwake (*Rissa tridactyla*) (A188)			
To restore the favourable conservation condition of kittiwake in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population size	Number	Long term SPA population trend is stable or increasing	Kittiwake is present within the North-west Irish Sea SPA throughout the year. Breeding kittiwake is a SCI for Lambay Island (004069), Howth Head (004113) and Ireland's Eye (004117) SPAs; all of which declined over the period 1999-2015 (19% to 3,320 pairs; 22% to 1,773 pairs; 52% to 455 pairs respectively) (Cummins et al., 2019). It is likely that this SPA does not contain all relevant

			foraging resources for all of the aforementioned SPAs (Baer and Newton, 2012; Moss et al., 2016; Power et al., 2021). Conversely kittiwake, breeding at other colonies and non-breeding individuals may use the North-west Irish Sea SPA during the breeding period. Based on Jessopp et al. (2018) data for summer, autumn and winter surveys of the western Irish Sea 1,632, 2,858, and 944 individuals are estimated to have occurred in the SPA, respectively
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by kittiwake. Jessopp et al. (2018) noted that sightings occurred throughout the western Irish Sea survey area, however, there was a distinct change in the distribution of sightings between the summer breeding season and the subsequent autumn and winter periods. In contrast to other gull species, and in all three seasons, areas of high sightings density occurred some distance from the coast. Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for kittiwake, which are 55km, 156km, and 770km respectively (see Power et al., 2021)
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Kittiwake is a surface feeding seabird and primarily piscivorous (e.g. sandeels, herring, gadoids) with some invertebrates (e.g. euphausids, amphipods) in the diet also recorded (Hatch et al., 2020)

Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours (e.g. courtship, bathing, preening) as defined in McSorley et al. (2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the site population's access to the SPA or other ecologically important sites outside the SPA	Kittiwake require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

Roseate tern (*Sterna dougallii*) (A192)			
To maintain the favourable conservation condition of roseate tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	No significant decline	Breeding roseate tern is also a SCI of Rockabill SPA. Since 1995 the Rockabill population has increased by 231% to 1,834 pairs (Allbrook et al., 2022; Hannon et al., 1997). Studies indicate that the waters of Rockabill SPA and the North-west Irish Sea SPA contain the majority of the foraging habitat for the Rockabill population (Power et al., 2022; Harwood et al., 2019; Power et al., 2021). At the latter stages of breeding season, and prior to migration, tern species can form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020). Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA (004024) and Dalkey Islands SPA (004172) and are a SCI for these SPAs. More recent work has identified further areas along the east coast (Burke et al., 2020)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by roseate tern. Boat based, visual tracking of roseate terns nesting on Rockabill showed terns feeding immediately around Rockabill Island, along coastal areas of north County Dublin, Louth and Meath as well as coastal areas from Skerries (immediately west of Rockabill Island) south to Donabate. Additionally, during the fledging period roseate terns foraged in deeper water offshore, immediately east of the colony (Harwood et al., 2019; Power et al., 2022)

Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Roseate Tern is largely piscivorous; studies from Rockabill SPA show that sandeels (Ammodytes spp) along with clupeids and, to a lesser extent, gadoids can form important prey bases (e.g. Allbrook et al., 2022). Breeding birds forage over marine waters often some distance from the colony (see Harwood et al., 2019; Power et al., 2021; Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Roseate tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into

			account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Common tern (Sterna hirundo) (A193)			
To maintain the favourable conservation condition common tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	No significant decline	Breeding common tern is also a SCI of two other SPAs. Between 1995-2022 the populations has increased by 328% to 1,503 pairs at Rockabill SPA (004014) and by 45% to 138 on the ESB Dolphin nesting platform (part of South Dublin and River Tolka Estuary SPA (004024)) by 45% to 138 pairs with a further 417 pairs located nearby on two structures outside of the SPA (Boland et al., 2022). Common tern can range up to 30km from nest sites it is likely that Rockabill SPA and the North-west Irish Sea SPA contain the majority of foraging habitat for the Rockabill population but a significantly lesser proportion for the Dublin Port colony (Power et al., 2021). Towards the end of the breeding season, and prior to migration, tern species form large aggregations at roost sites along the coast (Burke et al., 2020). Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA and Dalkey Islands SPA (004172) and common tern is listed as an SCI for these SPAs
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through

		to support the population	time. This will affect the spatio-temporal patterns of use of the habitats by common tern. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate common and Arctic tern by eye and they were grouped together. While sightings occurred across a large range of sea depths, they occurred more frequently over shallow areas of sea in the central transects of the survey area during the summer breeding season, with some sightings also concentrated further south
Forage spatial distribution, extent and abundance	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Common tern are largely piscivorous. Studies from Rockabill SPA show that sandeels (Ammodytes spp) along with Clupeidae (herrings) and, to a lesser extent, Gadidae (cods, pollocks) can form important prey bases (e.g. Allbrook et al., 2022). Breeding birds forage over marine waters often some distance from the colony (see Power et al., 2021, Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern

			species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Common tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Arctic tern (Sterna paradisaea) (A194)			
To maintain the favourable conservation condition arctic tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	No significant decline	Breeding Arctic tern is a SCI for Rockabill SPA (004014). Population size at Rockabill has fluctuated over the years. However, the population size in 2022 (estimate of 49 - 60 pairs), was similar to that in 1995 (49 pairs) (Allbrook et al., 2022; Hannon et al., 1997). Arctic tern can range up to 46km from their nest sites during the breeding season, so it is likely that Rockabill SPA and the North-west Irish Sea SPA contain the majority of the foraging habitat for this population (Power et al., 2021; Woodward et al., 2019). Towards the end of the breeding season, and prior to migration, tern species form large aggregations at roost sites along the coast (Burke et al., 2020).

			Notable concentrations have been recorded at South Dublin Bay and River Tolka Estuary SPA (004024) and Dalkey Islands SPA (004172) and Arctic tern is listed as an SCI for these SPAs
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by Arctic tern. Aerial surveys of the western Irish Sea (Jessopp et al., 2018) did not differentiate common and Arctic tern by eye and so they were grouped together. While sightings occurred across a large range of sea depths, they occurred more frequently over shallow areas of sea in the central transects of the survey area during the summer breeding season, with some sightings also concentrated further south
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Arctic tern are largely piscivorous. Most frequent fish prey are small, schooling species commonly caught in open water, at tide rips, and over predators (e.g. jellyfish and marine mammals). These are usually 1- or 2-year-old fish, including from the Clupeidae (herrings), Gadidae (cods, pollocks) and Ammodytidae (sandeels) families (Hatch et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean; mean of maximum distances across all studies; and maximum distance recorded) for Arctic tern, which are 6, 26, and 46km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or

		significantly impact the achievement of targets for population size and spatial distribution	spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Arctic tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Little tern (*Sterna albifrons*) (A195)			
To maintain the favourable conservation condition little tern in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			

Attribute	Measure	Target	Notes
Breeding population size	Number	No significant decline	Breeding little tern is a SCI of Boyne Estuary SPA (004080). Population size at Baltray, Co. Louth has fluctuated over the years but the 2022 estimate of 84 pairs represents an increase of some 500% from the 1995 All-Ireland Tern Survey (Moënner and Hartigan, 2022; Hannon et al., 1997). The foraging range of breeding little tern from the colony is relatively small and therefore it is likely that all feeding resources for this colony during the breeding season are included within the Boyne Estuary SPA and North-west Irish Sea SPA (Woodward et al., 2019; Power et al., 2021; Power et al., 2022). However there is likely to be interchange of birds from other colonies around the Irish Sea during the breeding season and on passage
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by little tern. Breeding birds forage over marine and brackish waters quite close (<5km) to the colony (see Power et al., 2022)
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	Little tern are largely piscivorous. Studies from a more southerly Irish colony show that sandeels (Ammodytes spp.) along with clupeids and, to a lesser extent, gadoids can form important prey bases (Johnson et al., 2022). Breeding birds forage over marine and brackish waters quite close (<5km) to the colony (see Power et al., 2021; Power et al., 2022)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic

		for population size and spatial distribution	expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). At latter stages of the breeding season tern species form large aggregations at terrestrial and intertidal roost sites along the coast (Burke et al., 2020)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Little tern require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Guillemot (Uria aalge) (A199)			
To maintain the favourable conservation condition of guillemot in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**

Population size	Number	No significant decline	Guillemot occur in the SPA throughout the year. Breeding guillemot is a SCI of Lambay Island and Ireland's Eye SPAs. From 1999-2015, individual population estimates at Lambay of 59,983 remained stable (-1%), and Ireland's Eye increased by 101% to 4,410 (Cummins et al., 2019). These birds exploit this SPA during the breeding season. As birds can range large distances from the colony during the breeding season it is likely that this SPA does not contain all relevant foraging resources for these populations (Baer and Newton, 2012; Power et al., 2021). Guillemot from other colonies and nonbreeding individuals may also use this SPA during the breeding period. Jessopp et al. (2018) undertook summer, autumn and winter surveys of the western Irish Sea; razorbill (Alca torda) and guillemot were categorised together. Based on this 18,621, 93,191, and 18,553 individuals are estimated to have occurred in the SPA respectively; it is likely that guillemot formed the majority of these
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat may vary through time. This will affect the spatio-temporal patterns of use of the habitats by the guillemot. Jessopp et al. (2018) noted that during the summer, guillemot/razorbill sightings concentrated around the central transect lines, while during autumn surveys, large numbers of sightings occurred in the northernmost transects. There was no obvious association between the occurrence of razorbills/guillemots and bathymetric features. HiDef (2019) undertook surveys off Gormanstown and noted that most areas were used regularly by guillemot, but were present at the highest density

			in the east of the study area. Woodward et al. (2019) provides estimates (i.e. mean, mean of max distances across all studies, and max distance) of guillemot movements from the colony, which are 33, 73, and 338km respectively
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of guillemot consists of micronektonic prey, 2–25cm in length (mainly 6–10cm), including fish, euphausiids, large copepods, and squid. In summer mainly fish, especially when feeding chicks, in contrast to a more diverse diet during non-breeding period, with euphausiids in particular more important (Ainley et al., 2021). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for guillemot, which are 33, 72, and 338km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities

			of guillemot performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Guillemot require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Razorbill (*Alca torda*) (A200)			
To maintain the favourable conservation condition of razorbill in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Population size	Number	No significant decline	Razorbill occur in the SPA throughout the year. Breeding razorbill is a SCI of Lambay Island and Ireland's Eye SPAs. From 1999-2015, individual population estimates at Lambay of 7,353 increased by 70%, and Ireland's Eye increased by 207% to 1,600 (Cummins et al., 2019). These birds exploit this SPA during the breeding season. As birds can range large distances from the colony during the breeding season it is likely that this SPA does not contain all relevant foraging resources for these populations (Baer and Newton, 2012; Power et al., 2021). Razorbill from other colonies and

			nonbreeding individuals may use this SPA during the breeding period. Jessopp et al. (2018) undertook summer, autumn and winter surveys of the western Irish Sea; razorbill and guillemot were categorised together. Based on this 18,621, 93,191, and 18,553 individuals are estimated to have occurred in the SPA respectively; it is likely that razorbill formed a significant minority of these
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat may vary through time. This will affect the spatio-temporal patterns of use of the habitats by razorbill. Jessopp et al. (2018) noted that during the summer, guillemot/razorbill sightings were concentrated around the central transect lines, while during autumn surveys, large numbers of sightings occurred in the northernmost transects. There was no obvious association between the occurrence of razorbills/guillemots and bathymetric features. HiDef (2019) undertook surveys off Gormanstown and noted that razorbill varied across the survey area, with most areas being used, except the most coastal of habitats. Woodward et al. (2019) provides estimates (i.e. mean, mean of max distances across all studies, and max distance) of razorbill movements from the colony, which are 61km, 89km, and 313km respectively
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of razorbill comprises schooling fish including herring and sandeel. Crustaceans and polychaetes may also be important in adult diets (Lavers et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all

			studies, and maximum distance recorded) for razorbill, which are 61km, 89km, and 313km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	The intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found the highest densities of razorbill performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Razorbill require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the breeding

			population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Puffin (*Fratercula arctica*) (A204)			
To maintain the favourable conservation condition of puffin in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Breeding population size	Number	Long term SPA population trend is stable or increasing	Breeding puffin is also a SCI of Lambay Island SPA (004069). This breeding population exploits the surrounding marine waters of North-west Irish Sea SPA during the breeding season. The breeding puffin population is estimated to have declined by 68% over the period 1999-2015 from 265 to 158 individuals (Mitchell et al., 2000; NPWS unpublished data). As puffin can range large distances from their nest sites during the breeding season it is likely that the North-west Irish Sea does not contain all relevant foraging resources for the Lambay Island SPA breeding population (Power et al., 2021). Also conversely non-breeding individuals will use the North-west Irish Sea SPA during the breeding period
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the population and its availability for use. The suitability and availability of habitat areas may vary through time. This will affect the spatio-temporal patterns of use of the habitats by puffin
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	The diet of puffin predominately consists of small to mid-sized (5 – 15cm) schooling midwater fish including sprat (Sprattus sprattus) sandeel (Ammodytes spp) and herring (Clupea harengus) (Lowther et al., 2020). Based on several studies, Woodward et al. (2019) provides estimates of foraging

			ranges from the nest site during the breeding season (i.e. overall mean, mean of maximum distances across all studies, and maximum distance recorded) for puffin, which are 62km, 137km, and 383km respectively (see Power et al., 2021)
Disturbance across the site	Intensity, frequency, timing and duration	Intensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of mortality or reduced fitness (if energy expenditure is greater than energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution. Seabird species can make extensive use of the marine waters adjacent to their breeding colonies for non site-specific maintenance behaviours as defined in McSorley et al. (2003). Studies in the UK found that the highest densities of puffin performing these behaviours occurred within 1km of the breeding colony (McSorley et al., 2003)
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Puffin require regular access to marine waters ecologically connected to their colonies during the breeding season and on migration. Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA

			must also be considered as a single SPA may not satisfy all the ecological requirements of the population, and it may require access to other SPAs or undesignated sites for certain activities, such as breeding and additional foraging locations when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors
Little Gull (*Hydrocoloeus minutus*) (A862)			
To maintain the favourable conservation condition of little gull in North-west Irish Sea SPA, which is defined by the following list of attributes and targets:			
Attribute	**Measure**	**Target**	**Notes**
Non-breeding population size	Number	No significant decline	Jessopp et al. (2018) noted that little gull occurred over a wide range of depths across the western Irish Sea, although there were no sightings over waters deeper than 80m. Based on Jessopp et al. (2018) it is estimated that 391 individuals occurred in the SPA area in winter (NPWS unpublished data analysis)
Spatial distribution	Hectares, time and intensity of use	Sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support the population	Distribution encapsulates the number of locations and area of potentially suitable habitat for the nonbreeding population and its availability for use. The suitability and availability of habitat areas may vary throughout the season. This will affect the spatiotemporal patterns of use of the habitats by the nonbreeding population
Forage spatial distribution, extent, abundance and availability	Location and hectares, and forage biomass	Sufficient number of locations, area of suitable habitat and available forage biomass to support the population target	A primarily aquatic forager that feed on flying insects, small fish and aquatic invertebrates typically at the water surface (Ewins and Weseloh, 2020). Little is known of the winter diet of this species
Disturbance across the site	Intensity, frequency, timing and duration	The iIntensity, frequency, timing and duration of disturbance occurs at levels that do not significantly impact the achievement of targets for population size and spatial distribution	The impact of any significant disturbance (direct or indirect) to the non-breeding population will ultimately affect the achievement of targets for population size and/or spatial distribution. Disturbance contributes to increased energetic expenditure which can result in increased likelihood of over-winter mortality or reduced fitness (if energy expenditure is greater than

			energy gain) and, in turn, negatively impact population trends. Factors such as intensity, frequency, timing and duration of a (direct or indirect) disturbance source must be taken into account to determine the potential impact upon the targets for population size and spatial distribution
Barriers to connectivity	Number, location, shape, area (hectares)	The number, location, shape and area of barriers do not significantly impact the wintering population's access to the SPA or other ecologically important sites outside the SPA	Barriers limiting the population's access to this SPA or ecologically important sites outside the SPA will ultimately affect the achievement of targets for population trend and/or spatial distribution. Factors such as the number, location, shape and area of potential barriers must be taken into account to determine their potential impact. Access to ecologically important sites outside the SPA must also be considered as a single SPA may not satisfy all the ecological requirements of the non-breeding population, and it may require access to other SPAs or undesignated sites for certain activities, such as additional foraging when preferred foraging areas are unavailable due to disturbance, prey availability, or other factors

Appendix B

B.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.

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

B.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 and during hours of darkness the MMO(s) will carry out Passive Acoustic Monitoring (PAM) 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 (see below).

B.1.1.1 Pre-start monitoring

Marine Mammal monitoring 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) or acoustic monitoring (during hours of darkness) to determine if any marine mammals are within the relevant zone of the activities.

B.1.1.2 Monitored zone

Should any marine mammal species be detected within a radial distance of the relevant zone of the survey vessel (as per the 'Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters' from DAHG (2014)), 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. In both cases, there will be a 30-minute delay from the time of the last sighting/acoustic detection within the relevant zone of the survey vessel to the commencement / recommencement of the operations. The MMO will use a distance measuring stick or reticule binoculars to ascertain distances to marine mammals sighted visually. *Note: once started, site investigations will not cease should marine mammals approach the survey vessel.*

B.1.1.3 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.

In commencing a seismic survey operation, including any testing of seismic sound sources, where the output peak sound pressure level exceeds 170 dB re: 1µPa @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.

B.1.1.4 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 =<170 dB re 1 µPa @ 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).

B.1.1.5 BREAKS IN SURVEY PERIODS

If there is a break in sound output from survey equipment for a period greater than 30 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.

B.1.1.6 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.

B.1.1.7 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 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.

Global Project Reach

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