codling wind park

Supporting Information: Screening for Appropriate Assessment (SISAA)

Maritime Usage Licence Application MUL230034

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ABBREVIATIONS

Abbreviation	Term
AA	Appropriate Assessment
ADCP	Acoustic Doppler Current Profiler
AIMU	Assessment of Impacts of the Maritime Usage Report
CA	Competent Authority
CEFAS	The Centre for Environment, Fisheries and Aquaculture Science
CIEEM	Chartered Institute of Ecology and Environmental Management
COSHH	Control of Substances Hazardous to Health
cSAC	candidate Special Areas of Conservation
CPT	Cone Penetration Test
CWP	Codling Wind Park
CWPL	Codling Wind Park Limited
dB	decibel
DDV	Drop Down Video
DEHLG	Department of Environment, Heritage and Local Government
DHLGH	Department of Housing, Local Government and Heritage
ECC	Export Cable Corridor
EDF	Électricité de France
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPS	European Protected Species
ESAS	European Seabirds at Sea
EU	European Union
FIL	Foreshore Investigation Licence
FLiDAR	Floating Light Detecting and Ranging
FLO	Fisheries Liaison Officer
FLS	Floating LiDAR System
ha	hectares

Abbreviation	Term
HDD	Horizontal Directional Drilling
HF	High frequency
hr	Hour
HSEQ	Health, Safety, Environment and Quality
Hz	Hertz
ICES	International Council for the Exploration of the Sea
IEMP	Integrated Ecological Management Plan
IMO	International Maritime Organisation
IAMMWG	Inter-Agency Marine Mammal Working Group
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IROPI	Imperative reasons of overriding public interest
IUCN	The International Union for Conservation of Nature
JNAPC	Joint Nautical Archaeology Policy Committee
JNCC	Joint Nature Conservation Committee
Kg	Kilogram
kHz	KiloHertz
km	Kilometres
LSE	Likely Significant Effects
m	metres
mm	millimetres
MARPOL	International Convention for the Prevention of Marine Pollution from Ships
MBES	Multibeam Echosounders
MCA	Maritime and Coastguard Agency (UK)
MUL	Maritime Usage Licence
MULA	Maritime Usage Licence Application
MPDM	Marine Planning and Development Management
MGN	Marine Guidance Note
MHWS	Mean High-Water Spring
MMO	Marine Mammal Observer

Abbreviation	Term
MoD	Ministry of Defence (UK)
MSL	Mean Sea Level
MU	Management Unit
MW	Megawatt
NGOs	Non-Governmental Organisations
NIS	Natura Impact Statement
NM	Nautical miles
NMS	National Monuments Services
NMPF	National Marine Planning Framework
NOAA	National Oceanic and Atmospheric Administration
NPWS	National Parks and Wildlife Services
ObSERVE	A major marine scientific programme established in October 2014, with the main aim to greatly improve the knowledge and understanding of protected offshore species and sensitive habitats through high quality, state-of-the-art data collection across Ireland's EEZ.
OMB	Operation and Maintenance Base
PCBs	Polychlorinated Biphenyls
PCW	Phocid carnivores in water
pSPA	proposed Special Protection Area
PSA	Particle Size Analysis
PTS	Permanent Threshold Shift
QIs	Qualifying Interests
RMPs	Records of Monuments and Places
RAMS	Risk Avoidance Method Statements
SAC	Special Area of Conservation
SCIs	Special Conservation Interests
SCANS-III	Small Cetaceans in European Atlantic waters and the North Sea, conducted in 2016
SCANS-IV	Small Cetaceans in European Atlantic waters and the North Sea, conducted in 2022
SEL	Sound Exposure Level
SFPA	Sea Fisheries Protection Authority
SNCB	Statutory nature conservation body

Abbreviation	Term
SBP	Sub-bottom Profiling
SPA	Special Protection Areas
SPL	Sound Pressure Level
SSC	Suspended Sediment Concentration
SSS	Sidescan Sonar
SSSI	Site of Special Scientific Interest
TOC	Total Organic Carbon
TTS	Temporary Threshold Shift
UHRS	Ultra High Resolution Seismic
USBL	Ultra-Short Baseline
VHF	Very high frequency
ZoI	Zone of Influence

DEFINITIONS

Definition	Term
Annex IV Risk Assessment	Information provided to the competent authority to inform a risk assessment for Annex IV species under Article 12 of the Habitats Directive (92.43/EEC)
Licence Application Area	The area subject to the Marine Usage Licence Application under the Maritime Area Planning Act 2021.
Array Area	The part of an Offshore Wind Farm which commonly includes wind turbines and their foundations, and internal electrical cabling and offshore substation. The current CWP array area is illustrated on Figure 3.1 in Appendix A.
Codling Wind Park (CWP)	Codling Wind Park is the name of the proposed Offshore Wind Farm being development by Codling Wind Park Limited. It encapsulates the area covered by the Foreshore Lease granted for the original Codling Wind Park in 2005, and the Foreshore Lease Application for Codling Wind Park Extension.
Department of Housing, Local Government and Heritage (DHLGH)	The Irish government department responsible for housing, planning and local government.
Environmental Impact Assessment (EIA)	A systematic means of assessing a development projects likely significant environmental effects undertaken in accordance with the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018.
Foreshore Lease	Leases that were granted prior to the MAP Act 2021, under the Foreshore Act 1933 for the erection of long-term structures (e.g. piers, marinas, bridges, roads, car parks).
Foreshore Licence	Licences that were granted prior to the MAP Act 2021, under the Foreshore Act 1933 for other works (e.g. laying of submarine pipelines and cables) and purposes (e.g. aquaculture).
Maritime Area Regulatory Authority (MARA)	MARA is a body under the aegis of the Department of Housing, Local Government and Heritage, whose functions are set out in the Maritime Area Planning Act 2021. MARA are responsible for managing the existing foreshore consent portfolio, and processing Maritime Usage Licences (MUL) and Maritime Area Consents (MACs).
Mean High Water Springs (MHWS)	The highest-level which spring tides reach on average over a period of time above chart datum.
Maritime Usage Licence (MUL)	Licences granted under the MAP Act 2021 for a number of a number of marine based activities, including Marine Environmental surveys for the purposes of scientific discovery and site investigations.
National Parks and Wildlife Service	The National Parks and Wildlife Service manages the Irish State's nature conservation responsibilities. As well as managing the national parks, the activities of the NPWS include the designation and protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas.
Population viability analysis	Population viability analysis is a species-specific method of risk assessment frequently used in conservation biology. It is traditionally defined as the process that determines the probability that a population will go extinct within a given number of years.

Definition	Term
Proposed Activities	All of the site investigations and baseline surveys the subject of the Maritime Usage Licence Application.
Receptor	Environmental component that may be affected, adversely or beneficially, by an impact.
Remotely Operated Vehicle	A remotely operated underwater vehicle is a tethered underwater mobile device. ROVs are unoccupied, highly manoeuvrable, and operated by a crew either aboard a vessel/floating platform or on proximate land.
Special Area of Conservation (SAC)	Areas of protected habitats and species as defined in the Habitats Directive.
Special Protection Area (SPA)	Sites classified in accordance with Article 4 of the EC Birds Directive (79/409/EEC) which came into force in April 1979. They are classified for rare and vulnerable birds (as listed on Annex 1 of the Directive), and for regularly occurring migratory Species.
Species	A group of interbreeding organisms that seldom or never interbreed with individuals in other such groups, under natural conditions; most species are made up of subspecies or populations.
Staging site	Places where migrant birds stop to rest, drink, and eat during migration to their final wintering destination.
Zone of Influence (ZoI)	Spatial extent of potential impacts resulting from a project or activity.

1 INTRODUCTION

1.1 The Project

Codling Wind Park (CWP) is a proposed offshore wind farm (OWF) in the Irish Sea, set in an area called Codling Bank, between approximately 13-22 kilometres (km) off the County Wicklow coast, between Greystones and Wicklow Town.

Codling Wind Park Limited (CWPL), are applying for a Maritime Usage Licence (MUL) from the Maritime Area Regulatory Authority (MARA), to undertake Site Investigation Activities to inform the detailed design stage of the proposed CWP. This Supporting Information: Screening for Appropriate Assessment (SISAA) Report has been prepared in support of the MUL application from the Maritime Area Regulatory Authority (MARA), under the Maritime Area Planning Act (2021).

The Licence Application Area (Figure 1.1, Appendix A) lies off the east coast of Ireland, from the Poolbeg Peninsula, situated on the east side of Dublin City, to Wicklow Town, and is contained entirely within Ireland's National Marine Planning Framework (NMPF) Area and Irish Exclusive Economic Zone (EEZ), both of which extend 200 miles (320 km) off the Irish coast. The Licence Application Area, hereafter referred to as the "Licence Area", comprises an area of circa 477 km^2 and includes the array area, the potential operation and maintenance base (OMB) at Wicklow Harbour, the proposed export cable corridor (ECC) and the reclamation area for the potential onshore substation along the northern shore of the Poolbeg Peninsula at Pigeon Park. The Licence Area accounts for all locations where site investigations are proposed as part of this Maritime Usage Licence Application.

The Site Investigation Activities, hereafter referred to as the "Proposed Activities" will include marine geophysical, hydrographic, geotechnical, benthic subtidal and intertidal ecological, environmental, metocean, and archaeological surveys and water quality monitoring. The Proposed Activities are outlined within Section 3 of this SISAA. Further details of the Proposed Activities are contained within the Assessment of Impact of the Maritime Usage (AIMU) report which accompanies this application.

In accordance with the requirements set out under Article 6(3) of the Habitats Directive (92/42/EEC), this SISAA report presents the supporting information necessary for the MARA to reach a Screening for Appropriate Assessment Determination in relation to the Proposed Activities.

The Application is also accompanied by an Assessment of Impacts of the Maritime Usage (AIMU) report and an Annex IV Risk Assessment. A Natura Impact Statement (NIS) will be prepared upon receipt of MARA's appropriate assessment screening determination to ensure compliance with that determination. The NIS will then be submitted to MARA to accompany the Application.

GoBe Consultants Ltd (GoBe) have been appointed by CWPL to assist in the collation of the Maritime Usage Licence Application (MULA). GoBe has been at the forefront of strategic planning, consenting and EIA for large scale offshore wind within the UK and have been actively applying our experience to the offshore wind farm market in Ireland. Our understanding of the requirements of the EIA and Appropriate Assessment (AA) processes will be applied to this MULA.

As part of the MUL application, GoBe have prepared this Supporting Information: Screening for Appropriate Assessment (SISAA) report. All GoBe staff have experience of the preparation of information to support Appropriate Assessments and EIA. Contributors to the report include [redacted] an [redacted]

1.2 The Developer

Codling Wind Park Limited (CWPL), a joint venture between Fred. Olsen Seawind and Électricité de France (EDF) Renewables, was established to develop Codling Wind Park. Both companies are leading developers, owners, and operators of renewable energy assets, with many years of global experience in the renewable energy and offshore wind sector.

1.3 Purpose of the Document

The purpose of this document, which will accompany a MULA, is to provide supporting information for Stage 1 of the Appropriate Assessment (Screening for Appropriate Assessment) to be conducted by MARA as required under Article 6(3) of the Habitats Directive (92/43/EEC).

This report aims to support the Licence application process and provide the necessary information to the competent authorities to assist them in making an informed decision on the likely impact of the Proposed Activities on Special Areas of Conservation (SACs) and their designated Annex I habitats and Annex II species Qualifying Interests (QIs) and Special Protection Areas (SPAs) and their designated Special Conservation Interest (SCI) species.

1.4 Legislative Background

1.4.1 Guidance

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

- Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities. Department of the Environment Heritage and Local Government (Ireland) (DEHLG) (2009, revised 11/02/10);
- Circular NPW 1/10 and PSSP 2/10 on Appropriate Assessment under Article 6 of the Habitats Directive – Guidance for Planning Authorities (DEHLG, 2010b). Department of Environment, Heritage and Local Government;
- Maritime Area Regulatory Authority Licence Application Technical Guidance: Obtaining a Licence to Carry Out Specified Maritime Usages in the Maritime Area under the Maritime Area Planning Act 2021 (MARA, 2023);
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. (Office of the Planning Regulator, 2021);
- Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. (EEC, 2001);
- 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);
- Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC (European Commission, 2007);
- Marine Natura Impact Statements in Irish Special Areas of Conservation: A working document. Prepared by National Parks and Wildlife Service, DAHG (2012);
- Guidance to Manage the Risk to Marine Mammals from Manmade Sound Sources in Irish Waters. Prepared by National Parks Wildlife Service, DAHG (2014); and
- Managing Natura 2000 sites – The provisions of article 6 of the 'Habitats' Directive 92/43/ECC (EU – 21 November 2018).
- Office of the Planning Regulator – Practice Note 01 – PN01 (March 2021);

- 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).

1.4.2 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 Section 4 of this report will determine whether the proposed surveys, both alone and in combination/cumulatively with other planned activities under the remit of this project and others, are likely to have a significant effect on any Natura 2000 site or its qualifying interests. This document includes Stage 1 of the Appropriate Assessment process (Section 5). A NIS addressing stage 2 of screening for appropriate assessment will be submitted to MARA upon receipt of their screening determination. The NIS will accompany this MULA.

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna), which was 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 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 and Birds Directive form the cornerstone of Europe's nature conservation policy. Together they form a coherent network of protected areas (SACs and SPAs), 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 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."

1.4.3 Appropriate Assessment Process

In the context of this MULA, MARA must determine whether an AA is required based on the description of the Proposed Activities, thus, this report aims to provide MARA with the necessary information to assist in making an informed decision on the likely impact of this project on European Sites.

For the ease of the reader, this report uses the term “No LSE” or “No likely significant effects” to denote where it can be excluded that the Proposed Activities or a specified source of impact from the Proposed Activities will have a significant effect on a Natura 2000 site.

The effects of the Proposed Activities on the Natura 2000 sites are considered herein in the context of SCIs and QIs within SPAs and SACs, respectively, and specifically on the habitats and species for which the Natura 2000 sites have been designated, as well as the conservation objectives for those Natura 2000 sites. It also considers the potential for effects on habitats and species outside the boundaries of Natura 2000 sites where liable to affect the conservation objectives of the site.

This SISAA Report contains a formal Screening for Appropriate Assessment (Section 5) up to and including a conclusion/determination in relation to screening. Should the AA screening determine that significant effects are likely, then effects are examined to determine if they must be screened in for Stage 2 of the Appropriate Assessment, which is considered within a Natura Impact Statement (NIS). If MARA determine that significant effects are likely, an NIS will be prepared to accompany the MUL Application for the Proposed Activities. The NIS shall comprise a scientific examination of the Proposed Activities and the relevant European Sites, to identify and characterise any possible implications of the Proposed Activities individually and in combination with other plans or projects in view of the conservation objectives of the site or sites, alongside any further information required to enable the carrying out of a Stage 2 Appropriate Assessment.

The AA process is summarised in Figure 1 below.

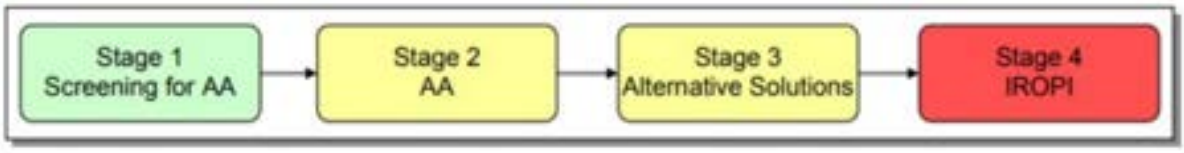

Figure 1 Stages in the AA process (Source: DEHLG, 2009)

The Proposed Activities have been outlined (Section 3) and all potential impacts and effects identified (Section 4) of this report.

The Office of the Planning Regulator issued a practice note (PN01) on Appropriate Assessment Screening for Development Management (Office of the Planning Regulator, 2021), outlining the steps and matters to be considered during the AA screening process. In line with the Office of the Planning Regulator’s practice note, and the European Commission's Methodological Guidance on Articles 6(3) and (4) of the Habitats Directive (European Commission 2019, European Commission 2021), the following stages and steps have then been undertaken:

- Stage 1 – AA screening: Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3), which are:

    i) whether a plan or project is directly connected to, or necessary for, the management of the site; and

ii) whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

- Step 1 – Provide a description of the plan or project, and local site or plan area characteristics (see Section 2);
- Step 2 – Ascertain the locations of the relevant Natura 2000 sites (see Section 4.1) and compile information on the QIs/ SCIs and conservation objectives for the sites (see Sections 4.1);
- Step 3 – Assessment of likely significant effects (direct, indirect and cumulative), undertaken on the basis of available information as a desk study, field survey or primary research, as necessary (Section 4.2);
- Step 4 – Consideration of 'in combination effects' (Section 4.2); and
- Step 5 – Draw conclusion as to whether or not the project (either alone or in combination with other plans or projects) may give rise to significant effects (Section 4.3), outlined within an AA Screening Statement.

If the effects are deemed to be significant, potentially significant, or uncertain, then the process must proceed to Stage 2 (AA report).

- Stage 2 – Appropriate Assessment: This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a NIS, i.e., the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site, in view of the site's SCIs and QIs, taking account of in combination effects. This should provide information to enable the competent authority to carry out the Appropriate Assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed through;
- Stage 3 - Alternative Solutions (where applicable);
- Stage 4 - Imperative Reasons of Overriding Public Interest (IROPI), or the plan or project should be abandoned. Recourse to derogation under Article 6(4) to allow a plan or project to proceed should be pursued in exceptional circumstances only, in which there are IROPI requiring a project to proceed, there are no less damaging alternative solutions, and compensatory measures have been identified that can be put in place.

It is the competent authority's responsibility to complete and record the AA. The overall assessment process includes the gathering and consideration of data and information relating to the plan or project and the site, the key elements of which should be contained in the NIS, in addition to data and information from other sources, and opinions from stakeholders, such as nature conservation authorities and relevant Non-Governmental Organisations (NGOs).

No measures intended to avoid or prevent any potential harmful effects of the Proposed Activities on any European Site have been considered when carrying out this screening exercise.

1.5 Licence Area

The Licence Area (Figure 1.1, Appendix A) lies off the east coast of Ireland, from North Dock Dublin Port to Wicklow Town, and is contained entirely within Ireland's National Marine Planning Framework (NMPF) Area and Irish EEZ, both of which extend 200 miles (320 km) off the Irish coast. The Licence Area covers circa 477km^2, encompassing the array area, the potential OMB at Wicklow Harbour, the proposed ECC, and the reclamation area for the potential onshore substation along the northern shore of the Poolbeg Peninsula at Pigeon Park. The Licence Area accounts for all locations where site investigations are proposed as part of this Maritime Usage Licence Application.

It is important to note that the Proposed Activities will not take place across the entire Licence Area. It is anticipated that the Proposed Activities will take less than the indicative timings provided in Table 3.1, or in any case it is expected that the surveys will not be undertaken over the entirety of the proposed duration.

The boundary of the Licence Area (see Figure 1.1, Appendix A) is defined by the co-ordinates presented in Table C (Appendix C) 'Co-ordinates of Licence Area'.

2 METHODOLOGY

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

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

The approach to this report draws mainly upon guidance produced by DEHLG (2009) and OPR (2021) and is further defined by the principles that underlie the Habitats Directive, for example the precautionary principle and proportionality. The methodology is required to identify all elements of the proposed works with the potential to have a significant effect on a European Site (EC, 2001). These sites will be identified for AA screening with reference to the proposed works effect-sources, the geographical scale over which they could arise (the 'Zone of Influence' (ZoI)) and possible interactions with European site's QIs. The well-established source-pathway-receptor (s-p-r) concept will guide the determination of the ZoI and effect-pathways to European sites.

2.1 Source-Pathway-Receptor approach

The s-p-r approach is the standard conceptual model that is used across a number of European Directives to characterise the means (pathways) via which effect-sources (such as the works being proposed) could be experienced by receptors (sensitive Qualifying Interest (QI) of a European site). Only where there is an identifiable source, a pathway and a sensitive receptor, is there likely to be a significant effect. The s-p-r framework refers to its three comprising elements that must all be present to identify a potential effect-pathway.

The pathway of an effect is defined through a ZoI, that outlines the geographical scale of the effect over which it could affect the receiving environment in a way that could have significant effects on the QI of a European site. A ZoI is often referred to as a 'footprint' of an effect. Source-pathway-receptor relationships are not always linear, and effects might be transmitted beyond the 'footprint' via hydrological pathways or enabled by impacts on another receptor (indirect effects). Potential effects may not be confined to within the Licence Area as a result of pathways created by the mobility of potential receptors (i.e. birds, marine mammals and fish). Notwithstanding this, how an effect might progress from its source along pathways to a particular European site can be discerned with reference to the receiving environment. Consideration of supporting habitat (defined as areas that can be used by a species, in particular those which may be listed as a feature of a European site, to support that species survival and/or reproduction) is also important here, for example ex situ sites utilised for foraging by bird species.

CIEEM (2018) defines the ZoI of a project as *'the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries'.*

DEHLG (2009) and OPR (2021) guidance suggests the ZoI should be established on a case-by-case basis using the s-p-r framework and not by arbitrary distances. The ZoI has been used to inform the search area within which European sites are screened for the relevant QI. For many types of development or effects, it is relatively simple to define the ZoI because the projects or effects are geographically discrete, and the number of receptors and types of impact are low. Generally, a single search (typically distance) parameter can be applied to determine the extent of a project's effects. In this case, the maximum distance for impacts on marine and aquatic species and habitats are varied and defined within Section 5 of this report.

The area over which direct effects can occur has been defined as the MUL Licence Area, as outlined herein (Figure 1.1, Appendix A). Notwithstanding this, consideration has also been given to the presence of mobile species (marine mammals, fish and birds) that may pass through the area during key stages of their life cycle (e.g. migration and foraging from breeding colonies) and their connectivity to European Sites across a wider study area.

3 PROPOSED ACTIVITES

3.1 Purpose of the Proposed Activities

The objectives of the proposed CWP OWF surveys are to determine the environmental conditions, and the seafloor and subsurface geological characteristics within the Licence Area, to inform the detailed design phase at CWP OWF. Site-specific data is needed to provide additional geotechnical, geophysical, environmental, and metocean information. Once gathered, this data will be used to inform detailed design decisions about foundation type, sizing, installation methodology, cable routing, methodology for laying and burying cables, cable landfall site selection, and to verify the validity of previously acquired data in light of the changing marine environment. The proposed programme of Proposed Activities to be undertaken within the Licence Area is summarised in Table 3.1 below and discussed in more detail in Section 3.3.

3.2 Survey Summary

As part of the Proposed Activities, two forms of site investigation survey are proposed: remote sensing activities (e.g. geophysical survey) which typically do not contact the seabed, and direct sampling activities (e.g. geotechnical survey) which will directly interact with the seabed. All Proposed Activities will be undertaken within the Licence Area shown in Figure 1.1 (Appendix A), as defined by the co-ordinates in Table C, (Appendix C).

The geophysical survey data to be collected as part of the Proposed Activities will subsequently be analysed, the results of which will be used to inform the precise locations where the direct sampling and tests will take place (within the Licence Area). For this reason, it has been necessary to consider, and present, indicative sampling locations within this document. This approach also allows for any site specific considerations (such as physical obstructions) to be avoided or taken into account at the time of carrying out the sampling/test.

CWPL are applying for a licence of 5-year duration to allow for flexibility to accommodate any unforeseen delays and breaks within the Proposed Activities campaigns.

The Proposed Activities will include:

- Metocean and Floating LiDAR campaign
- Geophysical campaign and UXO surveys;
- Geotechnical campaign;
- Fish & Shellfish surveys;
- Benthic & Intertidal surveys;
- Marine Mammal Passive Acoustic Monitoring (PAM) survey; and
- Archaeological surveys.

A summary of Proposed Activities is presented in Table 3.1 below and high-level method statements of the Proposed Activities are outlined in Section 3.3 below. Full details of the Proposed Activities can be found within the AIMU report (CWP-CWP-CON-02-01-09-Rep-001) submitted as part of this MUL application. Indicative proposed sampling locations are provided Figure 3.1 – 3.3 in Appendix A. This is illustrative and may be subject to change depending on the final design and outcome of any consultation and agreements reached with statutory bodies or consultees. Timings are also indicative and dependent on various factors including but not limited to weather and timing restrictions.

The information contained within Section 3.3 is indicative and may be subject to change depending on the final design and outcome of any consultation and agreements reached with statutory bodies or consultees. Timings for the Proposed Activities are also indicative and dependent on various factors including but not limited to weather and other environmental restrictions. Notwithstanding this, the details provided in this document are considered sufficient to inform a robust assessment of the Proposed Activities. A precautionary approach has been taken to ensure that the maximum impact is assessed where uncertainty exists over the precise timing or details of the Proposed Activities.

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 (Department of Communications, Climate Action, and the Environment (DCCAE), April 2018).

Table 3.1 Summary of Proposed Activities and Indicative Programme.

Proposed Activity	Proposed sample numbers / locations	Indicative timings
Metocean surveys	**Floating LIDAR system (FLS)** • Up to two devices to be deployed at any one time for up to 36 months deployment (indicative locations are shown in **Figure 3.1** in Appendix A). **Wave Buoys or MetOcean Buoys** • Up to two wave or MetOcean buoys located within the array area or along the export cable route. Predicted to use a clump weight anchors or drag anchors. Mooring can be single point or two-point mooring for systems. Buoys up to approximately 3 m diameter. **Acoustic Doppler Current Profilers (ADCPs)** • Up to two ADCPs placed on the seabed located within the array area or along the proposed export cable corridor (ECC).	Fixed 12 to 36 months period including the need for site access for data collection and servicing as required.
Geotechnical surveys	Indicatively 271 proposed survey locations have been identified across the Licence Area (including the Array Area, ECC, OMB and potential onshore substation location) which may require the use of boreholes, co-located Cone Penetration Tests (CPTs), and vibrocores (VCs), and may require multiple mobilisations. Trial pits will be used at the intertidal landfall area. The test locations are yet to be determined and will be informed by prior surveys, detailed engineering, and project design. Indicative locations for geotechnical tests within the Licence Area are provided in **Figure 3.2** in Appendix A. **Array Area** A conservative approach has been adopted which considers a maximum of 203 geotechnical survey locations consisting of up to 125 boreholes and up to 78 co-located CPTs and VCs. These are maximum figures	Two to eight months per mobilisation.

	(please refer to **Figure 3.2**). The most likely numbers of geotechnical survey locations will be significantly lower. (ie likely 60 or 75 boreholes to correspond with wind turbine generator (WTG) layouts with 78 co-located CPTs/VCs) Borehole indicative depths: 50 m. The maximum casing diameter of a borehole is typically 508mm. The diameter of sample recovered is approximately 105mm. Therefore, the maximum seabed penetration footprint from the boreholes within the array area is circa 25m^2 CPT and VC indicative depths: 6 m. CPT penetration cone is approximately 50 mm in diameter housed within a seabed frame with a footprint of between 8-10m^2. With a maximum of 78 locations, the maximum seabed penetration footprint over the proposed array area is less than 2m^2 for the CPTs. Vibrocore typically has an outer diameter of 100-120mm, with an expected sample recovery of 96mm. With a maximum of 78 locations, the maximum seabed penetration footprint over the array area is less than 2m^2. **Export cable corridor and intertidal landfall area** A conservative approach has been adopted which considers a maximum of 48 geotechnical survey locations in the ECC. Indicative depths: 6 m with few extending to 12 m close to the proposed intertidal landfall area. Diameter of casings and recovered samples for BHs and VCs and CPTs within the ECC are the same specifications as for the array area. Seven trial pits at the proposed intertidal landfall area. Indicative sampling duration is < 12 hours. **Potential Operation and Maintenance Base (OMB)** Ten boreholes and ten CPTs./VCs Borehole indicative depths: 6 m. CPT and VC indicative depths: 6 m. Indicative locations are shown in **Figure 3.1** and **Figure 3.2**. **Potential Onshore Substation Location** Ten boreholes and ten CPTs. Borehole indicative depths: 12 m. CPT and VC indicative depths: 6 m. Indicative locations are shown in in **Figure 3.1** and **Figure 3.2**.	
Geophysical and unexploded ordnance (UXO) surveys	**Array Area** Surveys across the proposed array area to assess ground conditions and to identify possible UXOs. Techniques include Multibeam echosounder (MBES), side scan sonar (SSS), and a gradiometer system using several	Two to eight months per mobilisation.

	magnetometers, a sub bottom profiler, and multichannel high-resolution acoustic seismic surveys i.e., sparkers. Ultra Short Base Line (USBL), an underwater acoustic positioning system will be used for towed equipment. **Export cable corridor & OMB** Surveys across ECC and OMB to assess ground conditions and to identify possible UXOs. Techniques include MBES, SSS, and a gradiometer system using several magnetometers, a sub bottom profiler, and multichannel high-resolution acoustic seismic surveys i.e., sparkers. USBL will be used for towed equipment. **Potential onshore substation location** Surveys in Pigeon Park to assess ground conditions. Techniques include MBES, SSS, and a gradiometer system using several magnetometers, a sub bottom profiler, and multichannel high-resolution acoustic seismic surveys i.e., sparkers.	
Fish & shellfish surveys	**Potting survey** Surveys will be designed to undertake investigative sampling. Indicatively may include ten locations for potting and trawl surveys within the proposed array area and/or along the proposed ECC and may be required at the potential OMB. Approximate duration of survey is three days. Indicative sampling duration is 24 hours per station. **Trawl survey** Surveys will be designed to undertake investigative sampling. Indicatively may include ten locations for potting and trawl surveys within the proposed array area and/or along the proposed ECC and may be required at the potential OMB. Indicative duration of survey is three days. Indicative sampling duration is one hour per station.	Periodically taking place over the following five year period. Potting surveys may be repeated up to quarterly; trawl survey sampling will occur no more than quarterly every annum. Maximum duration per year is 15-30 days.
Benthic & intertidal surveys	**Benthic sampling** Benthic sampling will occur up to two times annually. Indicative duration of survey is five days (likely using a 0.1 m^2 mini Hamon grab, Day grab, or a Van-Veen grab). Up to 60 across the proposed array area. Up to 20 reference sites (see **Figure 3.3** for indicative locations). Up to 20 along the proposed ECC up to mean high water springs (MHWS). Up to 10 around Wicklow Harbour for the potential OMB. Drop down videos (DDVs) may also be deployed at the same locations as the grab samples. Indicative locations are shown in **Figure 3.3.** Indicative sampling duration is < one hour per station.	Periodically taking place over the following 5-year period. Maximum duration per year is 4 weeks.

	Note – grabs may be required to inform a potential Dumping at Sea Permit application. **Ecological intertidal walkover** survey One at the proposed intertidal landfall area per year. 10 samples (sediment and fauna) at the proposed intertidal landfall area. Indicative sampling duration is < one hour per station. **Epibenthic Trawls** Indicative 30 locations within proposed array area and/or along the proposed ECC. Single survey to establish baseline, and possibly repeated over several mobilisations Indicative duration of survey is two days. Indicative sampling duration is one hour per station.	
Marine mammal acoustics	**Echolocation click detectors (PODs) and potentially broadband sound recorders.** A maximum of eight moorings equally dispersed outside of the array area boundary, but within the Licensed Area. Indicative locations are shown in Figure 3.1 in Appendix A.	Fixed 12 to 36 month period including the need for site access for data collection and servicing as required.
Intertidal archaeological walkover survey	Metal detector survey for archaeology at the proposed intertidal landfall area. Walkover at the proposed intertidal landfall area for archaeological features of interest.	Periodically taking place over the following 5-year period.

3.3 Survey Methodologies

High-level method statements and types of equipment that will be used during the Proposed Activities are provided below. The proposed programme of site investigations to be undertaken within the Licence Area is described in detail in the Description of the Proposed Activities section of the Assessment of Impacts on the Maritime Usage (AIMU) document submitted as part of this licence application.

3.3.1 Metocean

The metocean campaign across the Licence Area will comprise the deployment of:

- Up to two Floating LiDAR System (FLS) units for wind measurements, which is used to map the topography of the seabed;
- Acoustic Doppler Current Profilers (ADCPs) placed on the seabed for subsurface wave and current measurements, which are used to measure water current velocities over a depth range using the Doppler effect of sound waves scattered back from particles within the water column; or
- Waverider Buoys and/or MetOcean Buoys, used to measure wave data such as height and spread.

3.3.1 Geophysical Survey

The geophysical surveys across the Licence Area will comprise of the following:

- Multibeam Echosounders (MBES), which is used to provide detailed bathymetric mapping of the seabed;
- Sidescan Sonar (SSS), which is used to image the surface of the seabed for the detection of objects or structures;
- Sub-bottom Profiling (SBP)/Ultra-High resolution seismic (UHRS), which is used to produce a 2D image of the sub seabed geology;
- Marine Magnetometry/Gradiometer, used to locate and identify ferrous objects on or buried in the seabed; and
- Remotely Operated Vehicle (ROV), which is used to inspect certain areas of the proposed ECC or areas where there are features of interest within the proposed array area. An Ultra Short Base Line (USBL) system may be used to communicate the ROV's position relative to the vessel.

3.3.2 Geotechnical Survey

The 271 geotechnical survey locations across the Licence Area campaign will comprise:

- Cone Penetration Testing (CPT), a method of mapping and testing soil profiles on the seabed;
- Boreholes, a method of collecting sample from the seabed;
- Vibrocores (VCs), a method of rapidly retrieving continuous, undisturbed core samples from unconsolidated and semi-consolidated sediments; and
- Trial pits, a method of intrusive ground investigation for determining the condition and composition of the sediment. An estimation of seven trial pits to be used at the proposed intertidal landfall area for a duration of < 12 hrs.

Within the array area, there will be a maximum of 203 geotechnical locations consisting of up to 125 Boreholes and up to 78 co-located CPTs and VCs. These are maximum figures (please refer to Figure 3.2). The most likely numbers will be significantly lower (ie 60 or 75 boreholes to correspond with WTG layouts and 78 co-located CPTs/VCs). Along the ECC and intertidal landfall area there will be a maximum of 48 geotechnical locations, whilst there will be a maximum of 10 co-located boreholes and CPTs at both the potential OMB, and the potential onshore substation location.

3.3.3 Fish and Shellfish Survey

The fish or shellfish, surveys methods across the Licence Area are as follows:

- Potting survey, comprising fleets of pots (e.g. lobster pots) comparable with those used by local fishermen will be set over the Licence Area; and
- Trawl survey, the trawl survey would use comparable gear to that used locally. The sampling will occur no more than quarterly throughout the year. An estimated 10 locations for potting and trawl surveys within the proposed array area and/or along the proposed ECC and may be required at the potential OMB.

3.3.4 Benthic and Intertidal Survey

The benthic survey will be designed using analysis of the geophysical survey data available which will be reviewed to stratify sampling according to likely habitat types across the Licence Area.

Survey techniques are likely to include:

- Drop Down Video (DDV) at stations where sensitive habitats or hard substrate may be found;
- Deployment of a 0.1m^2 mini Hamon grab, Day grab, or a Van-Veen grab) at sediment-based sampling stations;
- Epibenthic Beam Trawl (if required following geophysical and DDV results); and
- Intertidal walkover survey.

3.3.5 Marine Mammal Passive Acoustic Monitoring (PAM) Survey

PAM will be conducted in order to determine baseline levels of dolphin/porpoise echolocation click occurrence and/or to collect data on background noise levels and other vocalisations made by cetaceans (*e.g.,* whistles) across the Licence Area.

Two different types of equipment may be used to collect marine mammal acoustics data:

- Echolocation click detectors (e.g., Chelonia's F-PODs); and
- Broadband sound recorders (e.g., Wildlife Acoustics' SM2M).

3.3.6 Archaeological Surveys

The archaeological surveys will be confirmed through the CWPL tendering process in consultation with the National Monuments service (NMS), however, it is proposed that two survey methods are utilised across the Licence Area:

- Intertidal walkover survey, which is used to survey and record visible archaeological remains within the intertidal zone; and
- A metal detection survey, which is used to detect metallic objects that may be buried below the surface layers of the intertidal zone.

A Detection Device Survey Licence will be applied for from the NMS prior to the surveys being undertaken.

3.3.7 Survey Vessels

In order to undertake these Proposed Activities, at any one time up to 8 survey vessels may be mobilised with a suite of survey equipment and devices within the Licence Area. A variety of survey vessels will be used. Vessels for geophysical surveys are generally between 10-60 m in length and are also suitable for environmental surveys. For deeper water and geotechnical surveys larger 30-90m vessels may be required. For borehole operations, jack-up barges may be used in order to maintain position. The exact vessel types will be defined after the tender process has been completed.

The vessels will conform to the following minimum requirements as appropriate:

- Endurance (e.g. fuel, water, stores, etc.) to undertake the required Proposed Activities;
- Appropriate accommodation and messing facilities on board;
- Station-keeping and sea keeping capabilities required by the specified work at the proposed time of year; the appointed contractor may provide supplemental tug assistance if such assistance benefits the operation;
- Staffing to allow all planned work to be carried out as a continuous operation (on a 24 hour per day basis for the offshore activities and on a 12 hour per day basis for the nearshore activities); and
- Equipment and spares with necessary tools for all specified Proposed Activities.

In instances where guard vessels and crew transfer / support vessels are required alongside survey vessels, it is possible that up to 15 vessels may be deployed at any one time.

4 IDENTIFICATION OF POTENITAL IMPACTS AND EFFECTS

Consideration of spatial and temporal footprint of Proposed Activities

It is critical to understand the overall spatial and temporal scale of the Proposed Activities in order to properly consider the potential impacts and effects that may arise on the Natura Site network.

The Licence Area is 477km^2, however Proposed Activities ongoing at any one time will occupy a limited percentage of that licenced area. Similarly, the total licenced duration covers a period of 7 years, however each Proposed Activity occupies only a small percentage of the total licenced duration (see Table 3.1).

As each survey vessel will spend no more than a few days in any particular location, potential impacts and effects will be localised at any one time to a very small proportion of the total Licence Area. Equipment deployments (e.g. floating Lidar), may be in place for longer periods, however their footprint is negligible in comparison to the overall Licence Area.

In this context, the highly localised, temporary and short duration of the Proposed Activities means that:

(1) the maximum number of vessels expected to be used by CWP at any one time i.e. 15 vessels, will not represent a significant addition to existing marine traffic operating in the Licence Area, which include cargo ships, ferries, fishing vessels and pleasure craft that run to a very large number of passages a year in the Irish sea; and

(2) the vessels at any one point in time would only occupy a very small percentage of the Licence Area available to protected species.

4.1 Marine Ornithology

Potential effects to SCIs within SPAs, or habitats supporting SCIs from the Proposed Activities are considered to be:

- Disturbance and displacement resulting from survey activity and vessel movements. This includes:
    - Increased above-water noise from:
        - Vessel-activity associated with the following survey activities;
            - Metocean survey device deployment and retrieval;
            - Geotechnical surveys in the array area, cable corridor route and around tidal landfall locations;
            - Geophysical and UXO surveys in the array area and cable corridor route;
            - Fish and shellfish surveys including potting surveys, trawls surveys and epibenthic trawls in the array area, cable corridor route and around tidal landfall locations;
            - Benthic sampling surveys in the array area, cable corridor route and around tidal landfall locations; and
            - Marine mammal acoustic recording device deployment and retrieval.
        - Use of survey equipment for geotechnical surveys (borehole excavation in intertidal areas).
        - Onshore activity associated with the following surveys in intertidal areas;

- Geotechnical surveys around tidal landfall; locations (survey staff and associated plant);
- Ecological intertidal walkover surveys (survey staff); and
- Intertidal archaeological walkover surveys (survey staff and survey equipment).

- Increased underwater noise from:

  - Vessel-activity associated with the following survey activities;
    - Metocean survey device deployment and retrieval;
    - Geotechnical surveys in the array area, cable corridor route and around tidal landfall locations;
    - Geophysical and UXO surveys in the array area and cable corridor route;
    - Fish and shellfish surveys including potting surveys, trawls surveys and epibenthic trawls in the array area, cable corridor route and around tidal landfall locations;
    - Benthic sampling surveys in the array area, cable corridor route and around tidal landfall locations; and
    - Marine mammal acoustic recording device deployment and retrieval.

  - The use of survey equipment for the following activities:
    - Geotechnical borehole of CPT surveys in the array area, cable corridor route and around tidal landfall locations;
    - Geophysical and UXO surveys using towed or vessel mounted noise-emitting devices in the array area and cable corridor route;
    - Fisheries surveys using trawling equipment (trawl surveys and epibenthic trawls) in the array area, cable corridor route and around tidal landfall locations; and
    - Benthic sampling surveys in the array area, cable corridor route and around tidal landfall locations.

- Increased visual disturbance from:

  - Vessel-activity associated with the following survey activities:
    - Metocean survey device deployment and retrieval;
    - Geotechnical surveys in the array area, cable corridor route and around tidal landfall locations;
    - Geophysical and UXO surveys in the array area and cable corridor route;
    - Fish and shellfish surveys including potting surveys, trawls surveys and epibenthic trawls in the array area, cable corridor route and around tidal landfall locations;
    - Benthic sampling surveys in the array area, cable corridor route and around tidal landfall locations; and
    - Marine mammal acoustic recording device deployment and retrieval.

  - Onshore activity associated with the following surveys in intertidal areas:
    - Geotechnical surveys around tidal landfall; locations (survey staff and associated plant);
    - Ecological intertidal walkover surveys (survey staff);
    - Intertidal archaeological walkover surveys (survey staff); and
    - Vessel-based surveys and intertidal surveys.

- Indirect effects through impacts upon prey species from:

- Underwater noise inducing activities within the array area, cable corridor route and around tidal landfall locations. Specifically from vessel noise from surveys and equipment noise from surveys.
- Impacts to seabed and intertidal habitats (habitat restructuring or increased suspended sediment levels) associated with the following activities:
  - Geotechnical borehole excavation or CPT surveys in the array area, cable corridor route and around tidal landfall locations;
  - Fisheries surveys using trawling equipment (trawl surveys and epibenthic trawls) in the array area, cable corridor route and around tidal landfall locations; and
  - Excavation during intertidal archaeological walkover surveys.

- Mortality or injury resulting from litter and pollution
  - Accidental release of litter in the array area, cable corridor route, and around tidal landfall locations from all survey activities; and
  - Accidental release of pollutants in the array area, cable corridor route and around tidal landfall locations from all vessel-based survey activities.

All other Proposed Activities are considered to have no potential route to impact for birds, directly or indirectly.

SCIs are described as three main groups: seabirds (including diver spp.); wildfowl (inclusive of ducks, and geese species.) and waders. The above impacts are not predicted to impact all SCI groups, rather each SCI is assessed where a potential route to impact exists (Table 4.1).

Table 4.1 Potential impacts and ornithological SCIs

Impact	Special conservation interest group
Disturbance and displacement from above water noise	Seabird, wildfowl, and waders
Disturbance and displacement from below water noise	Seabirds and wildfowl
Disturbance and displacement from visual impacts	Seabirds, wildfowl, and waders
Indirect effects through impacts upon prey species	Seabirds, wildfowl, and waders
Mortality or injury resulting from litter and pollution	Seabirds, wildfowl and waders

4.1.1 Disturbance and Displacement

Guidance from the UK defines disturbance as when the 'normal pattern of activity is interrupted by an anthropogenic activity', for example, foraging, resting or brooding. (Joint Statutory Nature Conservation Bodies (SNCB) Note 2017, Joint Nature Conservation Committee (JNCC) and Natural England (NE)[1]). Displacement is described as effective habitat loss, where there is some reduction in the area that individuals would usually be present and utilising the habitat, or freely moving through it. Whilst it is acknowledged that this advice comes

[1] https://data.jncc.gov.uk/data/9aecb87c-80c5-4cfb-9102-39f0228dcc9a/joint-sncb-interim-displacement-advice-note-2022.pdf

from a neighbouring jurisdiction, in the absence of specific guidance in Ireland, it is considered the most appropriate advice on how to consider the extent and potential consequences of seabird displacement.

Disturbance and displacement from above water noise

Proposed Activities may result in additional anthropogenic above water noise in the marine environment for the array area and cable corridor route and in the intertidal habitats around landfall locations. Birds vary in their responses and sensitivity to above water noise, and each SCI group is assessed accordingly below.

The character of additional anthropogenic above water noise experienced by SCIs shall vary between familiar sound profiles, such as additional vessel noise in parts of the Licence Area with high vessel traffic levels, and novel sound profiles, such as those emitted by intertidal geotechnical borehole excavation, or vessel activity in low traffic areas. These differences in the type of noise generated by different survey activities may influence the potential of those activities to result in disturbance and displacement effects.

Seabirds

Different seabird species show varied sensitivities to noise. Some species, such as herring gull, lesser black-backed gull and to a lesser extent kittiwake, nest in urbanised landscapes and display habituated responses to additional anthropogenic noise. Other species groups, such as divers, are notably sensitive to anthropogenic disturbance (Furness *et al*., 2012, Black *et al*., 2015, Dierschke *et al*., 2017, Fleissbach *et al*., 2019).

Wildfowl

Wildfowl display varied responses to anthropogenic noise, depending on the context, magnitude and predictability of the noise within the context of their surroundings. In addition, activity (i.e. foraging or roosting), as well as the time of day and flock size can affect how birds respond to sound disturbance (Cutts *et al*., 2013).

Waders

Waders show mixed responses to anthropogenic noise, depending on species. Some species, such as sanderling, are highly tolerant, whilst others such as knot and redshank are highly sensitive (Cutts *et al*., 2013). Recent work has suggested that the impact of noise to waders is already limited in industrialised areas as a result of habituation (Goss-Custard *et al*., 2019).

Disturbance and displacement from below water noise

Proposed Activities may result in additional anthropogenic below water noise in the marine environment for the array area and cable corridor route and in intertidal habitats around landfall locations. Birds vary in their responses and sensitivity to below water noise, and each SCI group is assessed accordingly below.

No route to impact exists in relation to underwater noise impacting wader SCIs as these species do not forage within the water column and therefore are not exposed to underwater noise.

Seabirds

For some species of diving seabirds, underwater noise is likely to be a disturbing factor, affecting prey acquisition, displacing them or their prey species from habitat or otherwise evoking an escape flight response (Black *et al*., 2015, Dierschke *et al*., 2017). Other seabirds that shallow dive, dip dive, or surface feed as their predominant method of foraging are unlikely to be impacted by below water noise, due to the brevity of exposure time and sensitivity to disturbance (Furness *et al*., 2012, Fleissbach *et al*., 2019).

Wildfowl

For some species of diving wildfowl (specifically diving duck and grebe species), underwater noise is likely to be a disturbing factor, affecting prey acquisition, displacing them from habitat or otherwise evoking an escape flight response (Black et al., 2015, Dierschke et al., 2017). Other wildfowl that do not forage within the water

column as their predominant method of foraging are unlikely to be impacted by below water noise, due to the brevity of exposure time and sensitivity to disturbance (Furness et al., 2012, Fleissbach et al., 2019).

Disturbance and displacement from visual impacts

Survey activities may result in additional anthropogenic visual impacts in the marine environment for the array area and cable corridor route and in intertidal habitats around landfall locations. Birds vary in their responses and sensitivity to visual impacts, and each SCI group is assessed accordingly below.

The character of additional anthropogenic visual impacts experienced by SCIs shall vary between familiar visual stimuli, such as the presence of personnel undertaking survey works in parts of the Licence Area where human activity levels and vessel traffic levels are already high, and novel visual impacts such as visually conspicuous activities in areas with low baseline levels of anthropogenic activity. These differences in the type of visual stimuli generated by different survey activities may influence the potential of those activities resulting in disturbance and displacement effects.

Seabirds
Breeding seabirds nesting on shorelines or structures in proximity to human activities can be disturbed from their nests. Similarly, other seabird aggregations or individual birds may be disturbed on approach or by vessel presence (Althouse *et al*., 2019, Furness *et al*., 2012, Dierschke *et al*., 2017, Fleissbach *et al*., 2019).

Wildfowl
Wildfowl differentially respond to visual disturbance, depending on their activity, species and context of the stimulus (Cutts *et al*., 2013). In particular, foraging or roosting aggregations of dabbling ducks or geese may be sensitive to visual disturbance.

Waders
Waders respond differentially to visual disturbance, depending on factors that include the species, flock size and context of their location (i.e. industrialised areas) (Cutts *et al*., 2013, Goss-Custard *et al*. 2019).

4.1.2 Indirect effects through impacts upon prey species

The Proposed Activities may result in disturbance or displacement of certain mobile prey species which, in turn, may affect their availability for SCIs. Impacts upon prey species may also occur through increased suspended sediment levels that may cause fish and mobile invertebrates to avoid the area effected by the Proposed Activities and may smother and hide immobile benthic prey, SCI groups may vary in their susceptibilities to indirect effects through impacts upon prey species, and each SCI group is assessed accordingly below.

Seabirds
Disturbance or displacement of hearing specialist fish prey species (by noise from geophysical and fish and shellfish surveys and benthic surveys) or benthic fish prey species (by agitation of benthic habitat from geotechnical surveys, fish and shellfish surveys and benthic surveys) may reduce the availability of those prey species to piscivorous seabird species.

Wildfowl
Disturbance or displacement of hearing specialist fish prey species (by noise from geophysical surveys) or benthic fish and shellfish prey species (by agitation of benthic habitat from geotechnical surveys, fish and shellfish surveys and benthic surveys) may reduce the availability of those prey species to piscivorous diving waterfowl species.

Waders

Disturbance or displacement of intertidal prey species which are foraged upon by wading bird species (by agitation of benthic habitat from geotechnical surveys, fish and shellfish surveys and benthic surveys) may reduce the availability of those prey species to wading bird species.

4.1.3 Mortality or injury resulting from litter and pollution

Should any litter and pollutants be released in the marine or intertidal environments within the Licence Area during the process of Proposed Activities these would have the potential to result in injury or mortality to SCIs from SPAs within the ZoI of the Licence Area.

4.2 Marine Mammals

Potential effects of the Proposed Activities on marine mammal QIs of European Sites include:

- Behavioural responses (disturbance and/or displacement), temporary threshold shift (TTS), or permanent threshold shift (PTS) from increased anthropogenic noise from geophysical survey and positioning equipment;
- Behavioural responses (disturbance and/or displacement), TTS, or PTS from increased anthropogenic noise from geotechnical surveys;
- Indirect effects through impacts upon prey species;
- Mortality or injury from collision events (with vessels undertaking Proposed Activities); and
- Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities.

None of the other Proposed Activities (trawls, benthic sampling, ecological/archaeological intertidal walkovers, metocean, or marine mammal passive acoustic monitoring) require sound generating equipment and as such there is no route to impact on marine mammal species relating to underwater noise from these activities. It should also be noted that there is no potential for the lethal effects or physical injury to arise as a result of increased anthropogenic noise from the geotechnical or geophysical surveys. Such effects are only considered to have the potential to arise through the use of explosives, or in relation to the behaviour of deep diving species following exposure to low frequency active sonar, neither of which are proposed as part of this application.

Information regarding each potential effect is provided in the following four sections.

4.2.1 Disturbance, TTS, and PTS from increased anthropogenic noise from geophysical survey and positioning equipment

The pulsed sound emitted by geophysical survey and positioning equipment has the potential to induce PTS, TTS, and/or disturbance when the frequencies emitted by the equipment fall within species' hearing ranges (see Table 4.2).

Table 4.3 provides typical frequencies and maximum peak sound pressure levels (SPL_{peak}) of the proposed suite of geophysical survey and positioning equipment types.

Southall *et al*. (2019) provide thresholds ('the 2019 thresholds') for received sound levels that have the potential to induce the onset of instantaneous PTS and TTS in marine mammals (see Table 4.4); this is the most recent scientific evidence-based publication on the topic. The (then) Department of Arts, Heritage and the Gaeltacht (DAHG) 2014 guidance 'on managing the risk to marine mammals from man-made sound

sources in Irish waters' is based on Southall *et al*. (2007) thresholds ('the 2007 thresholds'), however it is considered that the 2019 thresholds are most suitable for application within the AA process because; (1) the AA screening is required to be based on best scientific knowledge and (2) the 2019 thresholds are more conservative than the 2007 thresholds, such that any activity that is within the 2019 thresholds will be within the 2007 thresholds.

Due to the potential for all Annex II marine mammal species within the ZoI of the Proposed Activities to be affected by this route to impact, it is considered within the screening assessment against all relevant species. Relevant Annex IV species are assessed fully within the Annex IV Risk Assessment document that accompanies this MUL application.

Table 4.2 Auditory range for the four different marine mammal hearing groups (Southall et al., 2019).

Hearing group	Example species	Estimated auditory bandwidth (kHz)
Low frequency (LF) cetaceans	Minke whale	0.007 – 35
High frequency (HF) cetaceans	Bottlenose dolphin	0.15 – 160
Very high frequency (VHF) cetaceans	Harbour porpoise	0.2 – 180
Phocid carnivores in water (PCW)	Harbour seal, grey seal	0.05 – 86

Table 4.3 Typical frequencies and maximum peak sound pressure levels (SPLpeak) of the proposed suite of geophysical survey and positioning equipment types.

Equipment type	SPLpeak (dB re 1 µPa at 1 m)	Frequency (kHz)
Multibeam Echo Sounder (MBES)	210 – 229	200 – 450
Side Scan Sonar (SSS)	115 – 230	> 200
Magnetometer(s) / gradiometer	No sound emitted	No sound emitted
Single channel Sub-Bottom Profiler (SBP) – chirp / pinger	208 – 225	0.2 – 16
Ultra-High Resolution Seismic (UHRS) – boomer / sparker[2]	210 – 227	0.2 – 16
Ultra-Short Base Line (USBL)	193 – 207	18 – 55

[2] Includes the geophysical survey technique down P/check-shot' and / or 'P-S Suspension' Logging (PSSL) used during geotechnical surveys.

Table 4.4 Thresholds – peak SPLs (SPLpeak; dB re 1 µPa) – for assessing the potential for PTS and TTS to occur instantaneously.

Hearing group	Example species	Pulsed sound		Non-pulsed sound
		PTS	TTS	PTS
Low frequency cetaceans	Minke whale	219	213	230
High frequency cetaceans	Bottlenose dolphin	230	224	230
Very high frequency cetaceans	Harbour porpoise	202	196	230
Phocid carnivores in water	Grey seal Harbour seal	218	212	218

** (Southall et al., 2019 for pulsed sound and Southall et al., 2007 for non-pulsed sound – Southall et al. (2019) do not provide SPL thresholds for non-pulsed sound). No SPL thresholds are available for non-pulsed sound for TTS.*

4.2.2 Disturbance, TTS, and PTS from increased anthropogenic noise from geotechnical surveys

Geotechnical surveys, which only emit non-pulsed, i.e., continuous sound, have the potential to increase anthropogenic noise in the marine environment, which in turn has the potential to affect marine mammals. However, potential effects of geotechnical surveys on marine mammals are thought to be of relatively low concern as any drilling/coring activity is generally short in duration and occurs over a small spatial scale (JNCC, 2010).

Table 4.5 provides typical frequencies and SPLs of the proposed suite of geotechnical survey methods and equipment.

Due to the potential for all Annex II marine mammal species within the ZoI of the Proposed Activities to be affected by this route to impact, it is considered within the screening assessment against all relevant species.

Table 4.5 Typical frequencies and maximum sound pressure levels of the proposed suite of geotechnical survey methods/equipment[3]

Method / equipment	SPLpeak (dB re 1 µPa at 1 m)	Frequency (Hz)
Borehole[4]	148 – 151	120
CPT/seismic CPT	124 – 172	28
Vibrocore	194	50

4.2.3 Mortality or injury from collision events (with vessels)

Vessel strikes are a known cause of mortality in marine mammals (Laist *et al*., 2001, Erbe *et al.* 2020,). Non-lethal collisions have also been documented (Van Waerebeek *et al*., 2007; Schoeman *et al.,* 2020). Injuries from such collisions can be divided into two broad categories: blunt trauma from impact and lacerations from propellers. Injuries may result in individuals becoming vulnerable to secondary infections. Slower vessels, following a consistent trajectory, allow animals the opportunity to avoid collisions. The risk of fatality is also reduced if vessels are moving slowly.

Avoidance behaviour by cetaceans is often associated with fast, unpredictable boats such as speedboats and jet-skis (Bristow and Reeves, 2001; Gregory and Rowden, 2001; Leung and Leung, 2003; Buckstaff, 2004), while neutral or positive reactions have been observed with larger, slower moving vessels such as cargo ships (Leung and Leung, 2003; Sini *et al*., 2005).

Due to the potential for all Annex II marine mammal species within the ZoI of the Proposed Activities to be affected by this route to impact, it is considered within the screening assessment against all relevant species.

4.2.4 Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities

Marine mammals can be affected by pollution events or marine litter that can lead to death or a reduced level of health or fitness (e.g., through reduced breeding or feeding success) in populations.

Due to the potential for all Annex II marine mammal species within the ZoI of the Proposed Activities to be affected by this route to impact, it is considered within the screening assessment against all relevant species.

4.3 Annex I Habitats

The potential effects on Annex I habitat QIs from the Proposed Activities are considered to be:

- Direct physical disturbance from geotechnical and environmental surveys;

[3] SPL's derived from NOAA's User Spreadsheet Tool (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance).
[4] Borehole work may include 'down P/check-shot' and/or 'P-S Suspension' Logging (PSSL). Sound produced during check-shot logging is greater than that produced during PSSL. The source level of the check-shot logging equipment is comparable to that of the UHRS sparker (210 – 227 dB re 1 µPa @ 1 m; see Table 4.3) and is therefore assessed in the geophysical survey and positioning equipment section.

- Smothering/scour from increased suspended sediment concentrations (SSC) arising from geotechnical and environmental surveys;
- Community or habitat changes due to remobilisation of contaminated sediments during geotechnical and environmental surveys;
- Community or habitat changes resulting from introduction of invasive non-native species (INNS) arising from site investigation and environmental surveys; and
- Community or habitat changes resulting from littering or pollution events arising from site investigation and environmental surveys.

Each of these effects are described further below. No impacts are predicted on the offshore benthic habitat during geophysical or ROV surveys as no contact is made with the seabed.

4.3.1 Direct physical disturbance

A number of different elements of the Proposed Activities have the potential to directly disturb QIs within the Licence Area, with both offshore and intertidal habitats potentially affected.

Direct physical disturbance may occur as a result of direct contact with the seabed (i.e. through benthic grabs, epibenthic beam trawl, geotechnical site investigation and baseline surveys, or deployment of metocean equipment) in those locations where benthic QIs exist.

Geotechnical survey activities may also introduce vibration to the seabed and, although benthic organisms have no auditory capabilities, they are sensitive to vibration (Rogers et al., 2016), with responses including temporary retreat of tube dwelling species, and movement of mobile organisms away from the source of disturbance.

4.3.2 Smothering/scour from increased SSC

SSC may increase around any of the Proposed Activities that physically disturb the seabed (i.e. benthic grabs, epibenthic beam trawl, geotechnical site investigation and baseline surveys, or deployment of metocean equipment). These increases in SSC can affect filter feeding species by blocking feeding apparatus, smothering sessile species, or interfering with respiratory function, or can increase scour in areas of strong tidal movement. Regional data contained within the Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR[5]) Programme suggest that the most likely substrate types in the offshore regions of the Licence Area are coarse-grained sediments like sand and gravel. These sediments are exposed to the strong hydrodynamic movements in the area. Other notable habitats within the Licence Area include areas of finer sediments and sandy muds, particularly as you move towards the inshore sheltered areas (e.g., near to, and within Dublin Bay).

Coughlan *et al.* (2021) through a detailed hydrodynamic modelling exercise of the entire Irish Sea Basin concluded that Codling Bank had one of the lowest levels of sediment mobility within the region, due to the coarse nature of the sediments in the area, despite (or perhaps because of) the strong tidal currents the area is exposed to. It was also noted that in areas of finer sediment, such as those within the nearshore areas of Dublin Bay, similarly low seabed mobility exists, principally due to the low tidal current speeds in these areas which have created areas of net sediment accretion (Coughlan *et al.,* 2021). Considering this, and the relatively small and very localised increases in suspended sediment that may arise from the Proposed Activities when

[5] INFOMAR - https://www.infomar.ie/

compared to wider natural processes such as storm events, no elevation in SSC is predicted beyond 1km of Proposed Activities that may disturb the seabed.

4.3.3 Community or habitat changes due to remobilisation of contaminated sediments

Pollution by contaminated sediments can impact on the fitness or health of organisms or communities and thus alter community structure or habitats. Potential for occurrence within the ZoI is considered to be in line with that associated with increases in SSC, however typically, contaminated sediments are only associated with finer sediments as they do not bind effectively with coarse sands and gravels. The substrate type in the Licence Area largely consists of coarse sediments.

4.3.4 Community or habitat changes resulting from introduction of invasive non-native species (INNS)

Introduction of INNS can alter community composition through changes in predation or competition for resource, which can lead to a change in habitat, or loss of native species. The introduction of such invasive species can be via vessel or through contamination (i.e. colonised by invasive species).

4.3.5 Community or habitat changes resulting from littering or pollution events

Pollution or littering can directly impact on the fitness or health of organisms or communities and thus alter community structure and/or habitats.

4.4 Annex II Diadromous Fish

The potential effects on Annex II diadromous fish QIs from the Proposed Activities are considered to be:

- Injury and disturbance from underwater noise from geophysical and geotechnical surveys;
- Disturbance from increased levels of SSC from geotechnical and environmental surveys; and
- Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities.

These potential effects are expanded on below.

4.4.1 Injury and disturbance from underwater noise from geophysical and geotechnical surveys

Fish vary in their abilities to detect and utilise sound as well as their potential sensitivity to damage by sound (Popper *et al*. 2014; Popper & Hawkins, 2019; Popper *et al.* 2022). All fish detect kinetic sound energy in the form of particle motion, however some species have hearing specialisations that enable them to also detect sound pressure. Sound pressure detection is thought to broaden bandwidth and increase noise sensitivity in fish as well as potentially contribute to sound source localisation (Popper *et al*. 2022).

Acoustic signals emitted during geophysical surveys (e.g., from SSS, MBES and SBP) produce higher sound levels within the mid (1-10kHz), high (10-20kHz) and ultrasound (>20kHz) frequency range. Data on the effects of these systems on fish and shellfish receptors is limited; however, it has been suggested that fish lacking a swim bladder are unlikely to suffer from lethal or sublethal tissue injuries (Popper et al., 2014). As such, species with a swim bladder (a gas filled chamber used to maintain buoyancy) have a greater potential to suffer

barotrauma[6] or physical injury from sudden pressure changes (e.g., from sound pressure) than those without swim bladders (Popper *et al*. 2014).

Both the SSS and MBES proposed operate outside of the hearing range of all receptors and are therefore not anticipated to result in any TTS or disturbance impacts. There is however evidence that low to mid frequency acoustic signals, such as those used by some sub-bottom profiling systems, may induce TTS or result in behavioural responses in some receptors (e.g., birds such as herring and twaite shad), given their wider hearing bandwidth (Popper et al., 2014). These changes would be temporary with affected individuals anticipated to resume normal behaviours or recolonise areas shortly after survey work has ceased. Based on the above, the maximum sensitivity of fish and shellfish receptors to non-impulse sounds is deemed to be low.

4.4.2 Disturbance from increased levels of SSC from geotechnical and environmental surveys

The coarse nature of the sediments across much of the Licence Area mean that any potential increase in SSC will remain within close proximity to the Proposed Activities (see Section 3).

4.4.3 Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities

Fish species can be affected by pollution events or marine litter that can lead to death or a reduced level of health or fitness (e.g., through reduced breeding or feeding success) in populations.

4.5 Other Annex II species

There is a potential for Otter (*Lutra lutra*) to be present in coastal environments which overlap with the Licence Area, and sightings have been recorded near to Dublin Bay and in the Wicklow area (Lysaght & Marnell., 2016) According to open access data provided by Biodiversity Maps[7] there have been sightings of Otter along the coast of South Dublin as recently as 2018.

Otter surveys undertaken on behalf of Dublin City Council 2019 and Dún Laoghaire-Rathdown (DLR) Council, 2020[8] identified a number of watercourses within their jurisdiction that included evidence of the presence of otters. Sightings along the Dublin coastline were found in 14 watercourses and tributaries (Macklin et al, 2019). Along South Dublin coastline, a number of holts were recorded, the highest of which were recorded on the Shanganagh River, although holts were also recorded on seven other watercourses (Glencullen River, Carrickmines River, Little Dargle River, County Brook Stream, Glencullen Stream, Rathmichael Stream and Slang River). The highest number of holts in the survey area was recorded along the DLR coastal boundary.

It is considered that there are no other additional Annex II species that have not been considered above for which Natura Sites have been designated within the ZoI of the Proposed Activities.

Potential effects on Otter from the Proposed Activities are considered to be:

- Disturbance and displacement from activities in the intertidal or shallow subtidal area (i.e. environmental, geophysical, or geotechnical surveys in the intertidal or nearshore area);
- Indirect effects through impacts upon prey species; and

[6] Barotrauma refers to injuries (i.e. trauma) caused by changes in barometric or water pressure.
[7] https://maps.biodiversityireland.ie/
[8] DLR *Biodiversity Tour Booklet* available at: https://www.dlrcoco.ie/biodiversity/dlr-biodiversity-0

- Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities.

4.5.1 Disturbance and displacement from visual impacts

Activities from the intertidal surveys (ecological walkover, archaeological, or intertidal geotechnical surveys) all have the potential to result in visual and/or noise related disturbance and displacement.

4.5.2 Indirect effects through impacts upon prey species

Proposed Activities may result in disturbance or displacement of certain mobile prey species which, in turn, may affect their availability for otter. Impacts upon prey species may also occur through increased suspended sediment levels that may cause fish and mobile invertebrates to avoid the area effected by the Proposed Activities and may smother and hide immobile benthic prey.

4.5.3 Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities

Otter can be affected by pollution events or marine litter that can lead to death or a reduced level of health or fitness (e.g., through reduced breeding or feeding success).

4.6 In-Combination Screening for Cumulative Effects

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).

4.6.1 Defining Spatial Range for Cumulative Effects

The boundary for examination of cumulative effects has been defined considering the types of impact which relate to the activities set out in the AIMU document which accompanies this MUL application and includes remote (off-site) locations as set out in (EC, 2021). Impacts of noise associated with the planned survey activities are considered to have the widest spatial reach, with Harbour porpoise the designated Natura 2000 site feature which is most sensitive to noise disturbance (JNCC, 2020).

The JNCC Guidance on Assessing the Significance of Noise Disturbance Against Harbour Porpoise SACs Conservation Objectives (JNCC, 2020) has therefore been used to determine the boundary for examination of cumulative effects. The guidance uses published ranges for effects of noise from different noise producing activities to determine Effective Deterrence Ranges (EDRs). Where evidence is limited for a particular activity, the deterrence range is informed by studies which consider the most similar sound levels or other appropriate characteristics.

As outlined in the Annex IV Risk Assessment (Doc. No.: CWP-CWP-CON-02-01-09-ASM-0002) prepared to accompany this MUL application, for geophysical surveys in the North Sea, studies have shown that harbour porpoise (the most acoustically sensitive species of marine mammals in Irish and UK waters) were deterred from the area, up to 12 km from the source (measured by a reduction in acoustic activity) during seismic airgun surveys (Sarnocińska et al., 2020). Guidance in the UK considers that for other geophysical surveys (including SBP) a 5 km effective deterrent range (EDR) from geophysical survey equipment to be precautionary (JNCC, 2020).

As such, the EDR has been conservatively chosen as 12km (the EDR for Seismic CPTs – the largest EDR for the activities considered as part of this application) and doubled to ensure projects where other seismic activities are occurring which would also have a precautionary EDR of 12km are considered. The spatial range used for the identification of plans/projects with the potential to cause in-combination effects was 25km, for completeness. Projects within 25km of the Licence Area were then forward for temporal assessment.

4.6.2 Defining Temporal Range for Cumulative Effects

The temporal scope for examination of cumulative effects has been defined considering the period over which the licence activities would take place. A licence period of up to 5 years is being sought for this project therefore the temporal range used for the identification of plans/projects with the potential to cause in-combination effects was 5 years.

4.6.3 Identification of Plans/Projects

A list was compiled and is contained in Table B, Appendix B and identifies the plans/projects deemed to have spatial and temporal overlap with the Proposed Activities and thus have the potential to cause in-combination effects on the identified Natura 200 sites. Those projects listed will be examined fully for in-combination effects on the identified Natura 2000 sites within the NIS which will be submitted to MARA following receipt of MARA's screening determination.

5 APPROPRIATE ASSESSMENT (AA) SCREENING

The following sets out the assessment of LSE to protected sites and their respective QI/SCI's. The assessment outlines the criteria used for defining the Zone of Influence (ZOI)[9] relevant to the potential impacts of the Proposed Activities, outlines how European Natura 2000 sites have been identified (i.e. using the Source-Pathway-Receptor model) and describes the sites which have been identified as having the potential to be affected by the proposed works. The European Natura 2000 site information is based on the most up-to-date data available from the site synopses published by the National Parks and Wildlife Service (NPWS, www.npws.ie), the Joint Nature Conservation Committee (JNCC, https://jncc.gov.uk/) and the European Commission (https://ec.europa.eu/environment/nature/natura2000/index_en.htm).

5.1 Step 1-2: Identification of Designated Sites and Associated Interests

5.1.1 Zone Of Influence of the Proposed Activities

The following SACs and SPAs have been identified as potentially falling within the ZoI of the Proposed Activities:

- Any SPA designated for birds, including SPAs with breeding seabirds listed as species of Qualifying Interest, which have the potential to occur within the Licence Area and be affected by the Proposed Activities (Table 5.2). Note, indicative breeding season mean maximum foraging ranges from Woodward et al. (2019) have been used to determine relevant species for identification of SPAs (Table 5.1).

- Any SAC in the vicinity of the Licence Area designated for Annex I habitats which have the potential to be affected by the Proposed Activities.

- Any SAC designated for mobile Annex II species which have the potential to occur within the Licence Area and be affected by the Proposed Activities.

5.1.2 Marine Ornithology

Situated where the Atlantic Ocean meets North-western Europe, Ireland is a highly important breeding, wintering and migratory stopover destination for many species of birds. The coastline of Ireland and its associated islands and estuaries host nationally and internationally important assemblages of bird species throughout the year and as such many sites are designated as SPAs under the terms of the EU Birds Directive (2009/147/EC).

Many of the island and coastal cliff SPAs provide important habitat for breeding seabird species, of which 24 species are recorded as breeding in Ireland (Mitchell et al., 2004).

The East Atlantic Flyway (EAF) is a major migratory route for a number of bird species, which connects Arctic and Nearctic breeding grounds that extend from eastern Canada and central Siberia with wintering areas that stretch from western Europe and down into Sub-Saharan Africa. Ireland's location at the 'gateway' between the northern reaches and central/southern extent of the EAF make it a critical stopover destination for migrating

[9] The zone of influence (ZOI) of a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This has the potential to extend far beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.

waterfowl, waders and passerines. Estuarine habitats along the Irish East coast provide important foraging and staging areas outside of the breeding season for migratory species of waterfowl and waders (Crowe, 2005).

The screening exercise considers sites which meet the following criteria:

- The Proposed Activities overlap directly with a SPA;
- The distance between the Proposed Activities and a SPA is within the range for which there could be an interaction (i.e. the pathway is not too long);
    - **For seabirds SCIs this element of the screening process is informed by published information on foraging ranges (Woodward *et al.*, 2019).** Identifying the potential for breeding seabird SPAs to be within the ZoI of the Proposed Activities is progressed on the basis that SCIs from SPAs which are within the mean-maximum foraging range of the SCI from the proposed works may forage in, pass through or undertake other behaviours within the Licence Area. Table 5.1 provides the mean-max foraging range of breeding seabird species in Ireland. For offshore ornithological receptors the ZoI was defined as the area encompassed by the maximum of the mean-max foraging range of all receptors considered.
    - For fulmar, Manx shearwater, great skua and gannet (species with mean-max foraging ranges exceeding 500 km) the screening search distance was capped at 500 km. Although it is acknowledged that individuals from more distant breeding SPAs may occasionally occur within the Licence Area, the proportion within the very large foraging areas of these species occupied by the Licence Area is considered negligible. For SPAs beyond this distance from the Licence Area, the Licence Area also would not constitute a core part of their large foraging range. As such the potential for sites beyond 500km to occur within the ZoI of the Proposed Activities is considered negligible, and no route to LSE is concluded.

Table 5.1 Mean-max foraging ranges plus 1 Standard Deviation (SD) of breeding seabird species in Ireland (Woodward et al., 2019)

Species	Mean-max foraging range + 1SD (km) (Woodward et al., 2019)
Eider	21.5
Red-throated diver	9.0
Fulmar*	1,200.0
Manx shearwater*	2,365.5
European storm petrel	336.0
Leach's storm petrel	n/a
Gannet*	509.4
Cormorant	33.9
Shag	23.7
Arctic skua	n/a
Great skua*	931.2
Black-headed gull	18.5
Common gull	50.0

Mediterranean gull	20.0
Herring gull	85.6
Lesser black-backed gull	236.0
Kittiwake	300.6
Sandwich tern	57.5
Roseate tern	23.2
Common tern	26.9
Arctic tern	40.5
Little tern	5.0
Guillemot	153.7
Razorbill	164.6
Puffin	265.4
** For fulmar, Manx shearwater, great skua and gannet (species with mean-max foraging ranges exceeding 500 km) the screening search distance was capped at 500 km. Although it is acknowledged that individuals from more distant breeding SPAs may occasionally occur within the Licence Area, the proportion within the very large foraging areas of these species occupied by the Licence Area is considered negligible. For SPAs beyond this distance from the Licence Area, the Licence Area also would not constitute a core part of their large foraging range. As such potential for sites beyond 500km to occur within the ZoI of the Proposed Activities is considered negligible, and no route to LSE is concluded.*	

- **For migratory and wintering species of wildfowl and waders during non-breeding seasons, and wintering gull populations at estuarine SPAs, sites within 15 km of the Licence Area have been considered.** Although wintering SCIs from estuarine SPAs (waders, waterfowl and wintering gulls) do not generally forage as widely as breeding seabird species, it is noted that wintering estuarine species may move between estuarine areas. Wintering SCIs from estuarine SPAs may therefore utilise estuarine habitats outside the SPAs in which they are listed as SCIs and, should this ex-situ habitat use occur within or close to (within 1 km of) the Licence Area there is the possibility that Proposed Activities may impact upon these SCIs. On the basis that such movements will happen most frequently between estuarine habitats which are in close proximity, a 15 km range for screening of estuarine SPAs with the potential to occur within the ZoI of the Proposed Activities is considered appropriately conservative. Disturbance distances (NatureScot, 2023) will also be used to inform the screening process (Section 5.2) for wildfowl, waders, raptors and terns (Table 5.2).

Table 5.2 Disturbance distances for breeding and non-breeding season (NatureScot, 2023)

Species	Disturbance distances for breeding (BR) and non-breeding (NBR) seasons (m) (NatureScot, 2023)
Light-bellied Brent goose	NBR – 200-600m*
Greylag goose	BR – 200-600m NBR – 200-600m

Shelduck	BR – 100-400m NBR – 100-400m
Pintail	BR – 100-200m NBR – 100-200m
Shoveler	BR – 100-200m NBR – 100-200m
Common Scoter	BR – 300-500m
Goldeneye	BR – 100-150m NBR – 150-800m
Red-throated diver	BR – 500-750m NBR – <1000m
Great Northern Diver	NBR – 100-350m
Peregrine	BR – 500-750m NBR – <200m
Merlin	BR – 300-500m NBR – <200m
Oystercatcher	BR – 50-100m NBR – 150-300m
Ringed plover	BR – 100-200m NBR – 100-300m
Grey plover	NBR – 150-300m
Golden plover	BR – 200-500m NBR – 200-500m
Dunlin	BR – 100-200m NBR – 150-300m
Knot	NBR – 100-300m
Redshank	BR – 100-200m NBR – 200-300m
Black-tailed godwit	BR – 100-200m NBR – 100-200m
Bar-tailed godwit	NBR – 200-300m
Curlew	BR – 200-300m NBR – 200-650m
Little tern	BR – 100-300m
Sandwich Tern	BR > 200m
Common tern	BR – 200-400m
Arctic tern	BR >200m

Roseate tern	BR >200m
** For light-bellied brent goose the range for the other geese species that were assessed was used.*	

- Given the highly localised, temporary and short duration of the proposed surveys, it is considered that only those SPAs with direct overlap, or within 15 km, have potential to be affected by the Proposed Activities. Besides potential impacts from litter and pollution, potential impacts to wintering estuarine SCIs from SPAs beyond 15 km from the Licence Area are considered negligible and there is therefore no potential for any LSE on the SCI's of these sites.
- **For post-breeding tern aggregation SCIs, only four SPAs are designated in relation to such features within 100 km of the Licence Area** (South Dublin Bay and River Tolka Estuary SPA, Dalkey Islands SPA, North-west Irish Sea SPA and Seas off Wexford SPA), all of which are considered in screening.
- One other SPA with the potential to occur within the ZoI of the Licence Area was also identified. The Wicklow Mountains SPA lies within 10 km of the Licence Area at its closest point. Although this is an inland site, the peregrine and merlin SCI features for which it is designated are known to undertake seasonal movements away from upland breeding areas, to lowland and particularly coastal areas. As such there is the potential for ex-situ impacts upon the SPA. No other, similarly designated sites (for upland breeding raptor species) occur within 50 km of the Licence Area.

- The distance between the Proposed Activities and resources on which the interest feature depends (i.e. an indirect effect acting through prey or access to habitat) is within the range for which there could be an interaction (i.e. the pathway is not too long).

Those sites included in Screening are outlined in Table 5.3 and are shown in relation to the Proposed Activities in Figure 5.1 and Figure 5.2 (Appendix A).

Table 5.3 SPAs with bird QIs included in screening

Site code	Site name	Qualifying Interest / Special Conservation Interest	By Sea Distance from Licence Area (km)
All SPAs within 15 km of Licence Area – all SCIs			
[IE004024]	South Dublin Bay and River Tolka Estuary SPA	[A046] Light-bellied Brent goose *Wintering* [A144] Sanderling *Wintering* [A149] Dunlin *Wintering* [A143] Knot *Wintering* [A137] Ringed plover *Wintering* [A130] Oystercatcher *Wintering* [A179] Black-headed gull *Wintering* [A159] Bar-tailed godwit *Wintering* [A141] Grey plover *Wintering* [A162] Redshank *Wintering* [A192] Roseate tern *Post-breeding aggregation* [A193] Common tern *Post-breeding aggregation + Breeding* [A194] Arctic tern *Post-breeding aggregation + Breeding* [A999] Wetland and Waterbirds	0
[IE004186]	The Murrough SPA	[A001] Red-throated diver *Wintering* [A043] Greylag goose *Wintering* [A046] Light-bellied brent goose *Wintering* [A050] Wigeon *Wintering* [A052] Teal *Wintering* [A179] Black-headed gull *Wintering* [A184] Herring gull *Wintering* [A195] Little tern *Wintering* [A999] Wetland and Waterbirds	0
[IE004172]	Dalkey Islands SPA	[A193] Common tern *Post-breeding aggregation + Breeding* [A194] Arctic tern *Post-breeding aggregation + Breeding* [A192] Roseate tern *Post-breeding aggregation + Breeding*	0.29
[IE004236]	North-west Irish Sea SPA	[A001] Red-throated diver *Wintering* [A003] Great Northern Diver *Wintering* [A009] Fulmar *Breeding* [A013] Manx Shearwater *Breeding* [A017] Cormorant *Breeding + Wintering* [A018] Shag *Breeding* [A065] Common Scoter *Breeding + Wintering* [A177] Little Gull *Wintering* [A179] Black-headed Gull *Breeding + Wintering*	0.55

Site code	Site name	Qualifying Interest / Special Conservation Interest			By Sea Distance from Licence Area (km)
		[A182]	Common Gull	*Breeding + Wintering*	
		[A183]	Lesser Black-backed Gull	*Breeding + Wintering*	
		[A184]	Herring Gull	*Breeding*	
		[A187]	Great Black-backed Gull	*Breeding + Wintering*	
		[A188]	Kittiwake	*Breeding*	
		[A192]	Roseate Tern	*Post-breeding aggregation + Breeding*	
		[A193]	Common Tern	*Post-breeding aggregation + Breeding*	
		[A194]	Artic Tern	*Post-breeding aggregation + Breeding*	
		[A195]	Little Tern	*Wintering*	
		[A199]	Guillemot	*Breeding + Wintering*	
		[A200]	Razorbill	*Breeding + Wintering*	
		[A204]	Puffin	*Breeding*	
[IE004006]	North Bull Island SPA	[A046]	Light-bellied Brent goose	*Wintering*	0.76
		[A048]	Shelduck	*Wintering*	
		[A056]	Shoveler	*Wintering*	
		[A054]	Pintail	*Wintering*	
		[A052]	Teal	*Wintering*	
		[A130]	Oystercatcher	*Wintering*	
		[A140]	Golden plover	*Wintering*	
		[A141]	Grey plover	*Wintering*	
		[A160]	Curlew	*Wintering*	
		[A157]	Bar-tailed godwit	*Wintering*	
		[A156]	Black-tailed godwit	*Wintering*	
		[A169]	Turnstone	*Wintering*	
		[A143]	Knot	*Wintering*	
		[A144]	Sanderling	*Wintering*	
		[A149]	Dunlin	*Wintering*	
		[A162]	Redshank	*Wintering*	
		[A179]	Black-headed gull	*Wintering*	
		[A999]	Wetland and Waterbirds		
[IE004127]	Wicklow Head SPA	[A188]	Kittiwake	*Breeding*	4.85
[IE004113]	Howth Head Coast SPA	[A188]	Kittiwake	*Breeding*	4.95
[IE004117]	Ireland's Eye SPA	[A017]	Cormorant	*Breeding + Wintering*	9.92
		[A184]	Herring gull	*Breeding + Wintering*	
		[A188]	Kittiwake	*Breeding + Wintering*	
		[A199]	Guillemot	*Breeding + Wintering*	
		[A200]	Razorbill	*Breeding + Wintering*	

Site code	Site name	Qualifying Interest / Special Conservation Interest			By Sea Distance from Licence Area (km)
[IE004016]	Baldoyle Bay SPA	[A046] [A048] [A137] [A140] [A141] [A157] [A999]	Light-bellied brent goose Shelduck Ringed plover Golden plover Grey plover Bar-tailed godwit Wetland and Waterbirds	*Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering*	12.96
[IE004040]	Wicklow Mountains SPA	[A098] [A103]	Merlin Peregrine	*Breeding + Wintering* *Breeding + Wintering*	13.10
[IE004025]	Malahide Estuary SPA	[A005] [A046] [A048] [A054] [A067] [A069] [A130] [A140] [A141] [A143] [A149] [A156] [A157] [A162] [A999]	Great crested grebe Light-bellied brent goose Shelduck Pintail Goldeneye Red-breasted merganser Oystercatcher Golden plover Grey plover Knot Dunlin Black-tailed godwit Bar-tailed godwit Redshank Wetland and Waterbirds	*Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering* *Wintering*	14.98
More distant SPAs (beyond 15km to 500km) – <u>Showing only SCIs within mean-max foraging range of Proposed Activities.</u>					
[IE004069]	Lambay Island SPA	[A009] [A017] [A018] [A183] [A184] [A188] [A199] [A200] [A204]	Fulmar Cormorant Shag Lesser black-backed gull Herring gull Kittiwake Guillemot Razorbill Puffin	*Breeding* *Breeding + Wintering* *Breeding* *Breeding* *Breeding + Wintering* *Breeding* *Breeding* *Breeding* *Breeding*	18.97
[IE004014]	Rockabill SPA	[A194]	Arctic tern	*Breeding*	29.12
[IE004122]	Skerries Islands SPA	[A017] [A184]	Cormorant Herring gull	*Breeding + Wintering* *Breeding + Wintering**	29.41
[IE004237]	Seas Off Wexford SPA	[A009] [A013] [A016]	Fulmar Manx Shearwater Gannet	*Breeding* *Breeding* *Breeding*	50.01

Site code	Site name	Qualifying Interest / Special Conservation Interest		By Sea Distance from Licence Area (km)
		[A183]	Lesser Black-backed Gull *Breeding* [A188] Kittiwake *Breeding* [A199] Guillemot *Breeding* [A200] Razorbill *Breeding* [A204] Puffin *Breeding* [A184] Herring gull *Breeding + Wintering* [A191] Sandwich Tern *Post-breeding aggregation + Breeding*	
[UK9013121]	Aberdaron Coast & Bardsey Island SPA (Wales)	[A013]	Manx shearwater *Breeding*	53.42
[UK9020328]	Irish Sea Front SPA (Wales)	[A013]	Manx shearwater *Breeding*	62.98
[IE004002]	Saltee Islands SPA	[A009] [A204] [A016] [A183] [A188] [A199] [A200]	Fulmar *Breeding* Puffin *Breeding* Gannet *Breeding* Lesser black-backed gull *Breeding* Kittiwake *Breeding* Guillemot *Breeding* Razorbill *Breeding*	111.7
[UK9014051]	Skomer, Skokholm and Seas off Pembrokeshire SPA (Wales)	[A013] [A014] [A204] [A183]	Manx shearwater *Breeding* European storm petrel *Breeding* Puffin *Breeding* Lesser black-backed gull *Breeding*	136.89
[UK9014041]	Grassholm SPA (Wales)	[A016]	Gannet *Breeding*	192.89
[UK9020291]	Copeland Islands SPA (Northern Ireland)	[A013]	Manx shearwater *Breeding*	171.43
[UK9003091]	Ailsa Craig SPA (Scotland)	[A183] [A016] [A188]	Lesser black-backed gull *Breeding* Gannet *Breeding* Kittiwake *Breeding*	233.68
[IE004073]	Tory Island SPA	[A009]	Fulmar *Breeding*	377.2
[IE004155]	Beara Peninsula SPA	[A009]	Fulmar *Breeding*	377.74
[IE004175]	Deenish Island and Scariff Island SPA	[A009] [A013]	Fulmar *Breeding* Manx shearwater *Breeding*	406.13
[IE004007]	Skelligs SPA	[A009] [A013]	Fulmar *Breeding* Manx shearwater *Breeding*	418.62

Site code	Site name	Qualifying Interest / Special Conservation Interest			By Sea Distance from Licence Area (km)
		[A016]	Gannet	*Breeding*	
[IE004154]	Iveragh Peninsula SPA	[A009]	Fulmar	*Breeding*	417.31
[IE004003]	Puffin Island SPA	[A009] [A013]	Fulmar Manx shearwater	*Breeding* *Breeding*	420.41
[UK9001121]	Mingulay and Berneray SPA (Scotland)	[A009]	Fulmar	*Breeding*	447.42
[UK9001341]	Rum SPA (Scotland)	[A013]	Manx shearwater	*Breeding*	442.41
[IE004008]	Blasket Islands SPA	[A009] [A013]	Fulmar Manx shearwater	*Breeding* *Breeding*	447.63
** Inclusion of wintering periods as designated periods for these seabird species which do not occupy these sites outside the breeding season and disperse widely during the post and non-breeding seasons is very unusual, and may be an error in the Natura 2000 designation sheet*					

5.1.3 Marine Mammals

The following marine mammal species[10], which are all present in the Irish Sea, are listed under Annex II of the Habitats Directive (Council Directive 92/43/EEC), this means that they are '*animal and plant species of community interest whose conservation requires the designation of SACs*':

- Bottlenose dolphin (*Tursiops truncatus*) [1349];
- Harbour porpoise (*Phocoena phocoena*) [1351];
- Grey seal (*Halichoerus grypus*) [1364]; and
- Common (Harbour) seal (*Phoca vitulina*) [1365].

The spatial range to consider for marine mammal varies depending on the species, considering individual species ecology and behaviour. For all species, the study area covers the License Area and is extended over an appropriate area considering the scale of movement and population structure for each species. For each species, the area considered in the assessment is largely defined by the appropriate species Management Units (MUs) are defined by Inter-Agency Marine Mammal Working Group (IAMMWG) within IAMMWG, 2015 and based on the best understanding of the structure of biological populations and any ecological differentiation within such populations. The principle for range is based on the fact that almost all species of cetaceans found in UK waters are part of larger biological populations whose range extends into the waters of other European states.

In order to assess the potential for SACs with marine mammal QIs to occur within the ZoI of the Proposed Activities, a 5 km buffer (in line with the guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland), JNCC, 2020) around

[10] Species codes are given in square brackets in the bulleted list.

the Licence Area was created to represent the effective deterrence range of noise from the Proposed Activities being conducted in relation to CWP OWF. This effective deterrence range (recommended for England, Wales and Northern Ireland; JNCC, 2020) has been used in the absence of an equivalent recommendation for Ireland and is considered to represent the maximum area within which there is potential for any impacts on marine mammals, associated with the Proposed Activities. The potential for collision risk and pollution and littering is assessed for all Proposed Activities using vessels within the Licence Area.

An assessment of potential for SACs to occur within the ZoI of the Proposed Activities is presented below for each marine mammal QI and are shown in relation to the Proposed Activities in Figure 5.3 - Figure 5.6 (Appendix A). Identified SACs presented below have been listed in order of increasing distance from the Licence Area.

5.1.3.1 Bottlenose dolphin

Bottlenose dolphins are described as being one of the most frequently recorded and familiar cetaceans occurring in Ireland, occurring in group sizes between three and 30 in coastal waters, and larger groups of hundreds of individuals in offshore waters (NPWS 2019). Bottlenose dolphin sightings during the ObSERVE surveys were mainly located in the west and the south of Ireland (Rogan et al., 2018).

In Ireland, there are thought to be at least three distinct populations of bottlenose dolphin, as determined by genetic studies (Mirimin *et al.*, 2011). One of these populations is highly mobile and the same individuals have been recorded off all Irish coasts, with individuals recorded in Dublin Bay recaptured (i.e., sighted and identified through photographic identification (hereafter 'photo-ID') using distinctive features) and in Galway Bay (O'Brien *et al.,* 2010). Comparison of images within bottlenose dolphin photo-ID catalogues confirm movement of individuals through prospective corridors linking designated SACs in the Moray Firth (Scotland), Cardigan Bay (Wales) and Shannon Estuary (Ireland) (Robinson *et al.*, 2012). Photo-ID of bottlenose dolphins by IWDG have recorded same individuals off counties Dublin, Cork, Kerry, Galway, Mayo, Donegal and Antrim (Berrow *et al.,* 2010), suggesting that inshore dolphins recorded within and / or near the Licence Application Area potentially use the entire Irish coast. In March 2024, the Department of Housing, Local Government and Heritage announced new cetacean measures, with bottlenose dolphins added as QIs to 6 marine and/or coastal SACs. Most coastal sightings around Ireland fall within 10 km from shore (O'Brien *et al*., 2010; Robinson *et al*., 2012).

CWP Licence Application Area potential Bottlenose dolphin populations are considered to be part of the larger IAMMWG Irish Sea (IS) Management Unit (MU) (Figure 2 below). SACs falling within (or partly within) the IS MU are therefore considered to have potential to occur within the ZoI of the Proposed Activities and are therefore taken forward to screening in this assessment.

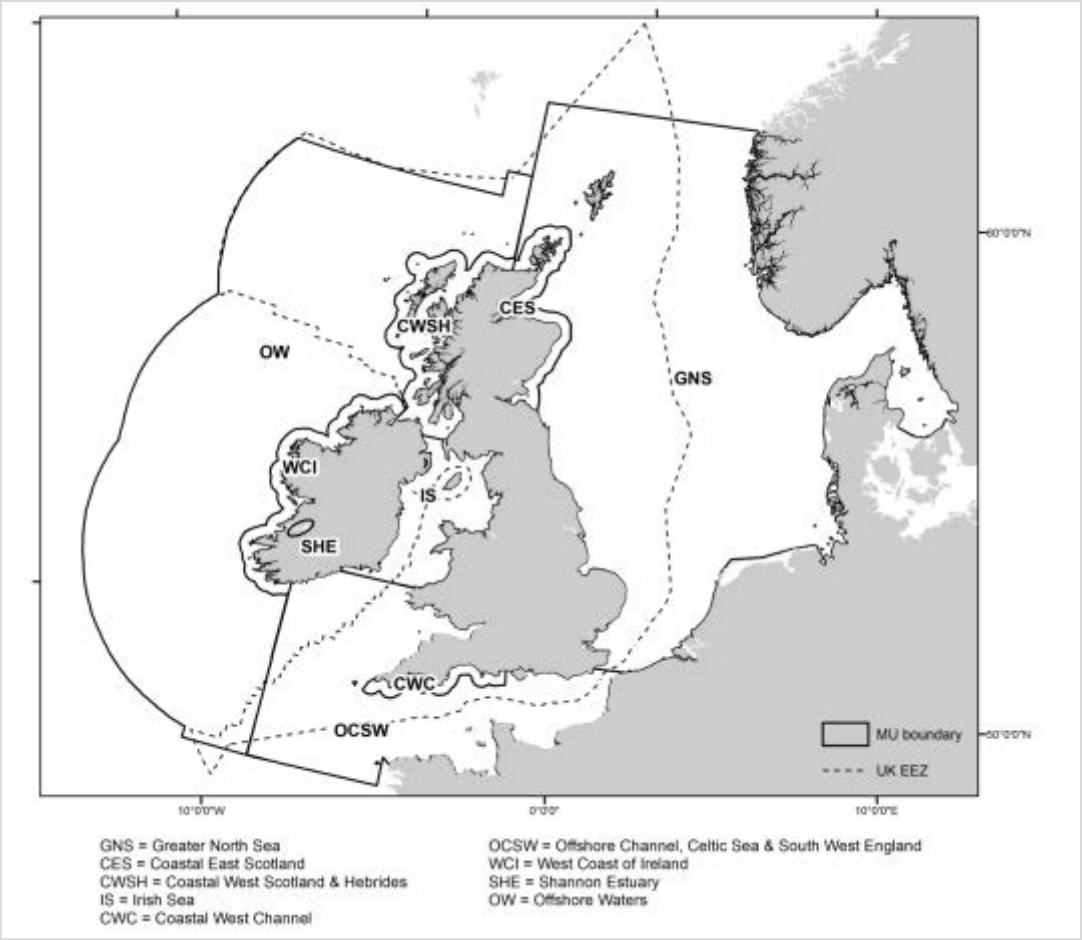

Figure 2 Bottlenose dolphin Management Units (MU) around the UK (taken from IAMMWG, 2022)

Those Irish and UK bottlenose dolphin SACs that have the potential to occur within the ZoI of the Proposed Activities due to the interchange of individuals between Ireland and the UK, namely:

- Lleyn Peninsula and the Sarnau SAC [UK0013117] (c. 57.92km by sea distance);
- Cardigan Bay SAC [UK0012712] (c. 97.98km by sea distance);
- Hook Head SAC [IE000764] (c. 127.68km by sea distance);
- St. John's Point SAC [000191] (c. 474.86km by sea distance);
- Belgica Mound Province SAC [IE002327] (c. 477.87km distance by sea);
- Lower River Shannon SAC [IE002165] (c. 538.98km by sea distance);
- West Connacht Coast SAC [IE002998] (c. 539.07km by sea distance);
- Duvillaun Islands SAC [IE000495] (c.559.70km by sea distance);
- Slyne Head Peninsula SAC [IE002074] (c. 613.90km by sea distance);
- Slyne Head Islands SAC [IE000328] (c. 610.77km by sea distance);
- Porcupine Bank Canyon SAC [IE003001] (c. 705.53km by sea distance);
- South-west Porcupine Bank SAC [IE002329]; (c. 711.51km by sea distance); and
- Moray Firth SAC [UK0019808] (c. 931.26km by sea distance).

5.1.3.2 Harbour porpoise

For harbour porpoises, the SCANS-IV model-based density surface (Gilles *et al*., 2023) was used to assess whether there was potential for SACs occur within the ZoI of the Proposed Activities. The SCANS-IV density surface (Figure 3) indicates an area of relatively high harbour porpoise density (defined as 0.3 to 0.4 or more animals/km^2) to the south of Ireland/off west Wales and southwest England which was used to infer population range (i.e. the range over which the population is distributed) for harbour porpoise using the Licence Area. It should be noted that the location, size, shape and scale of this relatively high porpoise density area is similar to that of the Celtic and Irish Seas Management Unit for harbour porpoise (Figure 4 below) (IAMMWG, 2023). Porpoise SACs falling within (or partly within) the IAMMWG Celtic and Irish Seas management area are therefore considered to have the potential to occur within the ZoI of the Proposed Activities, namely:

- Rockabill to Dalkey Island SAC [IE003000] (0km by sea distance);
- Lambay Island SAC [000204] (c. 18.97km by sea distance);
- Codling Fault Zone SAC [IE 003015] (c. 14.2km by sea distance);
- North Anglesey Marine SAC [UK0030398] (c. 31.79km by sea distance);
- Blackwater Bank SAC [IE002953] (c. 52.61km by sea distance);
- West Wales Marine SAC [UK0030397] (c. 53.30km by sea distance);
- Carnsore Point SAC [IE002269] (c. 84.78km by sea distance);
- North Channel SAC [UK0030399] (c. 104.85km by sea distance);
- Hook Head SAC [IE000764] (c. 127.68km by sea distance);
- Bristol Channel Approaches SAC [UK0030396] (c. 187.52km by sea distance);
- Roaringwater Bay and Islands SAC [IE000101] (c. 334.52km by sea distance);
- Kenmare River SAC [IE002158] (c. 384.89km by sea distance);
- Mers Celtiques - Talus du golfe de Gascogne [FR5302016] (c. 431.1km by sea distance);
- Nord Bretagne DH ZSC [FR2502022] (c. 461.2km by sea distance);
- Blasket Islands SAC [IE002172] (c. 447.63km by sea distance);
- Belgica Mound Province SAC [IE002327] (c. 477.87km by sea distance);
- Bunduff Lough & Machair/Trawalua And Mullagh SAC [IE000625] (c. 481.85km by sea distance);
- Ouessant-Molène ZSC [FR5300018] (c. 504km by sea distance);
- Abers - Côte des legends [FR5300017] (c. 511.8km by sea distance);
- Côte de Granit rose-Sept-Iles [FR5300009] (c. 521.7km by sea distance);
- Baie de Morlaix [FR5300015] (c. 525.8km by sea distance);
- West Connacht Coast SAC [IE002998] (c. 539.07km by sea distance);
- Tregor Goëlo [FR5300010] (c. 540.6km by sea distance);
- Côte de Crozon SAC [FR5302006] (c. 543.06 by sea distance);
- Chaussée de Sein [FR5302007] (c. 552.2km by sea distance);
- Inishmore Island SAC [IE000213] (c. 580.98km by sea distance);
- Kilkieran Bay and Islands SAC [IE002111] (c. 590.04km by sea distance);
- Récifs et landes de la Hague SAC [FR2500084] (c. 619.93 by sea distance);
- Anse de Vauville SAC [FR2502019] (c. 610.92 by sea distance);
- Baie de Saint-Brieuc – Est SAC [FR5300066] (c. 611.21 by sea distance);
- Récifs et landes de la Hague SAC [FR2500084] (c. 619.93 by sea distance);
- Banc et récifs de Surtainville SAC [FR2502018] (c. 621.44 by sea distance);

- Chausey SAC [FR2510037] (c. 635.16 by sea distance);
- Estuaire de la Rance SAC [FR5300061] (c. 647.32 by sea distance);
- Baie du Mont Saint-Michel SAC [FR2510048] (c. 667.79 by sea distance).

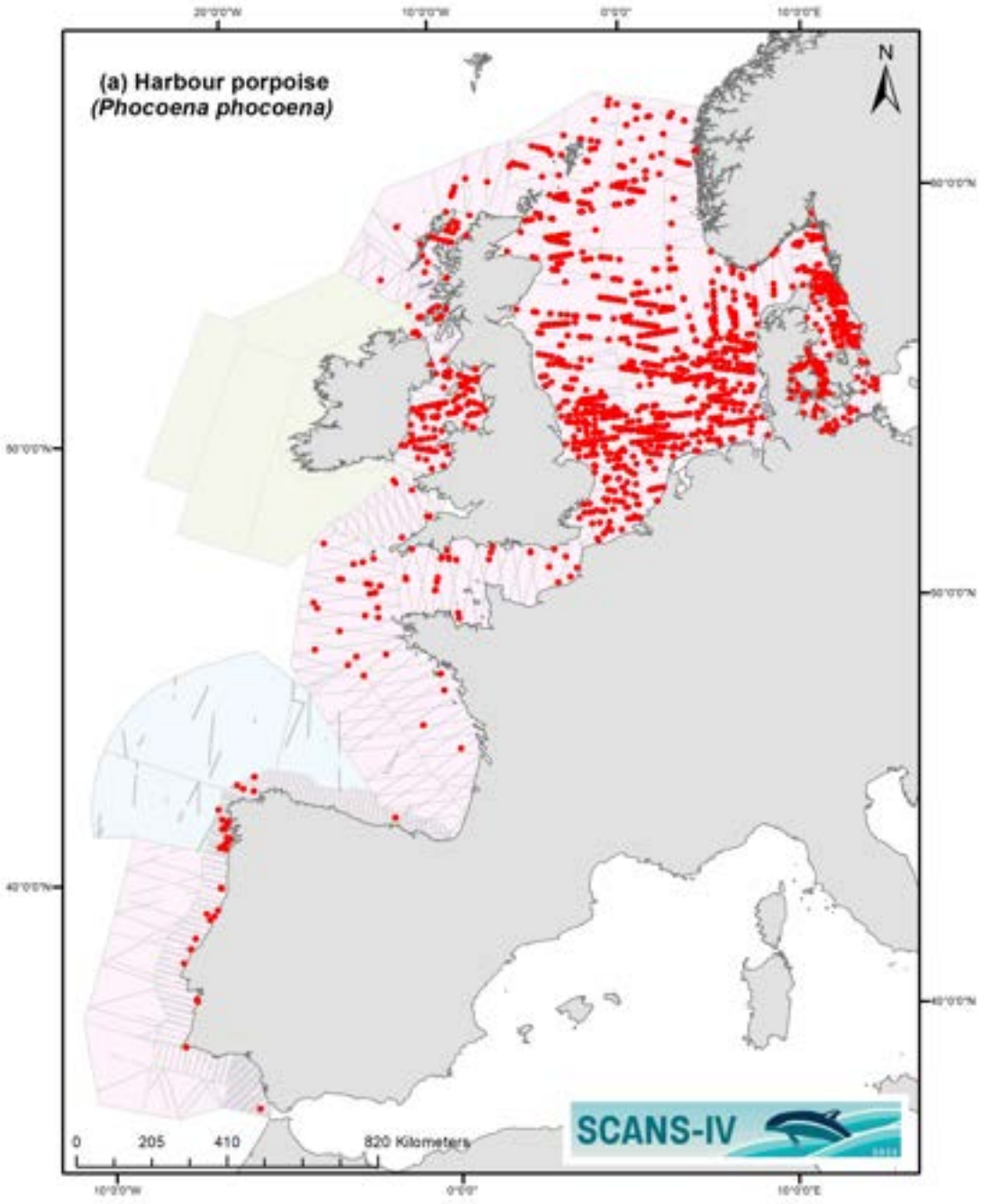

Figure 3 SCANS-IV distribution map for harbour porpoise (from Gilles et al., 2023)

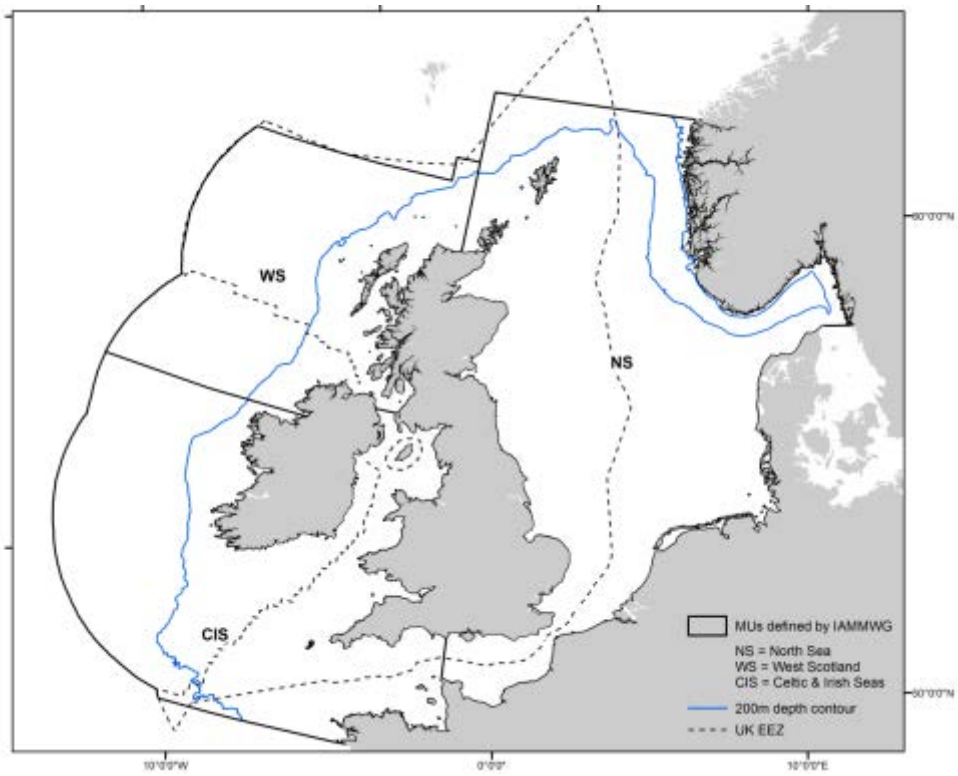

Figure 4 Harbour porpoise MU (taken from IAMMWDG, 2022)

5.1.3.3 Pinnipeds

Aerial surveys of the Irish Sea show that grey seals are more common than harbour seals within this region; however, more broadly the east coast had the lowest count of both species compared to the south, north and west (Morris and Duck, 2019). This may be an indication that this region is not as preferable to seals; however, in some regions to the east of Ireland, there is evidence of a decline in harbour seals, yet grey seal numbers in this region are generally stable or increasing (Culloch et al., 2018; Morris and Duck, 2019).

Grey and harbour seals spend a proportion of their time hauled-out on land in order to rest (between foraging trips), moult and pup. Foraging ranges (i.e., distances travelled during feeding activity, described using data from telemetry studies where devices are glued to animals' fur and detach during the annual moult) for both seal species have been used to assess the potential for SACs with seal QIs to occur within the ZoI of the Proposed Activities.

It is possible that seals using the closest SAC (Lambay Island SAC), for which they are a qualifying feature, could be using areas within the Licence Application Area for foraging and / or transiting through. Carter et al. (2022) used telemetry data of harbour and grey seals tagged around the UK and Ireland to produce habitat-based distribution estimates which indicated that the region on the south coast of Ireland does not support high densities of grey seals or harbour seals, as compared to southwest and southeast of Ireland. With respect to harbour seals, the areas around Lambay Island, Strangford Lough, and Murlough (all of which are SACs with harbour seal as a qualifying feature) do have higher densities predicted, but these are localised, and are still low when compared to key regions for this species, such as the west of Scotland and The Wash in southeast England (Carter et al., 2022).

The closest known breeding site for grey and harbour seals is within the Lambay Island SAC (for which grey and harbour seals are qualifying features); this SAC is c. 18.97km from the Licence Application Area. Surveys of this area in 2009 estimated a minimum pup production for grey seals of 77 pups and an overall population size of 270-347 (Ó Cadhla et al., 2013). Thermal imaging surveys in 2017 and 2018 recorded 60 harbour seals hauled out in the SAC (Morris and Duck, 2019).

Both species are also present within and around the Rockabill to Dalkey Island SAC which overlaps the Licence Application Area; however, neither are listed as a qualifying feature of the SAC.

In line with advice from IWDG, screening for seals (see Table 5.14) has been undertaken on the basis of foraging ranges. Consideration of the latest guidance published in Carter *et al*, 2022 that defines average or typical foraging range for species as 100 km for grey seals and 50 km for harbour seals (Carter *et al*, 2022).

Grey seal

Although grey seals are known to undertake long distance travel, the majority of their trips to sea are much shorter foraging trips (taking a small number of days), with seals generally returning to the same haul out sites from which they departed, as can be seen in Figure 3 below (McConnell *et al*., 1999; SCOS 2020). The maximum foraging range for the species is considered to be 448km (Carter et al., 2022) therefore SACs with grey seal QIs within this distance were identified as having the potential to occur within the ZoI of the Proposed Activities.

Whilst the maximum foraging range is considered to be 448km, the average foraging range for grey seals was identified as 100km (Carter et al., 2022), which is considered as part of the screening exercise in Section 5.2.

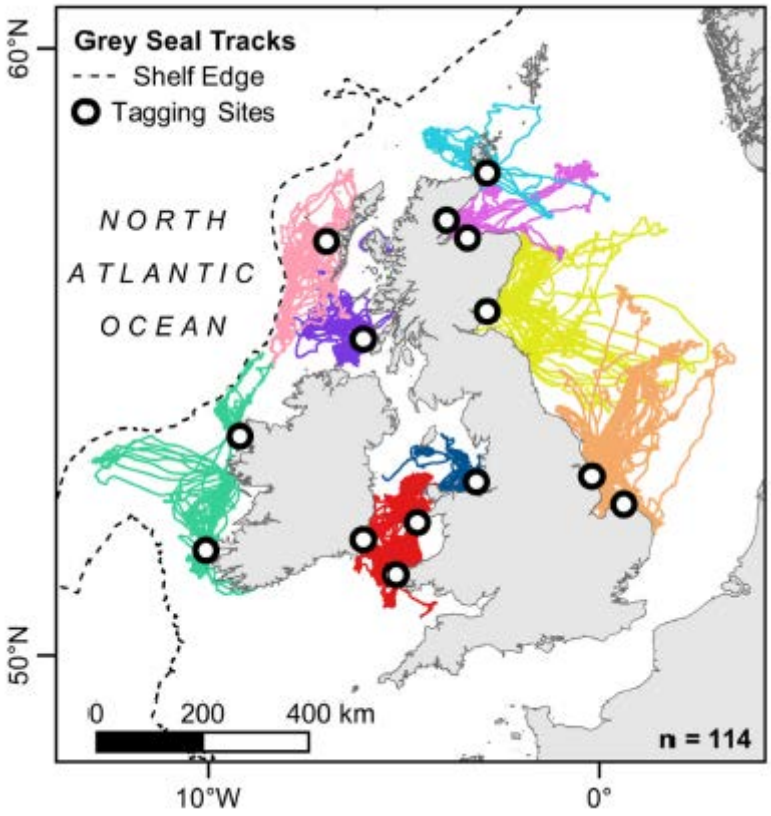

Figure 5 Satellite tracking data for 114 grey seals, colour-coded by habitat preference region (from Carter et. al. 2022)

Grey Seal SACs occurring within (or partly within) 448km (by sea) of the Licence Area are therefore considered to have the potential to occur within the ZoI of the Proposed Activities, namely:

- Rockabill to Dalkey Island SAC [IE0003000] (c. 0km by sea distance);
- Lambay Island SAC [IE000204] (c. 18.97km by sea distance);
- Lleyn Peninsula and the Sarnau SAC [UK0013117] (c. 57.92km by sea distance);
- Cardigan Bay SAC [UK0012712] (c. 97.98km by sea distance);
- Saltee Islands SAC [IE0000707] (c. 110.32km by sea distance);
- Pembrokeshire Marine [UK0013116] (c. 116km by sea distance);
- The Maidens [UK0030384] (c. 186.63km by sea distance);
- Bristol Channel Approaches [UK0030396] (c. 187.52km by sea distance);
- Lundy [UK0013114] (c. 215.67km by sea distance);
- Isles of Scilly Complex [UK0013694] (c. 332.69km by sea distance);
- Roaringwater Bay and Islands SAC [IE0000101] (c. 334.52km by sea distance);
- Horn Head and Rinclevan SAC [IE0000147] (c. 365.10km by sea distance);
- Slieve Tooey/Tormore Island/Loughros Beg Bay SAC [IE0000190] (c. 440.59km by sea distance); and
- Blasket Islands SAC [IE0002172] (c. 447.63km by sea distance).

Harbour seal

Regional differences are apparent in the distances harbour seals travel from haul-out sites to foraging areas (Table 5.4). For example, seals on the east coast of the UK (Moray Firth, St Andrews Bay and The Wash) make relatively long trips, whereas animals from the Northern Isles (Orkney and Shetland), Outer Hebrides and southwest Ireland generally make shorter trips (Sharples *et al*., 2012; Cronin, 2011).

Table 5.4 Information on average foraging trip distance

Location	Mean foraging trip distance (km)	Reference
Shetland, Orkney, The Thames	Between 11 and 21	Sharples et al. (2012)
The Wash	86	
Moray Firth	100.6	
Southwest Ireland	Foraging trips generally extended no further than 20 km from haul out sites; over half of these trips were less than 5 km	Cronin (2011)

A more recent study conducted by Carter et. al. (2022) identified the maximum foraging range for harbour seals to be 273km, with an average of 50km. (Carter et al, 2022).

Whilst the maximum foraging range is considered to be 273km, the average foraging range for harbour seals was identified as 50km (Carter et al., 2022), which is considered as part of the screening exercise in Section 5.2.

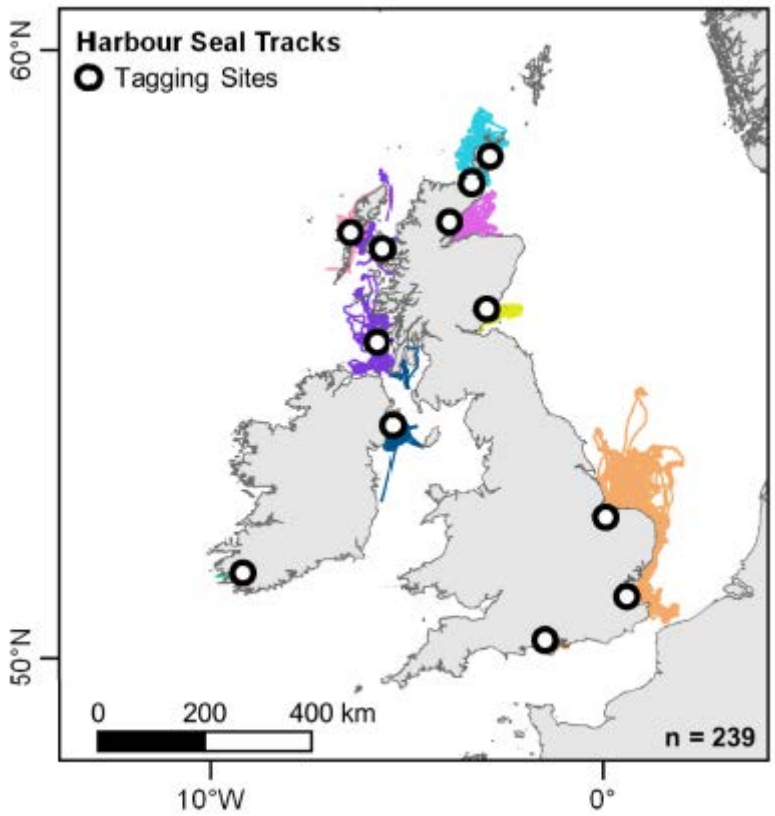

Figure 6 Satellite tracking data for 239 harbour seals, colour-coded by habitat preference region (from Carter et. al. 2022)

Grey Seal SACs falling within (or partly within) 273km (by sea) of the Licence Area are therefore considered to have the potential to occur within the ZoI of the Proposed Activities, namely:

- Lambay Island SAC [IE000204] (c. 18.97km by sea distance);
- Slaney River Valley SAC [IE000781] (c. 76.73km by sea distance);
- Murlough SAC [UK0016612] (c. 91.62km by sea distance);
- Strangford Lough [UK0016618] (c. 117.74km by sea distance); and
- South-East Islay Skerries [UK0030067] (c. 271.98km by sea distance).

5.1.4 Annex I Habitats

An assessment of potential for SACs to occur within the ZoI of the Proposed Activities was undertaken. There was considered to be potential for an SAC and its qualifying interests to occur within the ZoI if the Proposed Activities if the Licence Area overlapped the SAC or was within a 1km range of indirect impacts of Proposed Activities (see Section 4.3).

Those sites considered to have potential to occur within the ZoI are as follows:

- Rockabill to Dalkey Island SAC [IE003000];
- South Dublin Bay SAC [IE000210];
- Wicklow Reef SAC [IE002274];
- North Dublin Bay SAC [IE000206]; and
- Murrough Wetlands SAC [IE002249]

The list of sites that have the potential to be affected and their corresponding QIs are provided in Table 5.5 and illustrated in Figure 5.7 (Appendix A).

Table 5.5 List of sites with Annex I habitat as a QI that have the potential to occur within the ZoI of the Proposed Activities

Site Code	Site Name	Qualifying Interests	Distance of SAC from Application Area (km)
[IE0003000]	Rockabill to Dalkey Island SAC	[1170] Reefs [1365] Harbour porpoise*	0.0
[IE002274]	Wicklow Reef SAC	[1170] Reefs	0.0
[IE0000210]	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] Salicornia and other annuals colonizing mud and sand [2110] Embryonic shifting dunes	0.0
[IE000206]	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] Salicornia and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	0.0

Site Code	Site Name	Qualifying Interests	Distance of SAC from Application Area (km)
[IE002249]	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	1.0
**Denotes QIs that will not be considered further in this section as not a habitat QI (e.g., mammals). These QIs are assessed where relevant in other sections of this report.*			

5.1.5 Annex II Diadromous Fish

The following diadromous fish species are listed under Annex II of the Habitats Directive (Council Directive 92/43/EEC), which means that they are '*animal and plant species of community interest whose conservation requires the designation of special areas of conservation (SACs)*':

- Twaite shad (*Alosa fallax*) [1103];
- Allis shad (*Alosa alosa*) [1102];
- Atlantic salmon (*Salmo salar*) [1106];
- Sea lamprey (*Petromyzon marinus*) [1095];
- River lamprey (*Lampetra fluviatilis*) [1099]; and
- Fresh water pearl mussel (FWPM) (*Margaritifera margaritifera*) [1029].

There are a number of SAC rivers on the coast of Ireland, which have been designated for Annex II diadromous fish. Although these SAC rivers are not marine, the diadromous fish for which they are designated have a marine phase of their lifecycle. These species rely on the sea to migrate to feeding grounds, before returning to rivers to spawn. There is potential therefore for one or a number of these species to be present in the Licence Area. The SAC Rivers located on the coastlines of Ireland, the UK and France with diadromous fish QIs are illustrated in Figure 5.8 – Figure 5.10 (Appendix A).

SACs were assessed on their potential to occur within the ZoI of the Proposed Activities. There was considered to be potential for an SAC to occur within the ZoI if the Licence Area was adjacent to, or overlapped with the SAC boundary, or if species designated as QIs were likely to migrate through, or in proximity to, the Licence Area (i.e. within the western Irish Sea).

Atlantic Salmon

Salmon are an anadromous fish which spawns in rivers and is only offered protection under Annex II of the EU Habitats directive when in freshwater. With regard to SACs designated for Atlantic salmon, the Joint Nature Conservation Committee (jncc.gov.uk), state *"it should be noted that salmon is an Annex II species only in freshwaters throughout the EU, and therefore marine and estuarine sites are excluded from selection*".

Once they leave freshwater, Atlantic Salmon are known to undertake long distance migrations toward their feeding grounds in the North Atlantic. Recent studies found populations migrate towards oceanographic fronts for feeding (Rikardsen *et al*., 2021), including a westward migration of salmon from Irish southeast coast rivers out to the shelf edge, before crossing the Atlantic towards Greenland. Barry *et al.* (2020) found that individuals from Irish rivers in the northeast migrate out of the Irish Sea through the North Channel into deeper offshore waters further north. Atlantic salmon from Welsh SACs are also considered to follow prevailing currents north (Cefas, 2021). Therefore, only SACs designated for Atlantic Salmon in the southwest Irish Sea (i.e. the south and east coast of Ireland) and in the vicinity of the Licence Area are considered to be in the Zone of Influence of the Proposed Activities (Table 5.6).

Table 5.6 List of sites with Atlantic salmon as a QI that have potential for to occur within the ZoI of the Proposed Activities

Site code	Site name	Distance (Km)
IE0002299	River Boyne and River Blackwater SAC	55.43
IE0000781	Slaney River Valley SAC	76.73
IE0002162	River Barrow and River Nore SAC	144.87
IE0002137	Lower River Suir SAC	153.74
IE0002170	Blackwater River (Cork/Waterford) SAC	200.41

Although the FWPM lives its entire lifecycle in freshwater, its larval stages are parasitic and rely on Atlantic salmon (and trout, *Salmo trutta*) as a host to colonise different areas of a river. It is considered therefore that any impact from the Proposed Activities that effects Atlantic salmon, may also affect FWPM. FWPM are a QI of the following SAC's where Salmon have been identified as potentially occurring within the ZoI:

- Slaney River Valley SAC [IE0000781]
- Lower River Suir SAC [IE0002137]
- River Barrow and River Nore SAC [IE0002162] and
- Blackwater River (Cork/Waterford) SAC [IE0002170].

Shad Species

There is very little known about the distribution and movements of shad during their marine life-phase. However, a recent acoustic-tagging study of 73 Twaite shad from the River Severn (within the Severn estuary SAC) recorded a movement distance of up to 950km, with one individual detected in Blackwater estuary (Davies *et al.* 2020). SAC's with Allis Shad or Twaite Shad as QI's within 950 km are therefore considered to have the potential to occur within the ZoI of the Proposed Activities (Table 5.7, and Table 5.8 respectively).

Table 5.7 List of sites with Twaite shad [1103] as a QI that have potential to occur within the ZoI of the Proposed Activities

Site code	Site name	Distance (Km)
IE0000781	Slaney River Valley SAC	76.73
UK0013116	Pembrokeshire Marine/ Sir Benfro Forol	116.24
IE0002162	River Barrow and River Nore SAC	144.87
IE0002137	Lower River Suir SAC	153.74
IE0002170	Blackwater River (Cork/Waterford) SAC	200.41
UK0020020	Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd	188.71
UK0013010	Afon Tywi/ River Tywi	226.75
UK0013030	Severn Estuary/ Môr Hafren	302.99
UK0013007	River Usk/ Afon Wysg	335.79
UK0012642	River Wye/ Afon Gwy	347.40
FR5300046	Rade de Brest, estuaire de l'Aulne	562.63
FR5300009	Cote de Granit rose-Sept-Iles	521.7
FR5300008	Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay	543.23
FR5300010	Tregor Golo	540.63
FR5300066	Baie de Saint-Brieuc - Est	610.68
FR5300041	Valle de l'Aulne	635.23
FR5300061	Estuaire de la Rance	648.13
FR2500077	Baie du Mont Saint-Michel	659.82
FR2502020	Baie de Seine occidentale	673.57
FR5300026	Rivire Scorff, Fort de Pont Calleck, Rivire Sarre	696.72
FR5300029	Golfe du Morbihan, cote ouest de Rhuys	724.11
FR2502021	Baie de Seine orientale	744.78
FR5300034	Estuaire de la Vilaine	756.68
FR2300139	Littoral Cauchois	764.92
FR2300121	Estuaire de la Seine	777.32
FR5300002	Marais de Vilaine	788.52
FR5202011	Estuaire de la Loire Nord	797.23
FR5202012	Estuaire de la Loire Sud - Baie de Bourgneuf	797.86
FR5200621	Estuaire de la Loire	802.89
FR5400469	Pertuis Charentais	845.75

Table 5.8 List of sites with Allis shad [1102] as a QI that have potential to occur within the ZoI of the Proposed Activities

Site code	Site name	Distance (Km)
UK0013116	Pembrokeshire Marine/ Sir Benfro Forol	116.20
UK0020020	Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd	193.75
UK0013010	Afon Tywi/ River Tywi	226.75
UK0013007	River Usk/ Afon Wysg	335.79
UK0012642	River Wye/ Afon Gwy	347.40
FR5300046	Rade de Brest, estuaire de l'Aulne	562.63
FR5300024	Rivire Elorn	567.84
FR5300009	Cote de Granit rose-Sept-Iles	521.76
FR5300008	Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay	543.23
FR5300010	Tregor Golo	540.68
FR5300041	Valle de l'Aulne	635.23
FR5300026	Rivire Scorff, Fort de Pont Calleck, Rivire Sarre	696.72
FR5300066	Baie de Saint-Brieuc - Est	610.68
FR5300059	Rivire Lata, Pointe du Talud, tangs du Loc'h et de Lannenec	666.84
FR5300006	Rivire Elle	660.63
FR5300061	Estuaire de la Rance	648.13
FR2500080	Littoral Ouest du Cotentin de Brhal Pirou	656.64
FR2500077	Baie du Mont Saint-Michel	659.82
FR2502020	Baie de Seine occidentale	673.57
FR2500088	Marais du Cotentin et du Bessin - Baie des Veys	715.53
FR5300029	Golfe du Morbihan, cote ouest de Rhuys	724.11
FR2502021	Baie de Seine orientale	744.78
FR5300034	Estuaire de la Vilaine	756.68
FR2300121	Estuaire de la Seine	777.32
FR5300002	Marais de Vilaine	788.52
FR2300122	Marais Vernier, Risle Maritime	788.72
FR5202011	Estuaire de la Loire Nord	797.23
FR5202012	Estuaire de la Loire Sud - Baie de Bourgneuf	797.86
FR5200621	Estuaire de la Loire	802.89
FR5400469	Pertuis Charentais	845.75
FR3102005	Baie de Canche et couloir des trois estuaires	875.56

Sea Lamprey

Sea lampreys are considered to be solitary hunters and widely dispersed at sea (Henderson 2003). They have a parasitic adult phase which means their distribution is largely dictated by their host, and they do not display any homing behaviour (Bergstedt & Seelye, 1995). Sea lamprey feed on large fish including sharks, adult shad and salmon. It is considered that the abundance of sea lamprey is linked to the abundance of suitable prey, in particular shad and salmon (OSPAR, 2009). Accordingly, it is considered that there is potential for SACs with sea lamprey QIs over the same extent as those key prey species, i.e. 950 km to occur within the ZoI of the Proposed Activities (Table 5.9).

Table 5.9 List of sites with Sea lamprey [1095] as a QI that have potential to occur within the ZoI of the Proposed Activities

Site code	Site name	Distance (Km)
IE0000781	Slaney River Valley SAC	76.73
UK0012712	Cardigan Bay/ Bae Ceredigion	97.98
UK0013116	Pembrokeshire Marine/ Sir Benfro Forol	116.20
UK0012670	Afon Teifi/ River Teifi	118.28
IE0002162	River Barrow and River Nore SAC	144.87
IE0002137	Lower River Suir SAC	153.74
UK0030131	Dee Estuary/ Aber Dyfrdwy	158.78
UK0030074	Afonydd Cleddau/ Cleddau Rivers	184.58
UK0030252	River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid	189.67
IE0002170	Blackwater River (Cork/Waterford) SAC	200.41
UK0020020	Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd	188.71
UK0030032	River Derwent and Bassenthwaite Lake	219.64
UK0013010	Afon Tywi/ River Tywi	226.75
UK0013025	Solway Firth	229.67
UK0012643	River Eden	212.97
UK0013030	Severn Estuary/ Môr Hafren	302.99
UK0013007	River Usk/ Afon Wysg	335.79
UK0012642	River Wye/ Afon Gwy	347.40
UK0030248	River Axe	561.62
FR5300046	Rade de Brest, estuaire de l'Aulne	562.63
FR5300024	Rivire Elorn	566.24
FR5300009	Cote de Granit rose-Sept-Iles	521.70
FR5300008	Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay	543.23
FR5300004	Rivire le Douron	546.24
FR5300010	Tregor Golo	540.63
FR5300041	Valle de l'Aulne	635.23
IE0000627	Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC	484.67

Site code	Site name	Distance (Km)
IE0000365	Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC	412.15
IE0000458	Killala Bay/Moy Estuary SAC	509.17
UK0013016	River Avon	653.91
FR5300026	Rivire Scorff, Fort de Pont Calleck, Rivire Sarre	696.72
IE0001976	Lough Gill SAC	501.78
IE0002298	River Moy SAC	512.36
IE0000343	Castlemaine Harbour SAC	465.08
IE0002165	Lower River Shannon SAC	538.98km
FR5300059	Rivire Lata, Pointe du Talud, tangs du Loc'h et de Lannenec	666.84
FR5300006	Rivire Elle	660.63
FR5300028	Ria d'Etel	705.98
FR2500081	Havre de Saint-Germain-sur-Ay et Landes de Lessay	647.65
FR2500080	Littoral Ouest du Cotentin de Brhal Pirou	656.64
FR2500113	Bassin de l'Airou	686.87
IE0000297	Lough Corrib SAC	615.73
FR5300034	Estuaire de la Vilaine	756.68
FR2500110	Valle de la Se	697.55
FR2502020	Baie de Seine occidentale	673.57
FR5202011	Estuaire de la Loire Nord	797.23
FR2500077	Baie du Mont Saint-Michel	659.82
FR5202012	Estuaire de la Loire Sud - Baie de Bourgneuf	797.86
FR2500088	Marais du Cotentin et du Bessin - Baie des Veys	715.53
FR5400469	Pertuis Charentais	845.75
FR5300002	Marais de Vilaine	788.52
FR5200621	Estuaire de la Loire	802.89
FR5300058	Valle de l'Arz	864.33
FR2502021	Baie de Seine orientale	744.78
FR5200625	Lac de Grand-Lieu	839.68

River Lamprey

River lamprey [1099] are known to mainly inhabit estuarine environments during their early stages in life and riverine environments during their spawning stages. There is very little information about this species once they return to sea after spawning, however it is thought that the species remain in near coastal habitats (Maitland, 2003). As such, only those SAC rivers on the east and south coasts of Ireland are considered to occur within the ZoI of the Proposed Activities and those more distant sites considered too distant for any interaction to occur (Table 5.10).

Table 5.10 List of sites with River lamprey [1099] as a QI that have potential to occur within the ZoI of the Proposed Activities

Site code	Site name	Distance (Km)
IE0002299	River Boyne and River Blackwater SAC	55.43
IE0000781	Slaney River Valley SAC	76.73
IE0002162	River Barrow and River Nore SAC	144.87
IE0002137	Lower River Suir SAC	153.74
IE0002170	Blackwater River (Cork/Waterford) SAC	200.41

5.1.6 Other Annex II species

The following other Annex II species are considered to have the potential to occur within the ZoI of the Proposed Activities:

- Otter (*Lutra lutra*) [1355]

Otter are known to range widely with territories described as ranging from 2 – 32 km depending on the availability of food resource. Otters usually feed in shallow, sheltered waters ranging approximately 12km alongshore (Reid et al, 2013), and within 100m seaward from shore (Kruuk *et al*., 1998) and avoid deeper waters (Scottish Executive, 2007). As such, SAC's with Otter as a QI within 32 km of the Licence Area are considered to have the potential to occur within the ZoI of Proposed Activities (Table 5.11).

Table 5.11 List of sites with otter as a QI that have to occur within the ZoI of the Proposed Activities

Site Code	Site Name	Distance (Km)
IE002122	Wicklow Mountains SAC	15.5

5.2 Step 3-4: Assessment of Likely Significant Effects

5.2.1 Marine Ornithology

This section considers the potential for LSE on the ornithological features of those SPAs where the potential for occurrence within the ZoI exists (Table 5.12 and Table 5.13). The list of SPAs considered in screening for LSE is included in Table 5.2 and shown in Figures 5.1 and 5.2 (Appendix A). These SPAs are listed in order of increasing distance from the proposed works. SPAs are proposed to be screened in where LSE cannot be ruled out for one or more SCIs, for one or more routes to impact. SPAs are screened out where LSE can be ruled out for all routes to impact to all SCIs. A rationale is given for each SPA for each SCI and route to impact to explain the screening decision.

5.2.1.1 Step 3: Proposed Activities Alone Assessment

Table 5.12 Screening of Natura 2000 sites with direct overlap and within 15km of the Proposed Activities

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
South Dublin Bay and River Tolka Estuary SPA	Light-bellied Brent goose Sanderling Dunlin Knot Ringed plover Oystercatcher Bar-tailed godwit Grey plover Redshank	Winter	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the Licence Area and following NatureScot guidance (NatureScot, 2023a) all wildfowl and waders SCIs within 15km have been screened in. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	Out	These SCIs primarily forage within exposed intertidal areas and do not forage within the marine water column (Snow and Perrins, 1998) No pathway for effect from underwater noise and therefore no LSE.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the Licence Area and following NatureScot guidance (NatureScot, 2023a) all wildfowl and waders SCIs within 15km have been screened in. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Black-headed gull	Winter	Above-water noise	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area and following NatureScot guidance (NatureScot, 2023a) all wildfowl and waders SCIs within 15km have been screened in. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise	In	Black-headed gull is a species which undertakes a wide range of foraging behaviours across both terrestrial and marine habitats. In the marine environment these include dip feeding to take floating prey items, occasionally briefly fully submerging, and surface feeding while swimming, occasionally searching with head or neck submerged or up ending (Snow and Perrins, 1998). Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Roseate tern Common tern Arctic tern	Staging[11]	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Above-water noise disturbance from construction activities is not considered in isolation as a risk factor for birds, instead is combined with the presence of vessels, man-made structures and human activity. Fliessbach et al. (2019) found common tern and Arctic tern to have very low vulnerability to vessel disturbance. In fact, both of these species breed on man-made structures within Dublin docks in the summer months (NPWS, 2015a) within an environment where vessel traffic and other noise producing human activities are constant. Roseate terns are also considered to have low vulnerability to vessel (and even helicopter) disturbance (Furness et al., 2013)..Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

[11] Staging refers to places/sites where migrant birds stop to rest, drink, and eat during migration to their final wintering destination.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Common tern Arctic tern	Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Above-water noise disturbance from construction activities is not considered in isolation as a risk factor for birds, instead is combined with the presence of vessels, man-made structures and human activity. Fliessbach et al. (2019) found common tern and Arctic tern to have very low vulnerability to vessel disturbance. In fact, both of these species breed on man-made structures within Dublin docks in the summer months (NPWS, 2015a) within an environment where vessel traffic and other noise producing human activities are constant. Roseate terns are also considered to have low vulnerability to vessel (and even helicopter) disturbance (Furness et al., 2013). Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	All	All	Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result of Proposed Activities, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities.
The Murrough SPA	Teal Wigeon Greylag goose Light-bellied Brent goose	Winter	Above-water noise*1	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area and following NatureScot guidance (NatureScot, 2023a) all wildfowl and waders SCIs within 15km have been screened in. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*2	Out	These SCIs primarily forage within exposed intertidal areas and do not forage within the marine water column. No pathway for effect and therefore no LSE.
			Visual impacts*3	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area and following NatureScot guidance (NatureScot, 2023a) all wildfowl and waders SCIs within 15km have been screened in. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
	Herring gull Black-headed gull	Winter	Above-water noise	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
			Underwater noise	In	These SCIs undertake a wide range of foraging behaviours across both terrestrial and marine habitats. In the marine environment these include dip feeding to take floating prey items, occasionally briefly fully submerging, surface feeding while swimming, occasionally searching with head or neck submerged or up ending and shallow surface diving (Snow and Perrins, 1998).
			Visual impacts	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
	Red-throated diver	Winter	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
			Underwater noise*[2]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
	Little tern	Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
			Underwater noise*[2]	In	Little tern is a predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998).

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
			Visual impacts*3	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
	All	All	Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
	All	All	Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
Dalkey Islands SPA	Roseate tern Common tern Arctic tern	Staging	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Above-water noise disturbance from construction activities is not considered in isolation as a risk factor for birds, instead is combined with the presence of vessels, man-made structures and human activity. Fliessbach et al. (2019) found common tern and Arctic tern to have very low vulnerability to vessel disturbance. In fact, both of these species breed on man-made structures within Dublin docks in the summer months within an environment where vessel traffic and other noise producing human activities are constant. Roseate terns are also considered to have low vulnerability to vessel (and even helicopter) disturbance (Furness et al., 2013). Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
		Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Above-water noise disturbance from construction activities is not considered in isolation as a risk factor for birds, instead is combined with the presence of vessels, man-made structures and human activity. Fliessbach et al. (2019) found common tern and Arctic tern to have very low vulnerability to vessel disturbance. In fact, both of these species breed on man-made structures within Dublin docks in the summer months within an environment where vessel traffic and other noise producing human activities are constant. Roseate terns are also considered to have low vulnerability to vessel (and even helicopter) disturbance (Furness et al., 2013). Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
		All	Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as of Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
		All	Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
North-west Irish Sea SPA	Red-throated diver Great Northern Diver	Winter	Above-water noise*1	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
			Underwater noise*2	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.
			Visual impacts*3	In	Connectivity and route to impact identified. The SPA is within the disturbance distance of these species (NatureScot, 2023) from the License Area. Pathway for effect, therefore cannot conclude no LSE Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Fulmar Manx Shearwater Cormorant Shag Common Scoter Black-headed Gull Common Gull Lesser Black-backed Gull Herring Gull Great Black-backed Gull Kittiwake Guillemot Razorbill Puffin	Breeding	Above-water noise	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise	In	These SCIs undertake a wide range of foraging behaviours across both terrestrial and marine habitats. In the marine environment these include dip feeding to take floating prey items, occasionally briefly fully submerging, surface feeding while swimming, occasionally searching with head or neck submerged or up ending and shallow surface diving (Snow and Perrins, 1998).
			Visual impacts	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
	Little Gull Little Tern	Non-breeding	Above-water noise	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise	In	This SCIs undertake a range of foraging behaviours across both terrestrial and marine habitats. In the marine environment Little Gulls and Little Terns forage in very similar ways. Little Gulls mainly capture their prey by flying low over the water and periodically dipping to snatch prey from the surface, often without interrupting their flight (Bannon and Robert, 1996). Similarly, Little tern is a predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998).
			Visual impacts	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Roseate tern Common tern Arctic tern	Staging	Above-water noise*[1]	In	Connectivity and route to impact identified. Although the SPA is beyond the disturbance distance of these species (NatureScot, 2023) from the License Area they have been scoped in as a precautionary measure due to sensitivity of the species at the staging season. Above-water noise disturbance from construction activities is not considered in isolation as a risk factor for birds, instead is combined with the presence of vessels, man-made structures and human activity. Fliessbach et al. (2019) found common tern and Arctic tern to have very low vulnerability to vessel disturbance. In fact, both of these species breed on man-made structures within Dublin docks in the summer months within an environment where vessel traffic and other noise producing human activities are constant. Roseate terns are also considered to have low vulnerability to vessel (and even helicopter) disturbance (Furness et al., 2013). Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. Although the SPA is beyond the disturbance distance of these species (NatureScot, 2023) from the License Area they have been scoped in as a precautionary measure due to sensitivity of the species at the staging season. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
		Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs are predominantly surface foraging species, typically plunge diving with occasional full submersion (Snow and Perrins, 1998). Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
	All	All	Impacts upon prey species*[4]	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
	All	All	Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
North Bull Island SPA	Light-bellied Brent goose Shelduck Shoveler Pintail Teal Oystercatcher Golden plover Grey plover Curlew Bar-tailed godwit Black-tailed godwit Turnstone Knot Sanderling Dunlin Redshank	Non breeding	Above-water noise*[1]	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is just outside the disturbance distance of these species (NatureScot, 2023) from the License Area, however screened in due to the close proximity to the SPA. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	Out	These SCIs primarily forage within exposed intertidal areas and do not forage within the marine water column. No pathway for effect and therefore no LSE.
			Visual impacts*[3]	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is just outside the disturbance distance of these species (NatureScot, 2023) from the License Area, however screened in due to the close proximity to the SPA. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
	Black-headed gull	Non breeding	Above-water noise	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is just outside the disturbance distance of these species (NatureScot, 2023) from the License Area, however screened in due to the close proximity to the SPA. Pathway for effect, therefore cannot conclude no LSE.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
			Underwater noise	In	Black-headed gull is a species which undertakes a wide range of foraging behaviours across both terrestrial and marine habitats. In the marine environment these include dip feeding to take floating prey items, occasionally briefly fully submerging, and surface feeding while swimming, occasionally searching with head or neck submerged or up ending (Snow and Perrins, 1998). Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is just outside the disturbance distance of these species (NatureScot, 2023) from the License Area, however screened in due to the close proximity to the SPA. Pathway for effect, therefore cannot conclude no LSE.
	All	Non breeding	Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
	All		Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
Wicklow Head SPA	Kittiwake	Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	Kittiwakes obtain prey by snatching items from the surface or by splash diving just below the sea surface (Ratcliffe *et al*., 2000). Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Impacts upon prey species*[4]	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
			Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
Howth Head Coast SPA	Kittiwake	Breeding	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	Kittiwakes obtain prey by snatching items from the surface or splash diving just below the sea surface (Ratcliffe *et al*., 2000). Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Impacts upon prey species*[4]	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
			Litter and pollution	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
Ireland's Eye SPA	Herring gull Kittiwake	Breeding /wintering	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	Route to impact identified. These SCIs undertake a wide range of foraging behaviours within marine habitats. These include dip feeding to take floating prey items, occasionally briefly fully submerging, surface feeding while swimming, occasionally searching with head or neck submerged or up ending and shallow surface diving (Snow and Perrins, 1998; Ratcliffe *et al*., 2000).
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
	Cormorant Guillemot Razorbill	Breeding /wintering	Above-water noise*[1]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Underwater noise*[2]	In	These SCIs forage by undertaking moderate to long duration dives in pursuit of marine prey items. Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	All	Breeding /wintering	Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
	All	Breeding /wintering	Litter and pollution	In	Connectivity and route to impact identified. The SPA is within the MMF +1 SD of these species (Woodward *et al*, 2019) from the License Area. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
Baldoyle Bay SPA	Light-bellied brent goose Shelduck Ringed plover Golden plover Grey plover Bar-tailed godwit	Winter	Above-water noise*1	In	Potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.
			Underwater noise*2	Out	Non-diving species. No route to impact identified. No LSE.
			Visual impacts*3	In	Potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
			Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
			Litter and pollution	In	Connectivity and route to impact identified. Pathway for effect, therefore cannot conclude no LSE.
Wicklow Mountains SPA	Merlin Peregrine	Resident	Above-water noise*1	Out	No potential route to impact between these non-marine SCIs and any Proposed Activities. Separation distances between Proposed Activities and habitats utilised by these SCIs are sufficient to conclude no above water noise impacts to SCIs. No LSE.
			Underwater noise*2	Out	These SCIs predate other bird species, capturing them in flight and do not forage on or under the sea surface (Snow and Perrins, 1998). No pathway for effect and therefore no LSE.
			Visual impacts*3	Out	No potential for route to impact between these non-marine SCIs and Proposed Activities. Separation distances between Proposed Activities and habitats utilised these SCIs are sufficient to conclude no visual impacts to SCIs. No LSE.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
			Impacts upon prey species*4	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
			Litter and pollution	In	Connectivity and route to impact identified. Progress to NIS.
Malahide Estuary SPA	Light-bellied brent goose Shelduck Pintail Oystercatcher Golden plover Grey plover Knot Dunlin Black-tailed godwit Bar-tailed godwit Redshank	Winter	Above-water noise*1	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.
			Underwater noise*2	Out	These SCIs primarily forage within exposed intertidal areas and do not forage within the marine water column. No route to impact or pathway for effect and therefore no LSE.
			Visual impacts*3	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.

SPA	SCI	Season	Route to Impact	Screened in/out	Justification
	Great crested grebe Goldeneye Red-breasted merganser	Winter	Above-water noise*[1]	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.
			Underwater noise*[2]	In	These SCIs forage by undertaking moderate to long duration dives in pursuit of marine and/or freshwater prey items. Connectivity and route to impact. Pathway for effect, therefore cannot conclude no LSE. Progress to NIS.
			Visual impacts*[3]	In	Route to impact and potential connectivity with ex-situ estuarine habitats within 1km of Licence Area within 15 km of SPA. The SPA is outwith the disturbance distance of these species (NatureScot, 2023) from the License Area so the screening in is a precautionary measure. Progress to NIS.
	All	Winter	Impacts upon prey species*[4]	Out	Given the nature of Proposed Activities, there is potential for displacement of prey species of these SCIs. However, as Proposed Activities are localised and would take place only for short durations in any particular location, should any displacement of SCI prey species occur as a result, any such impacts would be so spatially and temporally limited as to have no potential for LSEs. At any given time during the course of Proposed Activities the vast majority of SCI prey species would experience no impacts in association with the Proposed Activities. Any impacts upon prey species would therefore be negligible. No LSE.
	All	Winter	Litter and pollution	In	Connectivity and route to impact identified. Progress to NIS.

Table 5.13 Screening of Natura 2000 sites beyond 15km of the Proposed Activities (to 500km) – Showing only SCIs within mean-max foraging range of Proposed Activities.

SPA	SCI	Route to impact	Screened in/out	Justification
Lambay Island SPA	Fulmar Cormorant Shag Lesser black-backed gull Herring gull Kittiwake Guillemot Razorbill Puffin	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	On the basis that the frequency of birds from more distant SPAs occurring within the Licence Area decreases as the distance between the Licence Area and those SPAs increases, it is considered that the Licence Area is beyond any core habitat use areas around these more distant sites. Furthermore, for SCIs from SPAs beyond 15 km from the Licence Area, given the small footprint of Proposed Activities within the Licence Area at any given time, the potential for disturbance and displacement effects resulting from survey noise, visual impacts or impacts upon prey species is considered to be very limited. Following the guidance from NatureScot (2023a) for waterfowl/waders and non-breeding seabirds at mSPAs, disturbance was assessed for SPAs within 15km of the Licence Area. None of the SCIs from these more distant SPAs are documented to display large flushing or disturbance
Rockabill SPA	Arctic tern	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Skerries Islands SPA	Cormorant Herring gull	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Seas off Wexford SPA	Fulmar Manx Shearwater Gannet Lesser Black-backed Gull Kittiwake Guillemot Razorbill Puffin Herring gull Sandwich Tern	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Aberdaron Coast & Bardsey Island (Wales)	Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Irish Sea Front SPA (Wales)	Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Saltee Islands	Fulmar Puffin	Above-water noise*1 Underwater noise*2	Out	

SPA	SCI	Route to impact	Screened in/out	Justification
	Gannet Lesser black-backed gull Kittiwake Guillemot Razorbill	Visual impacts*3 Impacts upon prey species*4		distances at sea (e.g. as per some diver species), and many are considered not to be sensitive to vessel operations. A very precautionary stance has been taken in considering that individuals could be displaced from a radius of 1 km around survey vessels (considered precautionary as if the receptors are already present in this area they are already accustomed to high levels of vessel traffic), the foraging areas affected by any individual activity under the scope of Proposed Activities would be negligible. Any impacts upon SCIs from SPAs beyond 15 km from the Licence Area from any route to impact would therefore be negligible. No LSE.
Skomer, Skokholm and Seas off Pembrokeshire (Wales)	Manx shearwater European storm petrel Puffin Lesser black-backed gull	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Grassholm (Wales)	Gannet	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Copeland Islands (Northern Ireland)	Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Ailsa Craig (Scotland)	Gannet Lesser black-backed gull Kittiwake	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Tory Island SPA	Fulmar	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Beara Peninsula SPA	Fulmar	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Deenish Island and Scariff Island SPA	Fulmar Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Skelligs SPA	Fulmar Manx shearwater Gannet	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Iveragh Peninsula SPA	Fulmar	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	

SPA	SCI	Route to impact	Screened in/out	Justification
Puffin Island	Fulmar Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3Impacts upon prey species*4	Out	
Mingulay and Berneray SPA (Scotland)	Fulmar	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Rum (Scotland)	Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
Blasket Islands	Fulmar Manx shearwater	Above-water noise*1 Underwater noise*2 Visual impacts*3 Impacts upon prey species*4	Out	
All SPAs	All SCIs	Litter and pollution*5	In	Although the potential for connectivity with Proposed Activities and subsequent pathway to impact for breeding seabird SCIs from SPAs beyond 15 km from the Licence Area is negligible, as mitigation measures are outlined for all activities in relation to preventing littering and pollution events, it is necessary to progress this impact for all SCIs from all SPAs beyond 15km for consideration in NIS.

5.2.1.2 Step 4: In Combination Assessment

Table B, Appendix B, lists all plans and projects in the vicinity of Proposed Activities which have been considered in screening with regard to potential in combination effects upon SCIs from SPAs. As such all of those projects listed within Table B, Appendix B are considered to have the potential to lead to in-combination LSE and will be considered as part of the NIS which will be submitted to MARA following MARA's screening process.

With regard to marine ornithology, all QI's and relevant Natura 2000 Sites screened in within Table 5.12 and Table 5.13 are considered as LSE could not be ruled out on each designated site. As such, no in-combination screening assessment is required herein. In-combination effects on those sites and QIs within Table 5.13 above will be addressed in further detail within the NIS.

5.2.2 Marine Mammals

5.2.2.1 Step 3: Proposed Activities Alone Assessment

This section considers the potential for LSEs on the marine mammal QIs of the SACs with which there is potential to occur within the ZoI. These SACs have been grouped and considered together for each species; the species have also been grouped and considered together for each potential effect because there is little difference in susceptibility between species (see Table 5.14).

SACs are proposed to be screened in where LSE cannot be ruled out for one or more QI, for one or more routes to impact, and screened out where LSE can be ruled out for all routes to impact to all QIs. A rationale is given for each SAC for each QI and route to impact to explain the screening decision.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
PTS, or TTS from increased anthropogenic noise	[1349] Bottlenose dolphin (*Tursiops truncatus*)	Lleyn Peninsula and the Sarnau Cardigan Bay Hook Head	In	Noise from geophysical survey and positioning equipment: There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out. Noise from geotechnical survey work: There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out.
		St. John's Point Belgica Mound Province Lower River Shannon West Connacht Coast Duvillaun Islands Slyne Head Islands Slyne Head Peninsula Porcupine Bank Canyon South-west Porcupine Bank Moray Firth	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1351] Harbour porpoise (*Phocoena phocoena*)	Rockabill to Dalkey Island SAC Lambay Island SAC Codling Fault Zone SAC North Anglesey Marine SAC Blackwater Bank SAC West Wales Marine SAC [Carnsore Point SAC North Channel SAC Hook Head SAC Bristol Channel Approaches SAC [Roaringwater Bay and Islands SAC Kenmare River SAC Mers Celtiques - Talus du golfe de Gascogne Nord Bretagne DH SAC Blasket Islands SAC Belgica Mound Province SAC Bunduff Lough & Machair/Trawalua And Mullagh SAC Ouessant-Molène ZSC Abers - Côte des legends Côte de Granit rose-Sept-Iles Baie de Morlaix West Connacht Coast SAC Tregor Goëlo SAC Chaussée de Sein Inishmore Island SAC Kilkieran Bay and Islands SAC Récifs et landes de la Hague SAC] Anse de Vauville SAC Baie de Saint-Brieuc – Est SAC Baie du Mont Saint-Michel SAC Banc et récifs de Surtainville SAC Chausey SAC Côte de Crozon SAC Estuaire de la Rance SAC	In	<u>Noise from geophysical survey and positioning equipment:</u> There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out. <u>Noise from geotechnical survey work:</u> There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1364] Grey seal (*Halichoerus grypus*)	Rockabill to Dalkey Island Lambay Island Lleyn Peninsula and the Sarnau Cardigan Bay	In	<u>Noise from geophysical survey and positioning equipment:</u> There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out. <u>Noise from geotechnical survey work:</u> There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
		Saltee Islands Pembrokeshire Marine The Maidens Bristol Channel Approaches Lundy Isles of Scilly Complex Roaringwater Bay and Islands Horn Head and Rinclevan Slieve Tooey/Tormore Island/Loughros Beg Bay Blasket Islands	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.
	[1365] Harbour seal (*Phoca vitulina*)	Lambay Island	In	<u>Noise from geophysical survey and positioning equipment</u>: There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out. <u>Noise from geotechnical survey work:</u> There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased anthropogenic noise. As such LSE cannot be ruled out.
		Slaney River Valley Murlough Strangford Lough South-East Islay Skerries	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
Disturbance from increased anthropogenic noise	[1349] Bottlenose dolphin (*Tursiops truncatus*)	Lleyn Peninsula and the Sarnau Cardigan Bay Hook Head	In	Increased vessel presence on site and transit from ports as well as increased underwater noise from vessel traffic. In-direct impacts from changes in prey species. There is a potential for connectivity with the Proposed Activities and a potential route impact on Annex II marine mammal species from increased disturbance risk from anthropogenic noise. As such LSE cannot be ruled out.
		St. John's Point Belgica Mound Province Lower River Shannon West Connacht Coast Duvillaun Islands Slyne Head Islands Slyne Head Peninsula Porcupine Bank Canyon South-west Porcupine Bank Moray Firth	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased disturbance risk from anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1351] Harbour porpoise (*Phocoena phocoena*)	Rockabill to Dalkey Island SAC Lambay Island SAC Codling Fault Zone SAC North Anglesey Marine SAC Blackwater Bank SAC West Wales Marine SAC [Carnsore Point SAC North Channel SAC Hook Head SAC Bristol Channel Approaches SAC [Roaringwater Bay and Islands SAC Kenmare River SAC Mers Celtiques - Talus du golfe de Gascogne Nord Bretagne DH SAC Blasket Islands SAC Belgica Mound Province SAC Bunduff Lough & Machair/Trawalua And Mullagh SAC Ouessant-Molène ZSC Abers - Côte des legends Côte de Granit rose-Sept-Iles Baie de Morlaix West Connacht Coast SAC Tregor Goëlo SAC Chaussée de Sein Inishmore Island SAC Kilkieran Bay and Islands SAC Récifs et landes de la Hague SAC] Anse de Vauville SAC Baie de Saint-Brieuc – Est SAC Baie du Mont Saint-Michel SAC Banc et récifs de Surtainville SAC Chausey SAC Côte de Crozon SAC Estuaire de la Rance SAC	In	Increased vessel presence on site and transit from ports as well as increased underwater noise from vessel traffic. In-direct impacts from changes in prey species. There is a potential for connectivity with the Proposed Activities and a potential route impact on Annex II marine mammal species from increased disturbance risk from anthropogenic noise. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1364] Grey seal (*Halichoerus grypus*)	Rockabill to Dalkey Island Lambay Island Lleyn Peninsula and the Sarnau Cardigan Bay	In	Increased vessel presence on site and transit from ports as well as increased underwater noise from vessel traffic. In-direct impacts from changes in prey species. There is a potential for connectivity with the Proposed Activities and a potential route impact on Annex II marine mammal species from increased disturbance risk from anthropogenic noise. As such LSE cannot be ruled out.
		Saltee Islands Pembrokeshire Marine The Maidens Bristol Channel Approaches Lundy Isles of Scilly Complex Roaringwater Bay and Islands Horn Head and Rinclevan Slieve Tooey/Tormore Island/Loughros Beg Bay Blasket Islands	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1365] Harbour seal (*Phoca vitulina*)	Lambay Island	In	Increased vessel presence on site and transit from ports as well as increased underwater noise from vessel traffic. In-direct impacts from changes in prey species. There is a potential for connectivity with the Proposed Activities and a potential route impact on Annex II marine mammal species from increased disturbance risk from anthropogenic noise. As such LSE cannot be ruled out.
		Slaney River Valley Murlough Strangford Lough South-East Islay Skerries	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased anthropogenic noise as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
Mortality or injury from collision events (with vessels)	[1349] Bottlenose dolphin (*Tursiops truncatus*)	Lleyn Peninsula and the Sarnau Cardigan Bay Hook Head	In	Increased presence of vessels on sites and transit from ports. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of vessel collision. As such LSE cannot be ruled out.
		St. John's Point Belgica Mound Province Lower River Shannon West Connacht Coast Duvillaun Islands Slyne Head Islands Slyne Head Peninsula Porcupine Bank Canyon South-west Porcupine Bank Moray Firth	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased vessel collision risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1351] Harbour porpoise (*Phocoena phocoena*)	Rockabill to Dalkey Island SAC Lambay Island SAC Codling Fault Zone SAC North Anglesey Marine SAC Blackwater Bank SAC West Wales Marine SAC [Carnsore Point SAC North Channel SAC Hook Head SAC Bristol Channel Approaches SAC [Roaringwater Bay and Islands SAC Kenmare River SAC Mers Celtiques - Talus du golfe de Gascogne Nord Bretagne DH SAC Blasket Islands SAC Belgica Mound Province SAC Bunduff Lough & Machair/Trawalua And Mullagh SAC Ouessant-Molène ZSC Abers - Côte des legends Côte de Granit rose-Sept-Iles Baie de Morlaix West Connacht Coast SAC Tregor Goëlo SAC Chaussée de Sein Inishmore Island SAC Kilkieran Bay and Islands SAC Récifs et landes de la Hague SAC] Anse de Vauville SAC Baie de Saint-Brieuc – Est SAC Baie du Mont Saint-Michel SAC Banc et récifs de Surtainville SAC Chausey SAC Côte de Crozon SAC Estuaire de la Rance SAC	In	Increased presence of vessels on sites and transit from ports. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of vessel collision. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1364] Grey seal (*Halichoerus grypus*)	Rockabill to Dalkey Island Lambay Island Lleyn Peninsula and the Sarnau Cardigan Bay	In	Increased presence of vessels on sites and transit from ports. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of vessel collision. As such LSE cannot be ruled out.
		Saltee Islands Pembrokeshire Marine The Maidens Bristol Channel Approaches Lundy Isles of Scilly Complex Roaringwater Bay and Islands Horn Head and Rinclevan Slieve Tooey/Tormore Island/Loughros Beg Bay Blasket Islands	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased vessel collision risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.
	[1365] Harbour seal (*Phoca vitulina*)	Lambay Island	In	Increased presence of vessels on sites and transit from ports. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of vessel collision. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
		Slaney River Valley Murlough Strangford Lough South-East Islay Skerries	Out	There is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased vessel collision risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.
Mortality or reduced health/fitness from pollution events or littering	[1349] Bottlenose dolphin (*Tursiops runcates*)	Lleyn Peninsula and the Sarnau Cardigan Bay Hook Head	In	The Proposed Activities may result in accidental pollution from leaks and/or accidental spillage which can affect sediment and water quality. In-direct impacts on prey species. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of pollution events. As such LSE cannot be ruled out.
		St. John's Point Belgica Mound Province Lower River Shannon West Connacht Coast Duvillaun Islands Slyne Head Islands Slyne Head Peninsula Porcupine Bank Canyon South-west Porcupine Bank Moray Firth	Out	Physical habitat loss: temporary increase in sediment concentrations may arise from the Proposed Activities. However there is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased pollution risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1351] Harbour porpoise (*Phocoena phocoena*)	Rockabill to Dalkey Island SAC Lambay Island SAC Codling Fault Zone SAC North Anglesey Marine SAC Blackwater Bank SAC West Wales Marine SAC Carnsore Point SAC North Channel SAC Hook Head SAC Bristol Channel Approaches SAC Roaringwater Bay and Islands SAC Kenmare River SAC Mers Celtiques - Talus du golfe de Gascogne Nord Bretagne DH SAC Blasket Islands SAC Belgica Mound Province SAC Bunduff Lough & Machair/Trawalua And Mullagh SAC Ouessant-Molène ZSC Abers - Côte des legends Côte de Granit rose-Sept-Iles Baie de Morlaix West Connacht Coast SAC Tregor Goëlo SAC Chaussée de Sein Inishmore Island SAC Kilkieran Bay and Islands SAC Récifs et landes de la Hague SAC Anse de Vauville SAC Baie de Saint-Brieuc – Est SAC Baie du Mont Saint-Michel SAC Banc et récifs de Surtainville SAC Chausey SAC Côte de Crozon SAC Estuaire de la Rance SAC	In	The Proposed Activities may result in accidental pollution from leaks and/or accidental spillage which can affect sediment and water quality. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of pollution events. As such LSE cannot be ruled out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1364] Grey seal (*Halichoerus grypus*)	Rockabill to Dalkey Island Lambay Island Lleyn Peninsula and the Sarnau Cardigan Bay	In	The Proposed Activities may result in accidental pollution from leaks and/or accidental spillage which can affect sediment and water quality. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of pollution events. As such LSE cannot be ruled out.
		Saltee Islands Pembrokeshire Marine The Maidens Bristol Channel Approaches Lundy Isles of Scilly Complex Roaringwater Bay and Islands Horn Head and Rinclevan Slieve Tooey/Tormore Island/Loughros Beg Bay Blasket Islands	Out	Physical habitat loss: temporary increase in sediment concentrations may arise from the Proposed Activities, however there is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased pollution risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

Table 5.14 Screening of Natura 2000 sites with marine mammal QIs with which there is potential to occur within the ZoI of the Proposed Activities

Potential effect	Marine mammal QIs	Relevant SACs	Screened in/out	Justification
	[1365] Harbour seal (*Phoca vitul*ina)	Lambay Island	In	The Proposed Activities may result in accidental pollution from leaks and/or accidental spillage which can affect sediment and water quality. There is potential for connectivity with the Proposed Activities and a potential route to impact on Annex II marine mammal species from increased risk of pollution events. As such LSE cannot be ruled out.
		Slaney River Valley Murlough Strangford Lough South-East Islay Skerries	Out	Physical habitat loss: temporary increase in sediment concentrations may arise from the Proposed Activities however there is no potential for connectivity with the Proposed Activities to impact on Annex II marine mammal species from increased pollution risk as distances are outside of the potential thresholds for this species. As such LSE can be screened out.

5.2.2.2 Step 4: In Combination Assessment

All QI's and relevant Natura 2000 Sites are screened in as LSE could not be ruled out on each designated site. As such, no in-combination screening assessment is required herein. In-combination effects on those sites and Qis within Table 5.14 above will be addressed in further detail within the NIS that will accompany this licence application.

5.2.3 Annex I Habitats

5.2.3.1 Step 3: Proposed Activities alone Assessment

Table 5.15 considers the potential for LSE on the Annex I habitat qualifying interests of those sites with which there is potential for connectivity, based on potential impacts and effects identified in Section 4.3. SAC's are proposed to be screened in where LSE cannot be ruled out for one or more QI, for one or more routes to impact, and screened out where LSE can be ruled out for all routes to impact to all QI's. A rationale is given for each SAC for each QI and route to impact to explain the screening decision.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
Direct Physical Disturbance	Rockabill to Dalkey Island SAC	[1170] Reefs	In	Direct overlap with the listed QI therefore LSE cannot be excluded for the Proposed Activities alone.
	Wicklow Reef SAC	[1170] Reefs	In	Direct overlap with the listed QI therefore LSE cannot be excluded for the Proposed Activities alone.
	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonizing mud and sand [2110] Embryonic shifting dunes	In	Direct overlap with the listed QIs therefore LSE cannot be excluded for the Proposed Activities alone.
	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	In	No Direct overlap with the QIs listed, however access through the SAC may be required and therefore LSE cannot be ruled out without mitigation for the Proposed Activities alone.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritime*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	Out	There will be no direct overlap with the QIs listed. The Murrough Wetlands SAC has a number of typically intertidal features, however these are located landward of the MHWS mark (resulting from seepage of seawater through the shingle barrier) and c. 1km upstream from the OMB area at Wicklow Harbour. No Proposed Activities will be undertaken within the SAC nor will access through the SAC be required as part of the activities and as such there will be no LSE from direct physical disturbance.
Increase in SSC/ Smothering	Rockabill to Dalkey Island SAC	[1170] Reefs	In	Potential connectivity between the listed QI and an increase in SSC arising from the Proposed Activities. As such LSE cannot be ruled out.
	Wicklow Reef SAC	[1170] Reefs	In	Potential connectivity between the listed QI and an increase in SSC arising from the Proposed Activities. As such LSE cannot be ruled out.
	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1310] *Salicornia* and other annuals colonising mud and sand [1210] Annual vegetation of drift lines [2120] Embryonic shifting dunes	In	Potential connectivity between the listed QIs and an increase in SSC arising from the Proposed Activities. As such LSE cannot be ruled out.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	In	Potential connectivity between the listed QIs and an increase in SSC arising from the Proposed Activities. As such LSE cannot be ruled out.
	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	In	Despite the Murrough Wetlands being located upstream from the Proposed Activities at the OMB at Wicklow Harbour. There is potential connectivity between these QIs and an increase in SSC arising from the Proposed Activities. As such LSE cannot be ruled out.
Community changes relating to increases in contaminated sediments	Rockabill to Dalkey Island SAC	[1170] Reefs	In	Potential connectivity between this QI and an increase in contaminated sediments arising from the Proposed Activities. As such LSE cannot be ruled out.
	Wicklow Reef SAC	[1170] Reefs	In	Potential connectivity between this QI and an increase in contaminated sediments arising from the Proposed Activities. As such LSE cannot be ruled out.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonizing mud and sand [2110] Embryonic shifting dunes	In	Potential connectivity between these QIs and an increase in contaminated sediments arising from the Proposed Activities. As such LSE cannot be ruled out.
	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	In	Potential connectivity between these QIs and an increase in contaminated sediments arising from the Proposed Activities. As such LSE cannot be ruled out.
	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	In	Potential connectivity between these QIs and an increase in contaminated sediments arising from the Proposed Activities. As such LSE cannot be ruled out.
Community or habitat change arising from introduction of INNS	Rockabill to Dalkey Island SAC	[1170] Reefs	In	Potential connectivity between the listed QI and an introduction of INNS arising from the Proposed Activities. As such LSE cannot be ruled out.
	Wicklow Reef SAC	[1170] Reefs	In	Potential connectivity between the listed QI and an introduction of INNS arising from the Proposed Activities. As such LSE cannot be ruled out.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonizing mud and sand [2110] Embryonic shifting dunes	In	Potential connectivity between the listed QIs and an introduction of INNS arising from the Proposed Activities. As such LSE cannot be ruled out.
	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	In	Potential connectivity between the listed QIs and an introduction of INNS arising from the Proposed Activities. As such LSE cannot be ruled out.
	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	In	Potential connectivity between the listed QIs and an introduction of INNS arising from the Proposed Activities. As such LSE cannot be ruled out.
Community or habitat change arising from littering or pollution events	Rockabill to Dalkey Island SAC	[1170] Reefs	In	Potential connectivity between this QI and a pollution or littering event arising from the Proposed Activities. As such LSE cannot be ruled out.
	Wicklow Reef SAC	[1170] Reefs	In	Potential connectivity between the listed QI and a pollution or littering event arising from the Proposed Activities. As such LSE cannot be ruled out.

Table 5.15 Screening of Natura 2000 sites designated for Annex I Habitats

Potential effect	SAC	QI	Screened in/out	Reasoning
	South Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonizing mud and sand [2110] Embryonic shifting dunes	In	Potential connectivity between the listed QI and a pollution or littering event arising from the Proposed Activities. As such LSE cannot be ruled out.
	North Dublin Bay SAC	[1140] Mudflats and sandflats not covered by seawater at low tide [1210] Annual vegetation of drift lines [1310] *Salicornia* and other annuals colonising mud and sand [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [2110] Embryonic shifting dunes [2120] Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2190] Humid dune slacks [1395] *Petalophyllum ralfsii* (Petalwort)	In	Potential connectivity between the listed QIs and a pollution or littering event arising from the Proposed Activities. As such LSE cannot be ruled out.
	Murrough Wetlands SAC	[1210] Annual vegetation of drift lines [1220] Perennial vegetation of stony banks [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)* [1410] Mediterranean salt meadows (*Juncetalia maritimi*) [7210] Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7230] Alkaline fens	In	Potential connectivity between the listed QIs and a pollution or littering event arising from the Proposed Activities. As such LSE cannot be ruled out.

5.2.3.2 Step 4: In Combination Assessment

All QI's and relevant Natura 2000 Sites are screened in as LSE could not be ruled out on each designated site. As such, no in-combination screening assessment is required herein. In-combination effects on those sites and QIs within Table 5.15 above will be addressed in further detail within the NIS that will accompany this licence application.

5.2.4 Annex II Diadromous Fish

5.2.4.1 Step 3: Proposed Activities alone Assessment

Table 5.16 considers the potential for LSE on the Annex II diadromous fish QIs of those sites with which there is potential connectivity (based on potential impacts and effects identified in Section 4.4). A conservative approach was used in identifying SACs which Annex II diadromous fish as QIs with which there is potential connectivity. There was considered to be potential for connectivity with the SAC if the Licence Area was adjacent to, or overlapped with the SAC boundary, or if species designated as QIs were likely to migrate through, or in proximity to, the Licence Area (i.e. within the western Irish Sea). SACs are proposed to be screened in where LSE cannot be ruled out for one or more QI, for one or more routes to impact, and screened out where LSE can be ruled out for all routes to impact to all QI's. A rationale is given for each SAC for each QI and route to impact to explain the screening decision.

Table 5.16 Screening of Natura 2000 sites designated for Annex II Diadromous Fish with the potential to occur within the ZoI of the Proposed Activities

QI	Relevant SACs	Potential effect	Screened in/out	Reasoning
Atlantic salmon [1106] (and FWPM [1029])	River Boyne and River Blackwater (Atlantic salmon only), Slaney River Valley, River Barrow and River Nore Lower River Suir, Blackwater River (Cork/Waterford),	Injury and disturbance from underwater noise	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Disturbance from increased levels of suspended sediment concentrations (SSC)	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Mortality or reduced fitness arising from pollution or littering events	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
Twaite shad [1103]	Slaney River Valley SAC Pembrokeshire Marine / Sir Benfro Forol River Barrow and River Nore SAC Lower River Suir SAC Blackwater River (Cork/Waterford) SAC Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd Afon Tywi/ River Tywi	Injury and disturbance from underwater noise	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Disturbance from increased levels of suspended sediment concentrations (SSC)	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

Table 5.16 Screening of Natura 2000 sites designated for Annex II Diadromous Fish with the potential to occur within the ZoI of the Proposed Activities

QI	Relevant SACs	Potential effect	Screened in/out	Reasoning
	Severn Estuary/ Môr Hafren River Usk/ Afon Wysg River Wye/ Afon Gwy Rade de Brest, estuaire de l'Aulne Cote de Granit rose-Sept-Iles Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay Tregor Golo Baie de Saint-Brieuc - Est Valle de l'Aulne Estuaire de la Rance Baie du Mont Saint-Michel Baie de Seine occidentale Rivire Scorff, Fort de Pont Calleck, Rivire Sarre Golfe du Morbihan, cote ouest de Rhuys Baie de Seine orientale Estuaire de la Vilaine Littoral Cauchois Estuaire de la Seine Marais de Vilaine Estuaire de la Loire Nord Estuaire de la Loire Sud - Baie de Bourgneuf Estuaire de la Loire Pertuis Charentais	Mortality or reduced fitness arising from pollution or littering events	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
Allis shad [1102]	Pembrokeshire Marine/ Sir Benfro Forol Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd Afon Tywi/ River Tywi River Usk/ Afon Wysg River Wye/ Afon Gwy Rade de Brest, estuaire de l'Aulne Rivire Elorn Cote de Granit rose-Sept-Iles	Injury and disturbance from underwater noise	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Disturbance from increased levels of suspended sediment concentrations (SSC)	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

Table 5.16 Screening of Natura 2000 sites designated for Annex II Diadromous Fish with the potential to occur within the ZoI of the Proposed Activities

QI	Relevant SACs	Potential effect	Screened in/out	Reasoning
	Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay Tregor Golo Valle de l'Aulne Rivire Scorff, Fort de Pont Calleck, Rivire Sarre Baie de Saint-Brieuc - Est Rivire Lata, Pointe du Talud, tangs du Loc'h et de Lannenec Rivire Elle Estuaire de la Rance Littoral Ouest du Cotentin de Brhal Pirou Baie du Mont Saint-Michel Baie de Seine occidentale Marais du Cotentin et du Bessin - Baie des Veys Golfe du Morbihan, cote ouest de Rhuys Baie de Seine orientale Estuaire de la Vilaine Estuaire de la Seine Marais de Vilaine Marais Vernier, Risle Maritime Estuaire de la Loire Nord Estuaire de la Loire Sud - Baie de Bourgneuf Estuaire de la Loire Pertuis Charentais Baie de Canche et couloir des trois estuaires	Mortality or reduced fitness arising from pollution or littering events	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
Sea lamprey [1095]	Slaney River Valley SAC Cardigan Bay/ Bae Ceredigion Pembrokeshire Marine/ Sir Benfro Forol Afon Teifi/ River Teifi	Injury and disturbance from underwater noise	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

Table 5.16 Screening of Natura 2000 sites designated for Annex II Diadromous Fish with the potential to occur within the ZoI of the Proposed Activities

QI	Relevant SACs	Potential effect	Screened in/out	Reasoning
	River Barrow and River Nore SAC Lower River Suir SAC Dee Estuary/ Aber Dyfrdwy Afonydd Cleddau/ Cleddau Rivers	Disturbance from increased levels of suspended sediment concentrations (SSC)	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

	River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid Blackwater River (Cork/Waterford) SAC Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd River Derwent and Bassenthwaite Lake Afon Tywi/ River Tywi Solway Firth River Eden Severn Estuary/ Môr Hafren River Usk/ Afon Wysg River Wye/ Afon Gwy River Axe Rade de Brest, estuaire de l'Aulne Rivire Elorn Cote de Granit rose-Sept-Iles Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay Rivire le Douron Tregor Golo Valle de l'Aulne Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC Killala Bay/Moy Estuary SAC River Avon Rivire Scorff, Fort de Pont Calleck, Rivire Sarre Lough Gill SAC River Moy SAC Castlemaine Harbour SAC Lower River Shannon SAC Rivire Lata, Pointe du Talud, tangs du Loc'h et de Lannenec Rivire Elle Ria d'Etel	Mortality or reduced fitness arising from pollution or littering events	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

Table 5.16 Screening of Natura 2000 sites designated for Annex II Diadromous Fish with the potential to occur within the ZoI of the Proposed Activities

QI	Relevant SACs	Potential effect	Screened in/out	Reasoning
	Havre de Saint-Germain-sur-Ay et Landes de Lessay Littoral Ouest du Cotentin de Brhal Pirou Bassin de l'Airou Lough Corrib SAC Estuaire de la Vilaine Valle de la Se Baie de Seine occidentale Estuaire de la Loire Nord Baie du Mont Saint-Michel Estuaire de la Loire Sud - Baie de Bourgneuf Marais du Cotentin et du Bessin - Baie des Veys Pertuis Charentais Marais de Vilaine Estuaire de la Loire Valle de l'Arz Baie de Seine orientale Lac de Grand-Lieu			
River lamprey [1096]	River Boyne and River Blackwater SAC Slaney River Valley SAC River Barrow and River Nore SAC Lower River Suir SAC Blackwater River (Cork/Waterford) SAC	Injury and disturbance from underwater noise	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Disturbance from increased levels of suspended sediment concentrations (SSC)	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.
		Mortality or reduced fitness arising from pollution or littering events	In	There is potential for connectivity with the Proposed Activities and a potential route to impact on this Annex II diadromous fish species. As such LSE cannot be ruled out.

5.2.4.2 Step 4: In Combination Assessment

All QI's and relevant Natura 2000 sites have been screened in as LSE could not be ruled out, as such no in-combination screening assessment is required herein. In-combination effects on those sites and QI's within Table 5.16 above will be addressed in further detail within the NIS that will accompany this licence application.

5.2.5 Other Annex II Species

5.2.5.1 Step 3: Proposed Activities alone Assessment

Table 5.17 considers the potential for LSE on the Annex II QIs of those sites with which there is potential connectivity (based on potential impacts and effects identified in Section 4.5). SACs are proposed to be screened in where LSE cannot be ruled out for one or more QI, for one or more routes to impact, and screened out where LSE can be ruled out for all routes to impact to all QI's. A rationale is given for each SAC for each QI and route to impact to explain the screening decision.

Table 5.17 Screening of Natura 2000 sites designated for other Annex II species with the potential to occur within the ZoI the Proposed Activities

Relevant SACs	QI	Potential effect	Screened in/out	Rationale
Wicklow Mountain SAC	Otter [1355]	Disturbance and displacement from activities in the intertidal or shallow subtidal area (i.e. environmental, geophysical, or geotechnical surveys in the intertidal or nearshore area)	In	There is potential for connectivity with the Proposed Activities and potential route to impact on otters. As such LSE cannot be ruled out.
		Indirect effects through impacts upon prey species	In	There is potential for connectivity with the Proposed Activities and potential route to impact on otter. As such LSE cannot be ruled out.
		Mortality or reduced health/fitness resulting from litter or pollution arising from the Proposed Activities.	In	There is potential for connectivity with the Proposed Activities and potential route to impact on otter. As such LSE cannot be ruled out.

5.2.5.2 Step 4: In Combination Assessment

All QI's (and relevant Natura Sites) are screened in as LSE could not be ruled out on each designated site. As such, no in-combination screening assessment is required herein. In-combination effects on those sites and QIs within Table 5.17 above will be addressed in further detail within the NIS that will accompany this licence application.

5.3 Step 5: Conclusion of AA Screening

5.3.1 Marine Ornithology

Following screening, it cannot be excluded based on objective scientific information that the Proposed Activities, individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites. This conclusion is in view of the site's conservation objectives:

- South Dublin Bay and River Tolka Estuary SPA;
- Dalkey Islands SPA;
- The Murrough SPA;
- North-west Irish Sea SPA;
- Wicklow Head SPA;
- North Bull Island SPA;
- Howth Head Coast SPA;
- Baldoyle Bay SPA;
- Ireland's Eye SPA;
- Wicklow Mountains SPA; and
- Malahide Estuary SPA.

5.3.2 Marine Mammals

Following screening it cannot be excluded based on objective scientific information that the Proposed Activities, individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites. This conclusion is in view of each site's conservation objectives and due to the potential effects of the Proposed Activities:

SACs with Harbour porpoise as a QI:

- Rockabill to Dalkey Island SAC
- Lambay Island SAC [000204]
- Codling Fault Zone SAC [IE 003015]
- North Anglesey Marine SAC [UK0030398]
- Blackwater Bank SAC [IE002953]
- West Wales Marine SAC [UK0030397]
- Carnsore Point SAC [IE002269]
- North Channel SAC [UK0030399]

- Hook Head SAC [IE000764]
- Bristol Channel Approaches SAC [UK0030396]
- Roaringwater Bay and Islands SAC [IE000101]
- Kenmare River SAC [IE002158]
- Mers Celtiques - Talus du golfe de Gascogne [FR5302016]
- Nord Bretagne DH ZSC [FR2502022]
- Blasket Islands SAC [IE002172]
- Belgica Mound Province SAC [IE002327]
- Bunduff Lough & Machair/Trawalua And Mullagh SAC [IE000625]
- Ouessant-Molène ZSC [FR5300018]
- Abers - Côte des legends [FR5300017]
- Côte de Granit rose-Sept-Iles [FR5300009]
- Baie de Morlaix [FR5300015]
- West Connacht Coast SAC [IE002998]
- Tregor Goëlo [FR5300010]
- Chaussée de Sein [FR5302007]
- Inishmore Island SAC [IE000213]
- Kilkieran Bay and Islands SAC [IE002111]
- Récifs et landes de la Hague SAC [FR2500084]
- Anse de Vauville SAC [FR2502019]
- Baie de Saint-Brieuc – Est SAC [FR5300066]
- Baie du Mont Saint-Michel SAC [FR2510048]
- Banc et récifs de Surtainville SAC [FR2502018]
- Chausey SAC [FR2510037]
- Chausseé de Sein SAC [FR5302007]
- Côte de Crozon SAC [FR5302006] and
- Estuaire de la Rance SAC [FR5300061].

SACs with Bottlenose dolphin as a QI that are screen in for potential LSE within the Irish Sea Bottlenose dolphin MU:

- Lleyn Peninsula and the Sarnau SAC [UK0013117]
- Cardigan Bay SAC [UK0012712]
- Hook Head SAC [IE000764]

SACs with Grey seals as a QI that are screened in for potential LSE due to 100km foraging distance from the Proposed Activities:

- Rockabill to Dalkey Island SAC [IE0003000]
- Lambay Island SAC [IE000204]
- Lleyn Peninsula and the Sarnau SAC [UK0013117] and
- Cardigan Bay SAC [UK0012712].

SACs with Harbour seals as a QI that are screen in for potential due to 50km average foraging distance from the Proposed Activities:

- Lambay Island SAC [IE000204].

5.3.3 Annex I Habitats

Following screening it cannot be excluded based on objective scientific information that the Proposed Activities, individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites. This conclusion is in view of the site's conservation objectives and due to the potential effects of the Proposed Activities:

- Rockabill to Dalkey Island SAC [IE003000]
- North Dublin Bay SAC [IE000206]
- South Dublin Bay SAC [IE000210]
- Wicklow Reef SAC [IE002274] and
- Murrough Wetlands SAC [IE002249].

5.3.4 Annex II Diadromous Fish

Following screening it cannot be excluded based on objective scientific information that the Proposed Activities, individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites. This conclusion is in view of the sites conservation objectives and due to the potential effects of the Proposed Activities:

- Afon Tywi/ River Tywi [UK0013010]
- Afonydd Cleddau/ Cleddau Rivers [UK0030074]
- Baie de Canche et couloir des trois estuaires [FR3102005]
- Baie de Saint-Brieuc - Est [FR5300066]
- Baie de Seine occidentale [FR2502020]
- Baie de Seine orientale [FR2502021]
- Baie du Mont Saint-Michel [FR2500077]
- Bassin de l'Airou [FR2500113]
- Blackwater River (Cork/Waterford) SAC [IE0002170]
- Cardigan Bay/ Bae Ceredigion [UK0012712]
- Carmarthen Bay and Estuaries/ Bae Caerfyrddin ac Aberoedd [UK0020020]
- Castlemaine Harbour SAC [IE0000343]
- Cote de Granit rose-Sept-Iles [FR5300009]
- Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [IE0000627]
- Dee Estuary/ Aber Dyfrdwy [UK0030131]
- Estuaire de la Loire [FR5200621]
- Estuaire de la Loire Nord [FR5202011]
- Estuaire de la Loire Sud - Baie de Bourgneuf [FR5202012]
- Estuaire de la Rance [FR5300061]
- Estuaire de la Seine [FR2300121]
- Estuaire de la Vilaine [FR5300034]
- Golfe du Morbihan, cote ouest de Rhuys [FR5300029]
- Havre de Saint-Germain-sur-Ay et Landes de Lessay [FR2500081]

- Killala Bay/Moy Estuary SAC [IE0000458]
- Killarney National Park, Macgillycuddy's Reeks and Caragh River Catchment SAC [IE0000365]
- Lac de Grand-Lieu [FR5200625]
- Littoral Cauchois [FR2300139]
- Littoral Ouest du Cotentin de Brhal Pirou [FR2500080]
- Lough Corrib SAC [IE0000297]
- Lough Gill SAC [IE0001976]
- Lower River Shannon SAC [IE0002165]
- Lower River Suir, [IE0002137]
- Marais de Vilaine [FR5300002]
- Marais du Cotentin et du Bessin - Baie des Veys [FR2500088]
- Marais Vernier, Risle Maritime [FR2300122]
- Pembrokeshire Marine/ Sir Benfro Forol [UK0013116]
- Pertuis Charentais [FR5400469]
- Rade de Brest, estuaire de l'Aulne [FR5300046]
- Ria d'Etel [FR5300028]
- River Avon [UK0013016]
- River Axe [UK0030248]
- River Barrow and River Nore [IE0002162]
- River Boyne and River Blackwater SAC [IE0002299]
- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid [UK0030252]
- River Derwent and Bassenthwaite Lake [UK0030032]
- River Eden [UK0012643]
- River Moy SAC [IE0002298]
- River Usk/ Afon Wysg [UK0013007]
- River Wye/ Afon Gwy [UK0012642]
- Rivire Elle [FR5300006]
- Rivire Elorn [FR5300024]
- Rivire Lata, Pointe du Talud, tangs du Loc'h et de Lannenec [FR5300059]
- Rivire le Douron [FR5300004]
- Rivire Leguer, forts de Beffou, Coat an Noz et Coat an Hay [FR5300008]
- Rivire Scorff, Fort de Pont Calleck, Rivire Sarre [FR5300026]
- Severn Estuary/ Môr Hafren [UK0013030]
- Slaney River Valley, [IE0000781]
- Solway Firth [UK0013025]
- Tregor Golo [FR5300010]
- Valle de la Se [FR2500110]
- Valle de l'Arz [FR5300058] and
- Valle de l'Aulne [FR5300041].

5.3.5 Other Annex II Species

Following screening it cannot be excluded based on objective scientific information that the Proposed Activities individually or in combination with other plans or projects, will have a significant effect on the following Natura 2000 sites. This conclusion is in view of the site's conservation objectives and due to the potential effects of the Proposed Activities:

- Wicklow Mountains SAC [IE002122]

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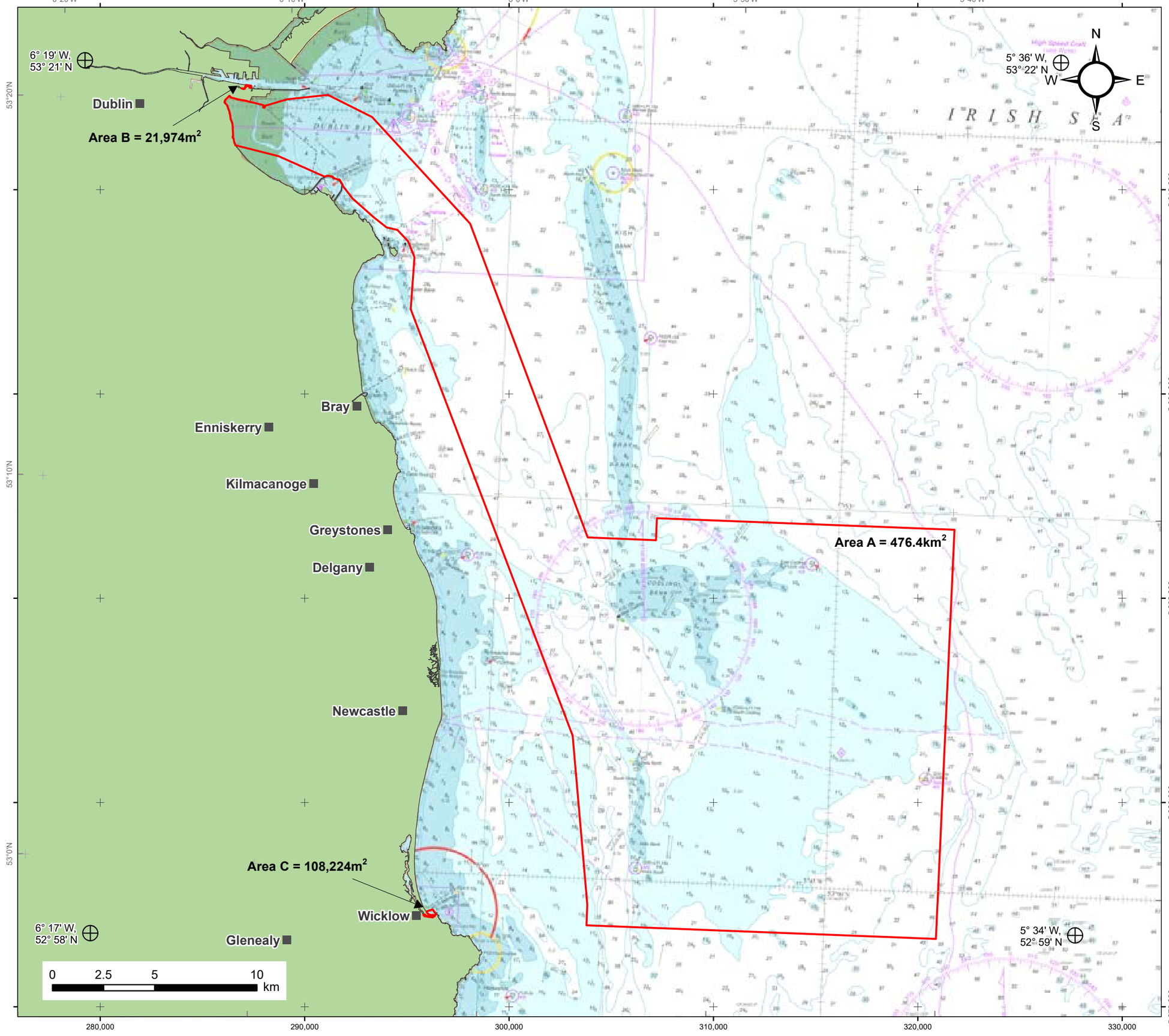
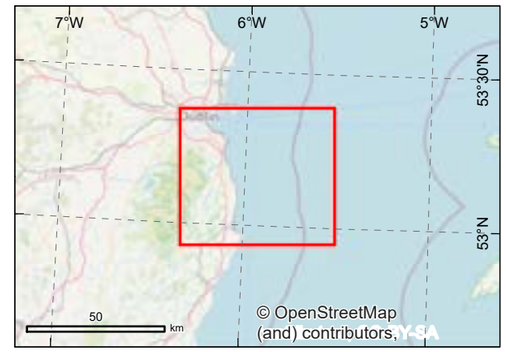
7 APPENDICES

APPENDIX A FIGURES





Licence Area (CWP, 2024.05.20)

High Water Mark (TE, 2024.04.19)

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe *Website:*

Map title: Fig 1.1: Maritime Usage Licence Application Area

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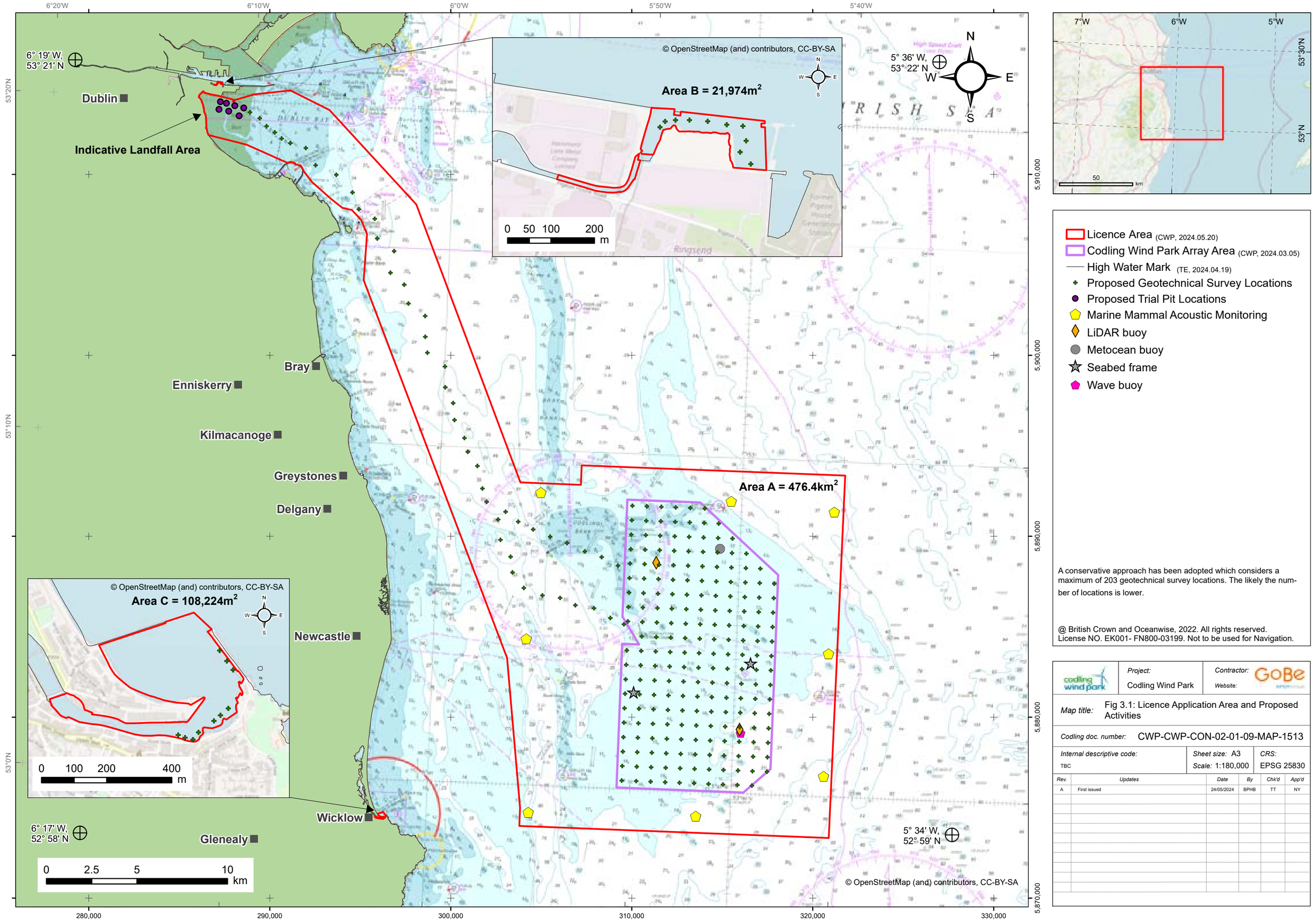

Licence Area (CWP, 2024.05.20)
Codling Wind Park Array Area (CWP, 2024.03.05)
High Water Mark (TE, 2024.04.19)
Proposed Geotechnical Survey Locations
Proposed Trial Pit Locations
Marine Mammal Acoustic Monitoring
LiDAR buoy
Metocean buoy
Seabed frame
Wave buoy

A conservative approach has been adopted which considers a maximum of 203 geotechnical survey locations. The likely the number of locations is lower.

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe *Website:*
Map title:	Fig 3.1: Licence Application Area and Proposed Activities	
Codling doc. number:	CWP-CWP-CON-02-01-09-MAP-1513	
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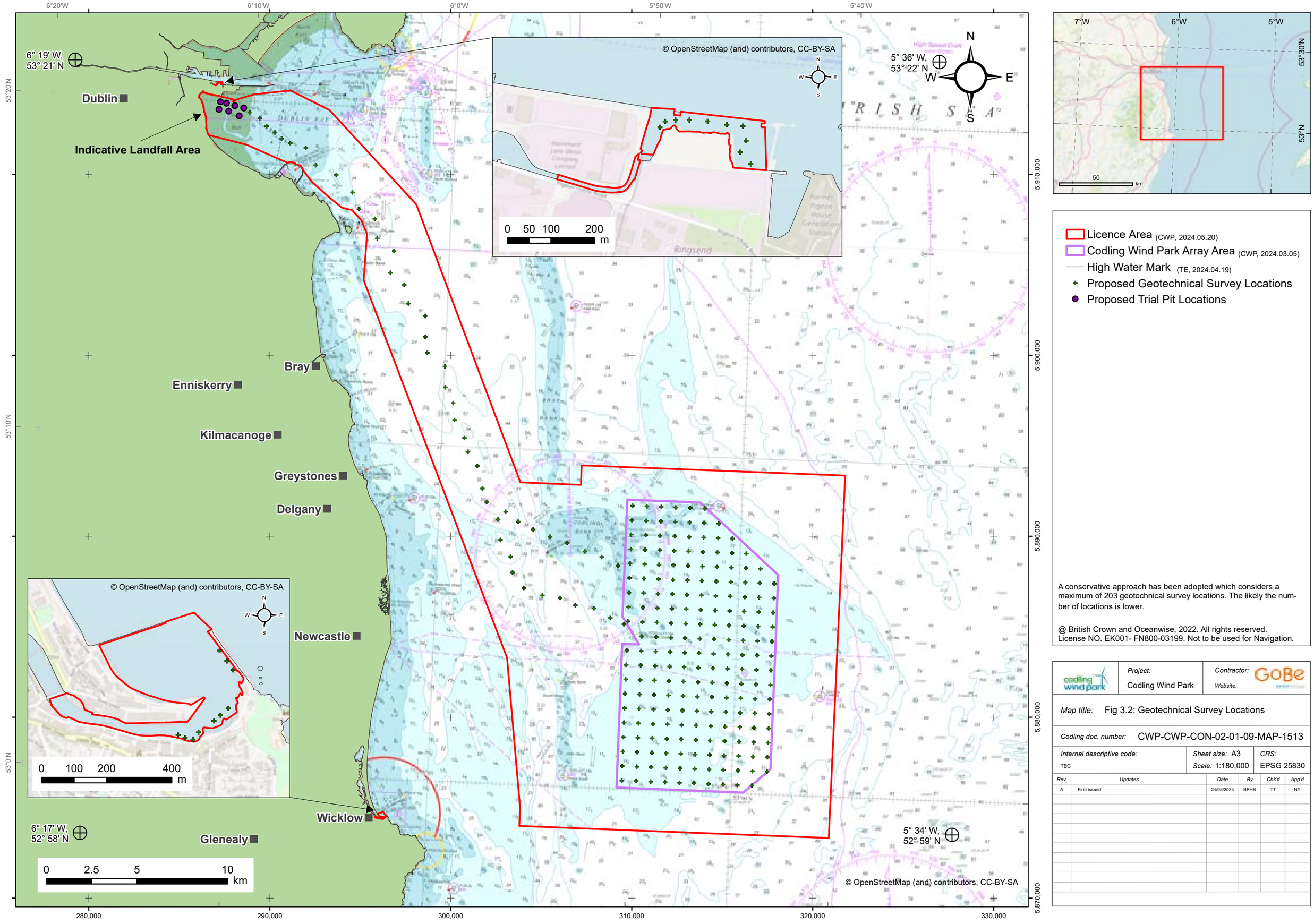

Licence Area (CWP, 2024.05.20)
Codling Wind Park Array Area (CWP, 2024.03.05)
High Water Mark (TE, 2024.04.19)
Proposed Geotechnical Survey Locations
Proposed Trial Pit Locations

A conservative approach has been adopted which considers a maximum of 203 geotechnical survey locations. The likely the number of locations is lower.

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe *Website:*

Map title: Fig 3.2: Geotechnical Survey Locations

Codling doc. number: CWP-CWP-CON-02-01-09-MAP-1513

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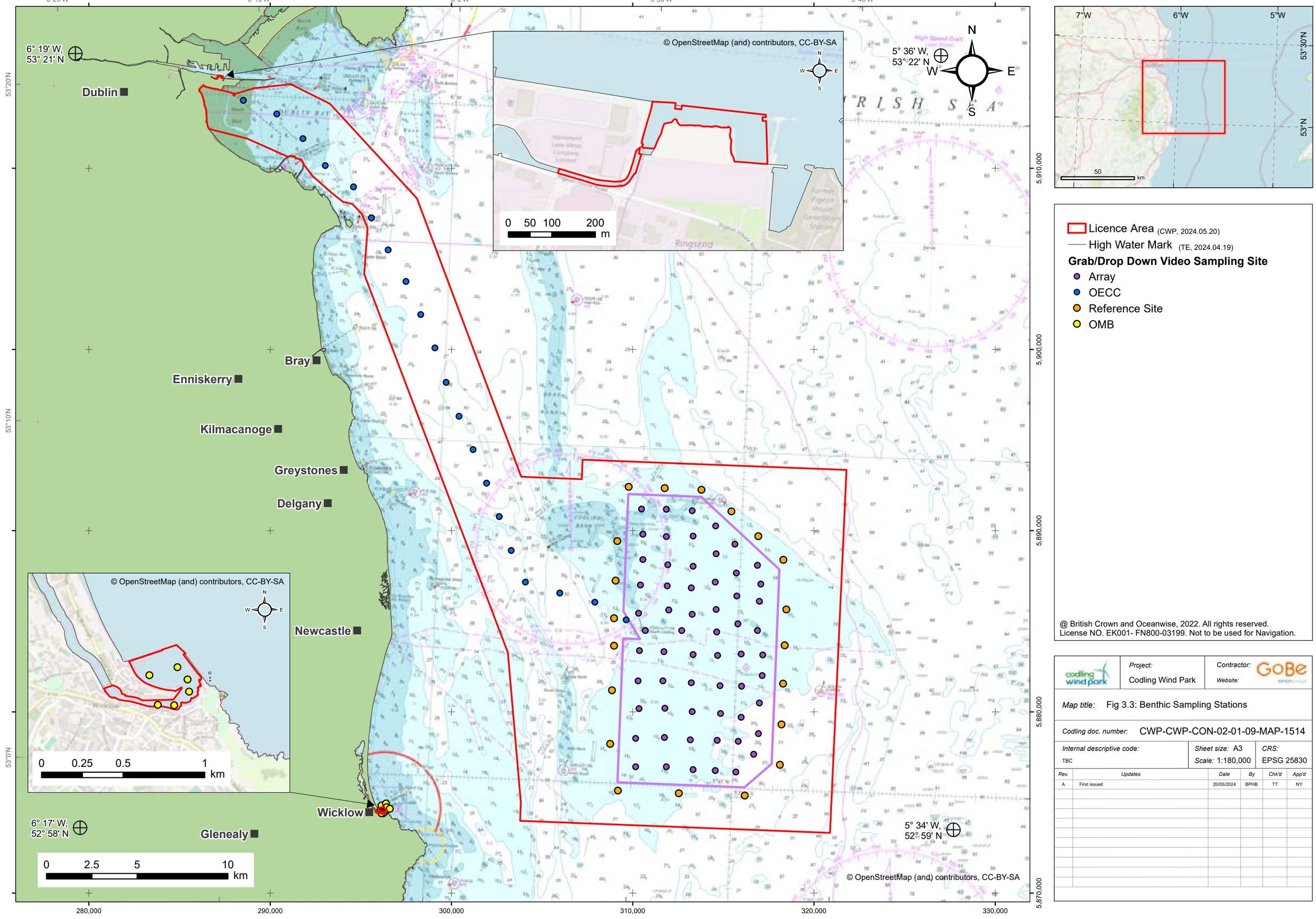

Licence Area (CWP, 2024.05.20)

High Water Mark (TE, 2024.04.19)

Grab/Drop Down Video Sampling Site

- Array
- OECC
- Reference Site
- OMB

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe *Website:*

Map title: Fig 3.3: Benthic Sampling Stations

Codling doc. number: CWP-CWP-CON-02-01-09-MAP-1514

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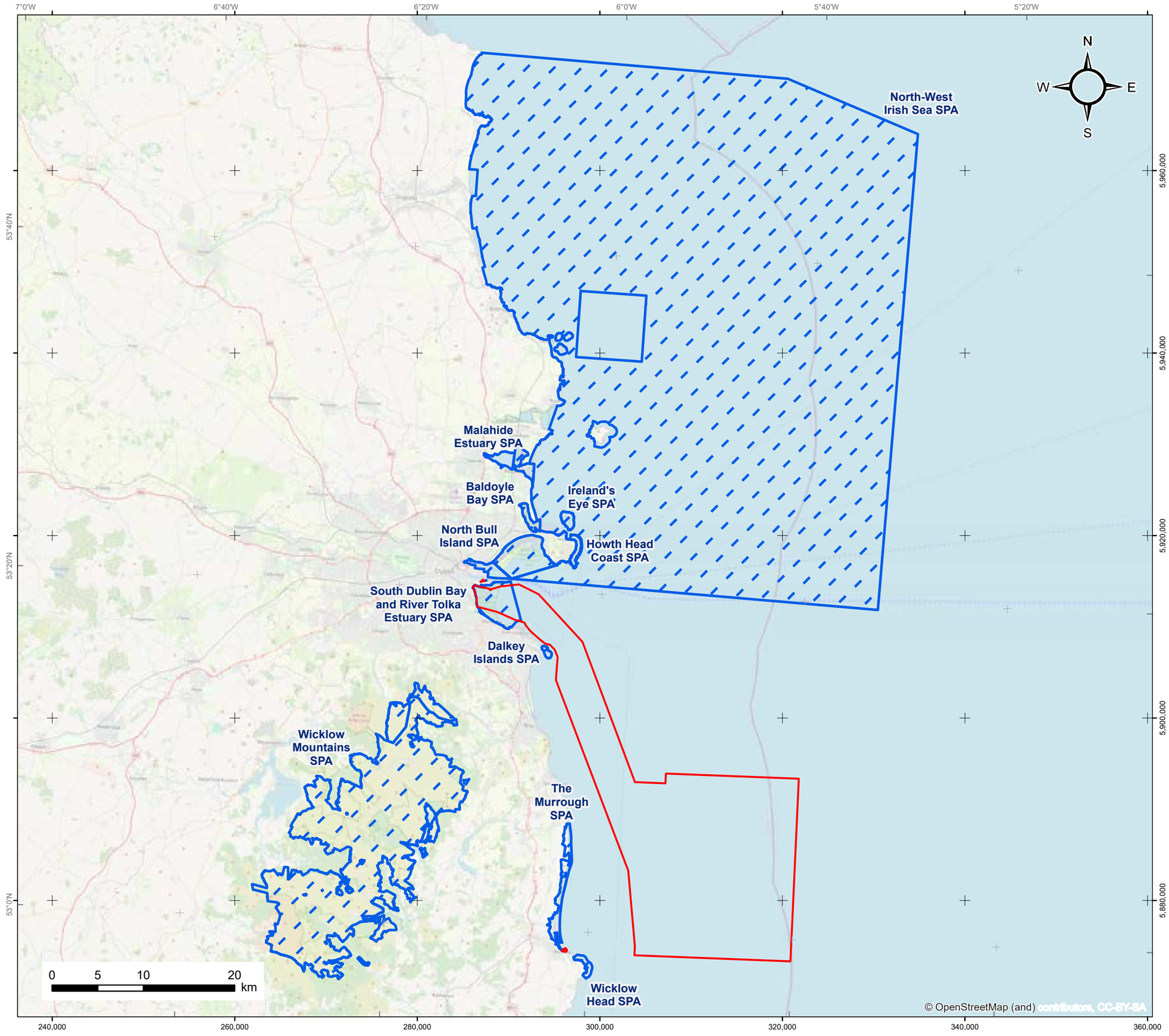

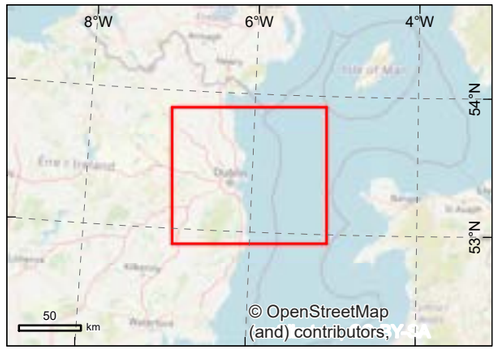

CWP MULA (CWP, 2024.05.20)

Special Protection Areas

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe	*Website:*

Map title: Fig 5.1: Special Protected Areas within 15km of Application Area

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

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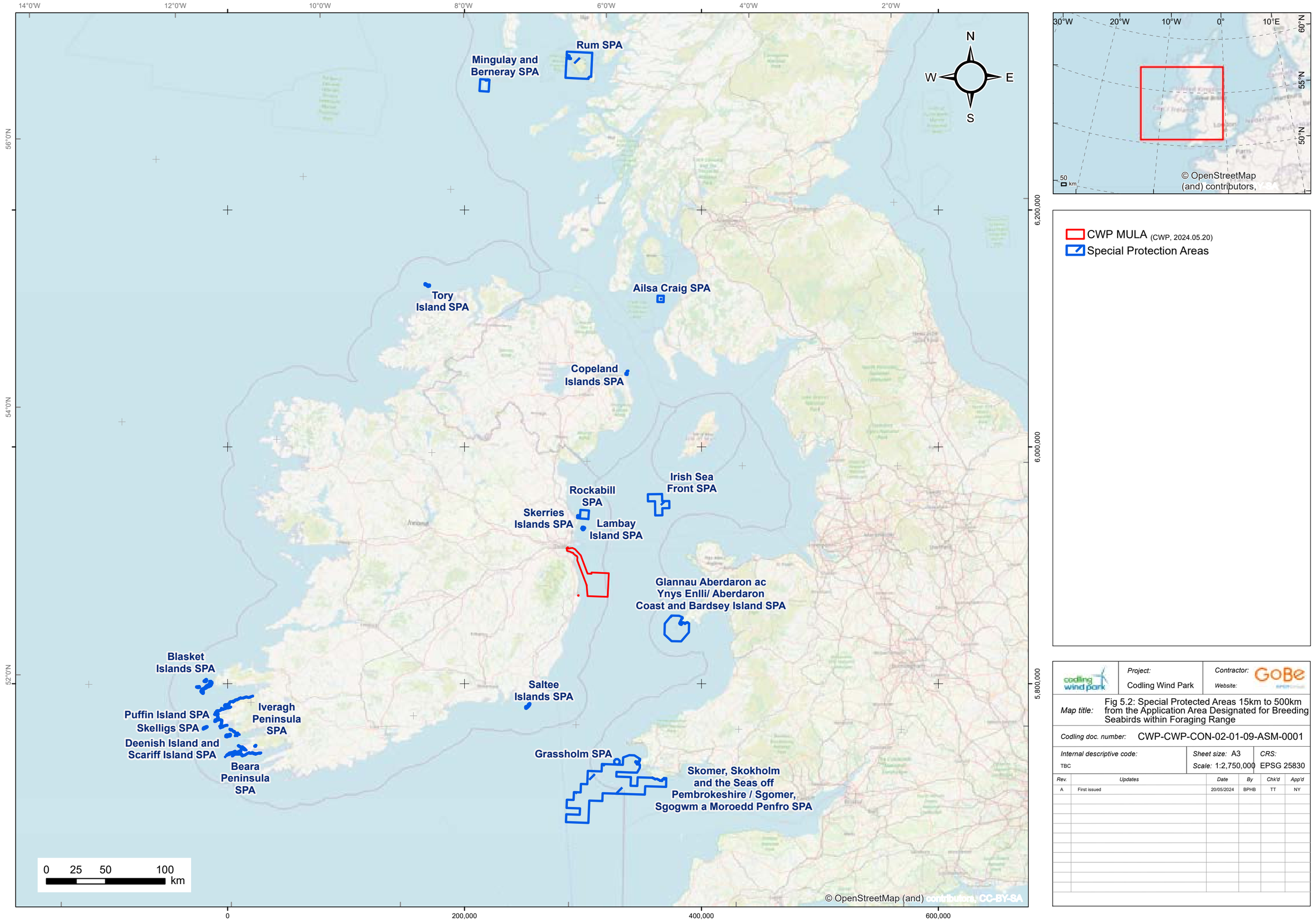

CWP MULA (CWP, 2024.05.20)
Special Protection Areas

codling wind park	Project: Codling Wind Park	Contractor: GoBe	Website:

Map title: Fig 5.2: Special Protected Areas 15km to 500km from the Application Area Designated for Breeding Seabirds within Foraging Range

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

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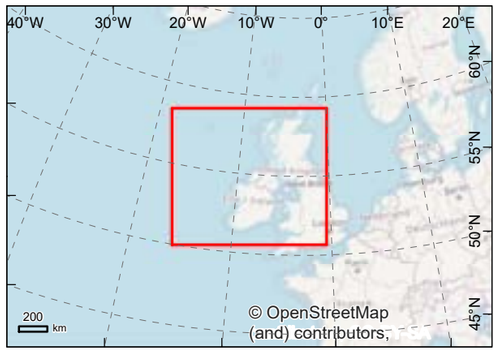

CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

Project: Codling Wind Park		Contractor: GoBe	
Website:			
Map title: Fig 5.3: Special Areas of Conservation (SAC) Designated for Marine Mammals where this is Potential Connectivity with the Application Area - Bottlenose Dolphin			
Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001			
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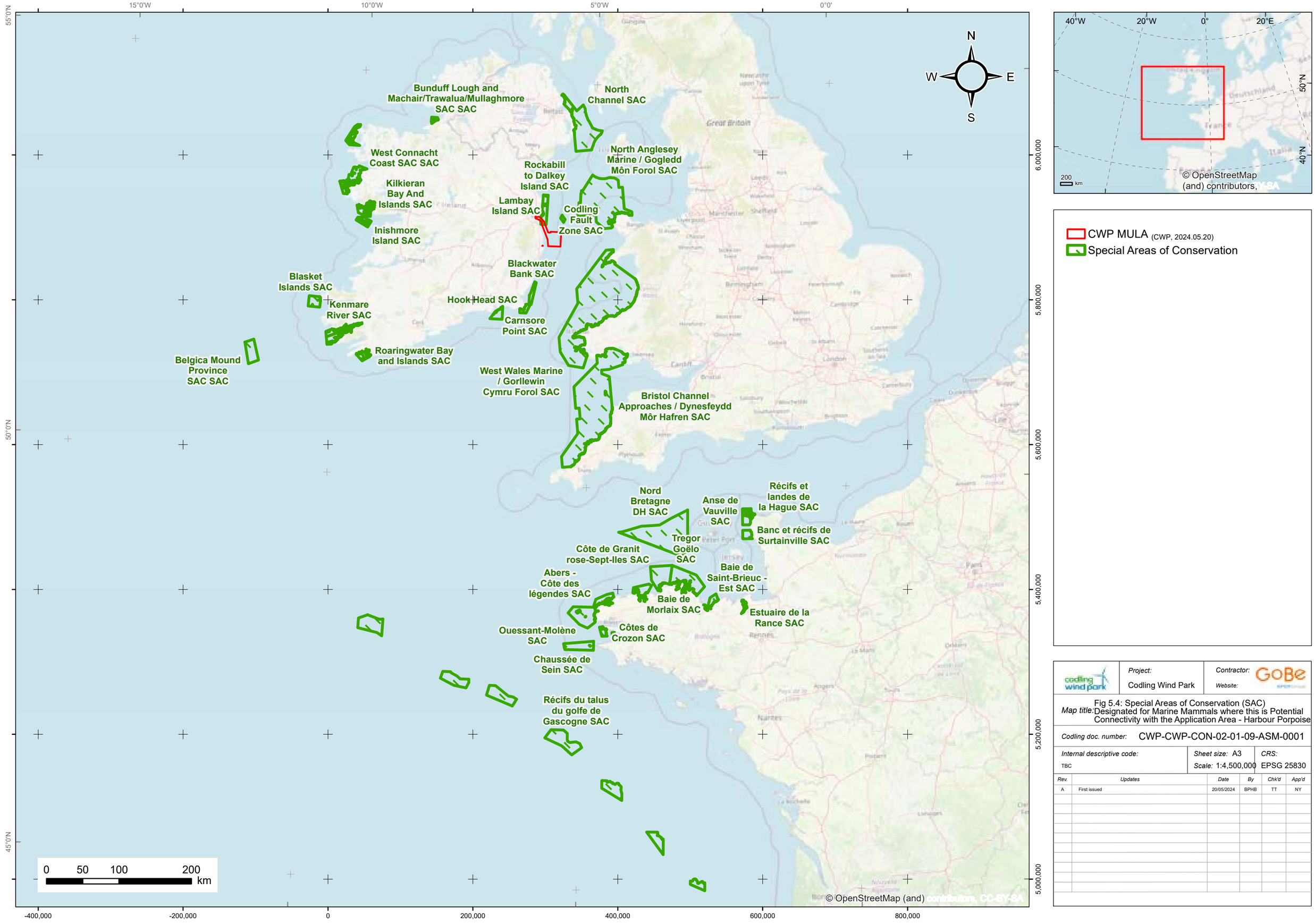

CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

Project: Codling Wind Park		Contractor: GoBe	Website:

Fig 5.4: Special Areas of Conservation (SAC) Designated for Marine Mammals where this is Potential Connectivity with the Application Area - Harbour Porpoise

Map title:

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

Internal descriptive code: TBC

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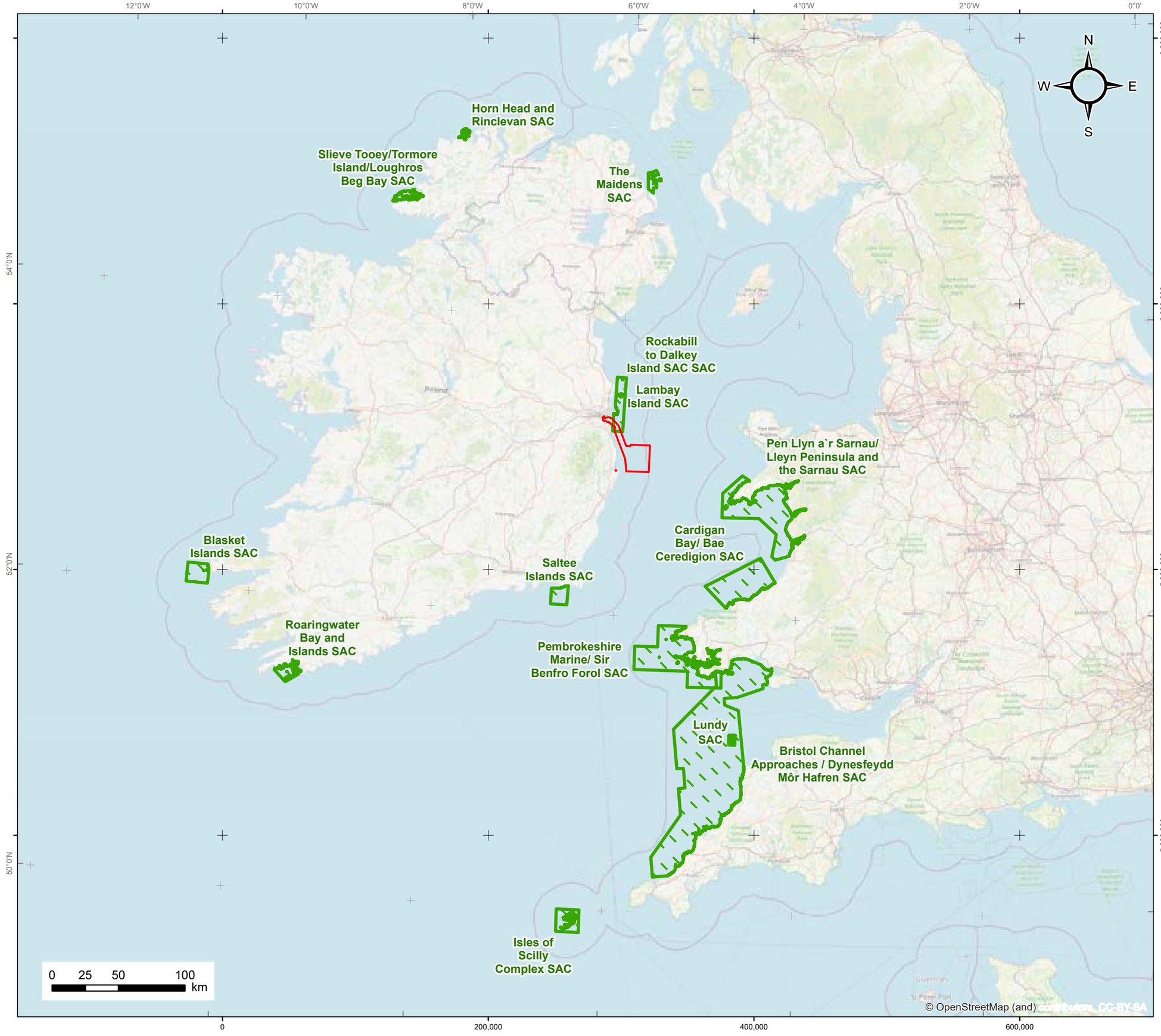

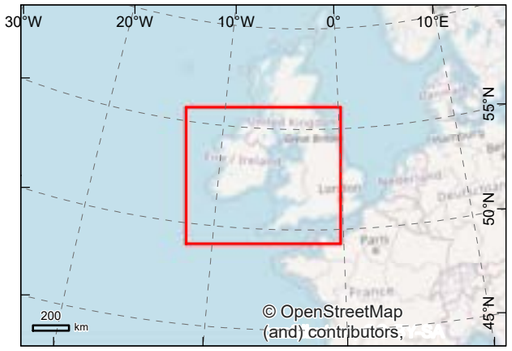

CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe	*Website:*

Fig 5.5: Special Areas of Conservation (SAC) Designated for Marine Mammals where this is Potential Connectivity with the Application Area - Grey Seal

Map title:

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

Internal descriptive code: TBC

Sheet size: A3

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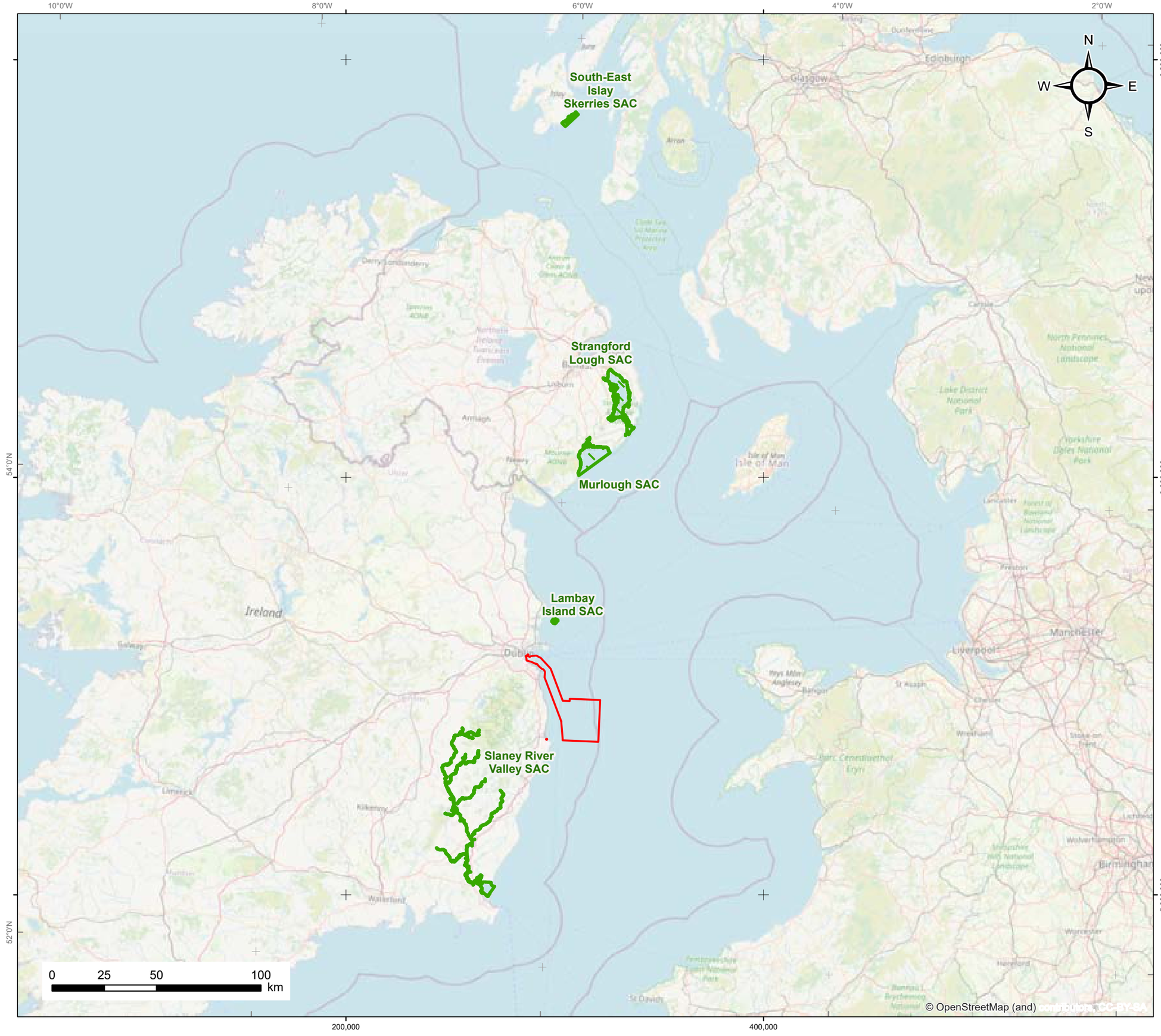

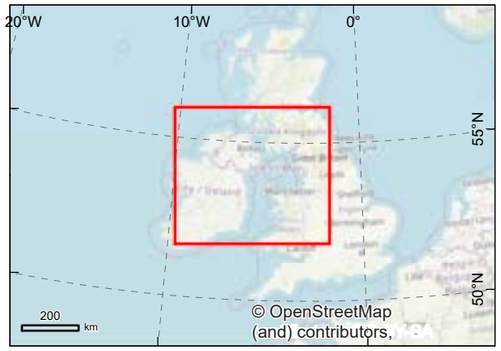

CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe *Website:*

Map title: Fig 5.6: Special Areas of Conservation (SAC) Designated for Marine Mammals where this is Potential Connectivity with the Application Area - Harbour Seal

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

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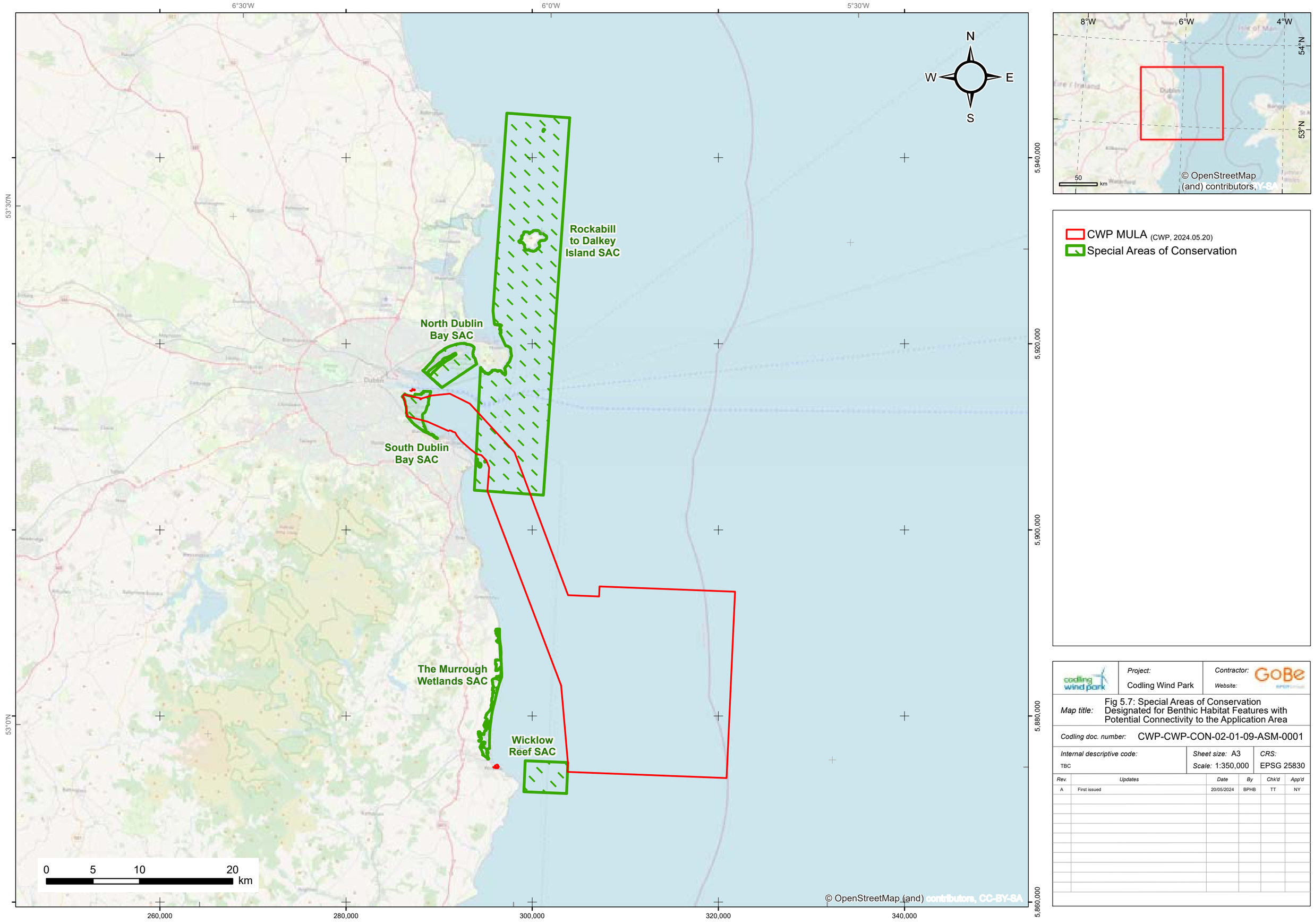


CWP MULA (CWP, 2024.05.20)
Special Areas of Conservation

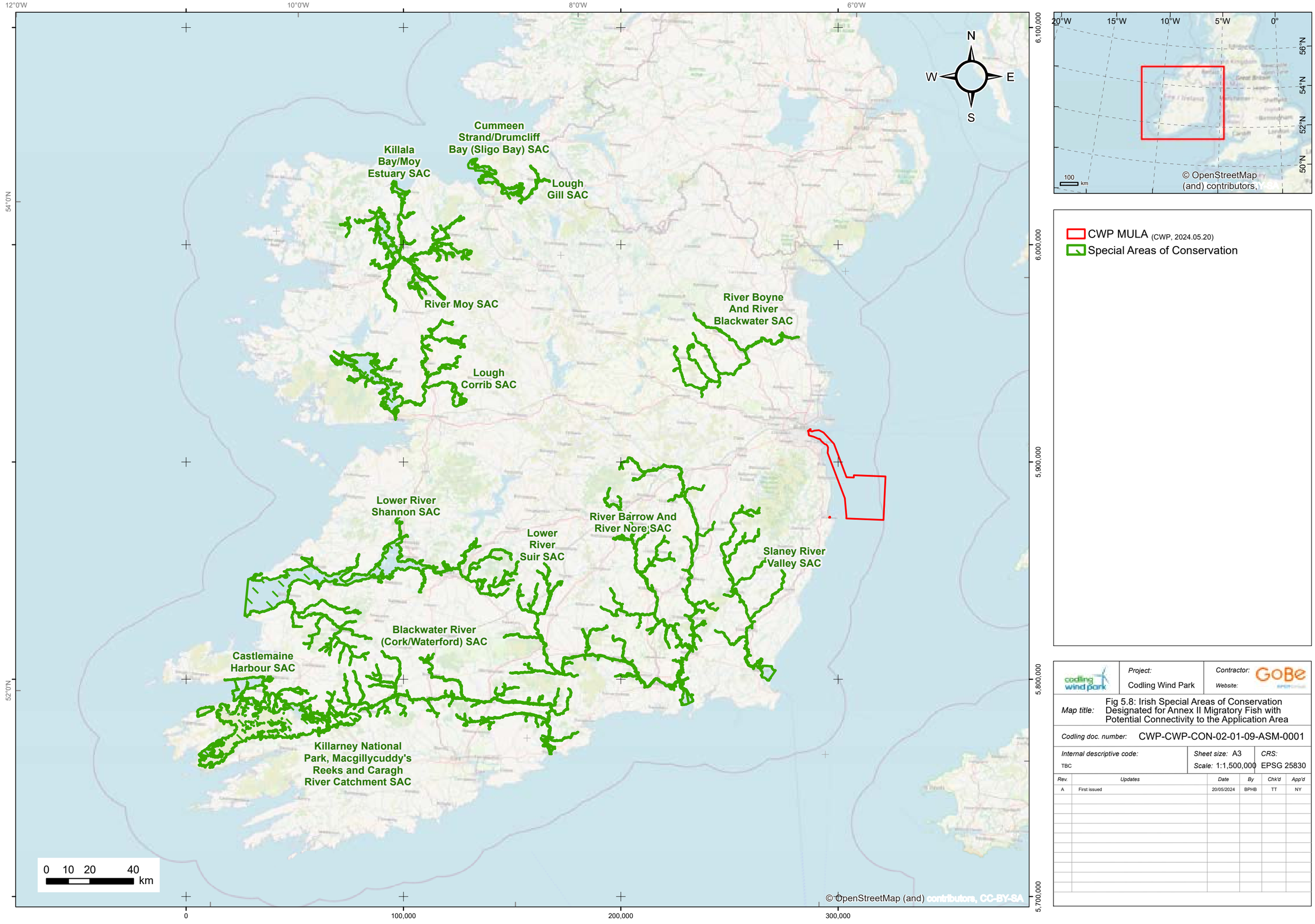
codling wind park	*Project:* Codling Wind Park	*Contractor:* GoBe	*Website:*

Map title: Fig 5.7: Special Areas of Conservation Designated for Benthic Habitat Features with Potential Connectivity to the Application Area

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

Internal descriptive code:	*Sheet size:* A3	*CRS:*
TBC	*Scale:* 1:350,000	EPSG 25830

Rev.	*Updates*	*Date*	*By*	*Chk'd*	*App'd*
A	First issued	20/05/2024	BPHB	TT	NY

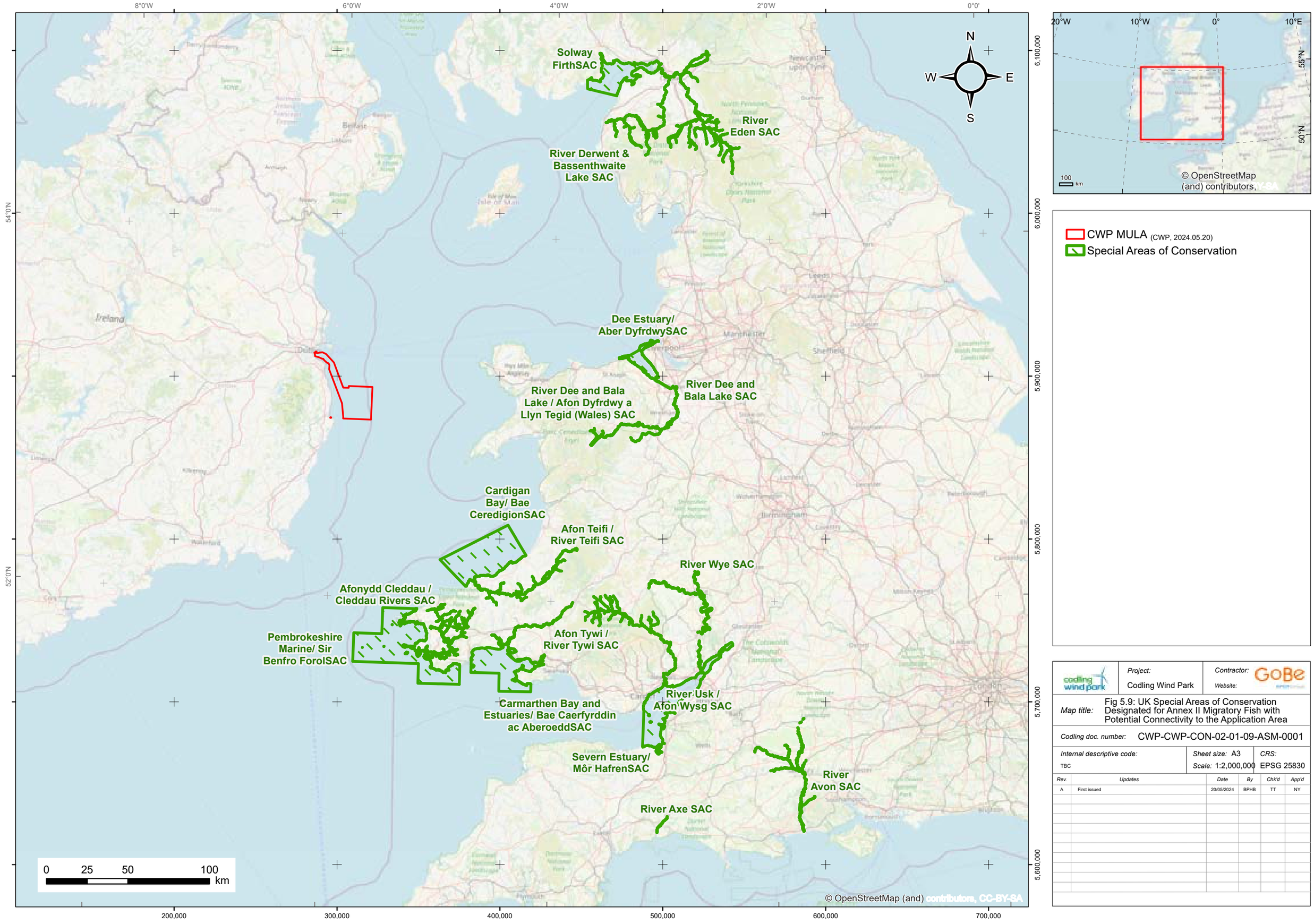


CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

Project: Codling Wind Park		Contractor: GoBe	
Website:			
Map title: Fig 5.8: Irish Special Areas of Conservation Designated for Annex II Migratory Fish with Potential Connectivity to the Application Area			
Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001			
Internal descriptive code: TBC	Sheet size: A3	Scale: 1:1,500,000	CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issued	20/05/2024	BPHB	TT	NY



CWP MULA (CWP, 2024.05.20)
Special Areas of Conservation

codling wind park

Project: Codling Wind Park

Contractor: GoBe

Website:

Map title: Fig 5.9: UK Special Areas of Conservation Designated for Annex II Migratory Fish with Potential Connectivity to the Application Area

Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001

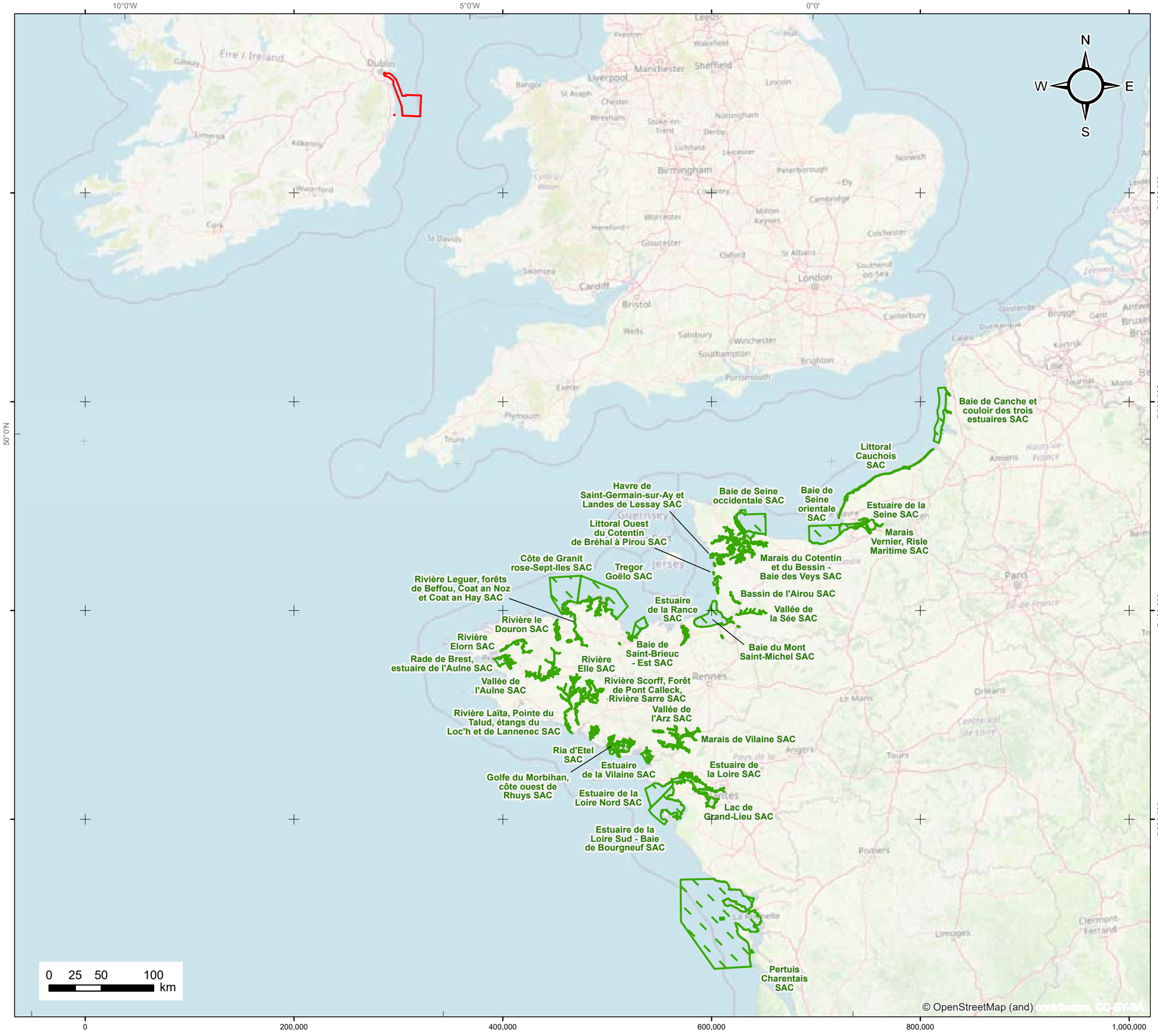
Internal descriptive code: TBC

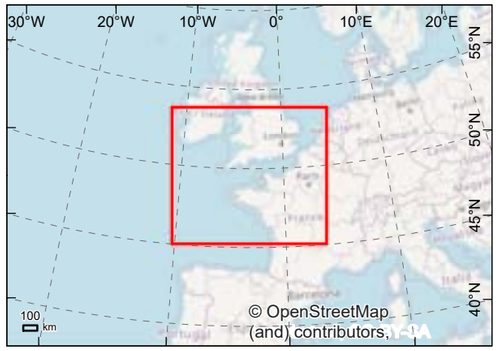
Sheet size: A3

Scale: 1:2,000,000

CRS: EPSG 25830

Rev.	Updates	Date	By	Chk'd	App'd
A	First issued	20/05/2024	BPHB	TT	NY





CWP MULA (CWP, 2024.05.20)

Special Areas of Conservation

Project: Codling Wind Park		Contractor: GoBe	
Website:			
Map title: Fig5.10: French Special Areas of Conservation Designated for Annex II Migratory Fish with Potential Connectivity to the Application Area			
Codling doc. number: CWP-CWP-CON-02-01-09-ASM-0001			
Internal descriptive code: TBC	Sheet size: A3	CRS:	
	Scale: 1:3,500,000	EPSG 25830	

Rev.	Updates	Date	By	Chk'd	App'd
A	First issued	20/05/2024	BPHB	TT	NY

APPENDIX B PROJECT LIST FOR IN-COMBINATION ASSESSMENT

Table B below identifies the plans/projects deemed to have spatial and temporal overlap with the Proposed Activities and thus have the potential to cause in-combination effects on the identified Natura 200 sites and their relevant QIs and SCIs.

Table B: Plan/project list for in-combination assessment

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
FS007031	Statkraft North Irish Sea Array (NISA) Site Investigations	Louth	Site investigation works	Determined 2022	31/03/2021	Beginning 2022	2027 (5-year licence)	20.77	23.06	57.39
FS006915	Celtix Connect - Havhingsten Telecommunicati on Cable Dublin	Dublin	Installation and maintenance of a fibre-optic Havhingsten Telecommunications Cable - landing site is at Loughshinny, Fingal, Co Dublin.	Determined 2022	09/01/2020	April 2020 (works will take 7 days)	N/A	22.90	23.60	62.18
FS007029	Innogy - Site Investigation - Dublin Array at Kish and Bray Banks	Dublin	Site investigation works	Determined 2021	28/01/2021	2024	applying for a 5-year licence for metocean devices to be left out but other works will take 1wk - 6 month	0.22	0.49	40.67
FS007132	Maintenance Dredging in Dublin Port	Dublin	Dublin Port Company (DPC) need to carry out regular maintenance dredging of the navigation channel, basins and berthing pockets in order to maintain their advertised charted depths and hence provide safe	Determined (2022)	20/08/2020	This application is for DPC's maintenance dredging requirements to be carried out in 2022 to 2029.	2029	0.83	0.03	41.31

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			navigation for vessels to and from the Port. Maintenance dredging campaigns are required approximately every 18 months but may need to be carried out more regularly as a result of extreme weather events causing excessive siltation in the channel.							
FS006842	Rockabill Cable Systems Ltd	Dublin	Pre-installation survey, localised site investigations and installation of a subsea fibre optic cable	Determined (2019)	18/06/2018	10/06/2019	10/06/2054	17.21	17.74	56.92
FS006758	Techworks Marine	Dublin	Foreshore Lease/Licence application for placement of monitoring buoys in Dublin bay (buoys removed).	Completed	30/03/2017	03/08/2017	03/08/2022	0.00	9.18	35.47
FS006631	America Europe Connect Ltd	Dublin	Geophysical survey and localised site investigations for a subsea fibre optic cable. Donabate, Dublin	Determined 2018	09/08/2016	01/04/2018 (2 weeks of surveys)	01/04/2019	15.42	15.93	55.21
FS006241	Codling Wind Park Ltd	Wicklow	CWP old site investigations licence application	Consultation	13/11/2013	N/A	N/A	0.00	12.61	0.00

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
FS006077	Dun Laoghaire Rathdown Co.Co. - Dalkey Island	Dublin	Foreshore lease application for refurbishment works to the existing slipway and pier on Dalkey Island	Consultation / Approved subject to conditions 2014	13/02/2012	N/A	N/A	0.90	10.37	32.41
FS006192	Providence Resources P.L.C.	Dublin	Foreshore licence application for site investigation and exploratory well drilling	Determined 2013	24/11/2011	N/A	Surrendered 2013	0.00	10.11	13.81
FS006460	Codling Wind Park 11 Ltd	Wicklow	CWPII original foreshore lease for OWF	Applied	25/03/2009	N/A	N/A	0.00	30.15	8.12
FS004527	Eirgrid Plc - Rush	Dublin	Foreshore licence application for an Ireland - UK Submarine Electricity Interconnector	Determined (2010)	26/09/2008	09/11/2010	09/11/2109	20.80	21.50	60.18
FS006806	Dublin Port Company	Dublin	Foreshore lease application for the provision of a new Pontoon at Berth 50 to accommodate Dublin Port Company Tugboats	Determined (2019)	13/03/2018	21/02/2019	N/A	1.42	0.70	42.05
FS006713	Dun Laoghaire Harbour Company	Dublin	Foreshore Licence application for the provision & maintenance of existing moorings within Dun Laoghaire Harbour. Varied maintenance schedules from annually to every 4-5yrs.	Consultation	17/08/2017	Applying for a 10-year licence	N/A	0.03	6.50	35.71

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
FS006497	Dublin Port Company Site Investigations	Dublin	Foreshore Licence application for geophysical and geotechnical marine based site investigation works, to support the design of new quay walls, jetties, land reclamations and capital dredging at Dublin Port, Co. Dublin	Determined (2016)	03/09/2015	01/04/2016	01/04/2021	0.83	0.03	41.31
FS006980	Dublin Port Company - Alexandra Basin Re-development	Dublin	This application is for DPC's maintenance dredging requirements to be carried out in 2020 and 2021.	Determined (2020)	13/07/2015	20/06/2016	20/06/2022	0.83	0.03	41.31
FS007132	Dublin Port Company - Maintenance dredging	Dublin	Foreshore Lease/licence application for Maintenance Dredging.	Determined (2022)	19/02/2021	2022-2029	2029	0.83	0.03	41.31
FS006495	Dublin Port Company - Maintenance dredging	Dublin	Foreshore Lease/licence application for Maintenance Dredging.	Determined (2016)	04/03/2015	08/05/2016	08/05/2019	0.83	0.03	41.31
FS007134	ESB Wind Development Limited (ESB)	Dublin	This application relates to the Site Investigation works only. These activities are required to inform: the overall project feasibility; the conditions at site and along the cable	Consultation	23/11/2020	Q2/Q3 2022 or 2023	5-year licence period	0.00	2.74	21.78

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			route; the various assessments required to progress the project; and the development of the project.							
FS007163	Wicklow Sea Wind	Wicklow	Geophysical, geotechnical, environmental and metocean - license area 226.81km2	Public Consultation closed on 31.5.23	21/12/2021	Q2 2022- Q4 2024		2.04	38.55	6.72
FS007232	DP Energy Latitude 52		Geotechnical, geophysical, hydrographical, ecological and potential deployment of metocean devices - licence area 1036km2	Applied	22/12/2021	2024	5 year licence applied for	4.71	46.29	5.65
FS006843	Irish Water Greater Dublin Drainage	Dublin	Construction of a 5.232km pipeline and marine diffuser - marine license area 1.11km2	Applied	07/05/2020	Q1 2021 - Q4 2024 (not granted yet)	n/a	8.85	10.17	48.43
FS007261	Shelmalere	Wicklow/Wexford	Hydrological, geotechnical, geophysical, hydrographical, ecological and potential deployment of metocean devices - license area 639.66km2	Public consultation closed on 30.11.22	07/10/2021	2022	n/a	23.30	59.35	19.89
FS007330	Realt na Mara Offshore Wind Farm Limited	Louth	Geophysical, geotechnical, archaeological, ecological, metocean, benthic	Applied	10/03/2022	2023-2025 (if granted)	n/a	0.00	0.70	13.63

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			surveys - licence area 459.40km2							
FS007351	GDG deployment of 3 ADCP	Dublin	Acoustic doppler current profiler, trawl resistant bottom mount unit	Determined (2022)	21/10/2021	2022 (6 weeks)	n/a	0.00	45.63	22.79
FS007588	Wicklow Sea Wind (cable)	Dublin/Wicklow	geotechnical, geophysical and ecological - licence area 198.74	Public consultation closed 31.5.23	05/08/2022	Q2 2023- Q3 2024 (not yet granted) (24 months)	n/a	5.20	30.99	3.66
FS007367	Greystones (OWL) Windfarm	Dublin/Wicklow	Geotechnical, geophysical, environmental and metocean - licence area 251.13km2	Applied	27/06/2022	2023 - 2026 (not yet granted) (3 years)	n/a	0.00	0.70	25.67
FS007472	Mac Lir Offshore Wind Limited	Wicklow/Wexford	Geophysical, geotechnical and environmental	Applied	14/02/2023	(licence sought for 5 years)	n/a	0.00	0.69	12.76
FS007635	Mares Connect	Dublin/Louth	Geophysical, geotechnical and environmental - licence area 730.70km2	Public consultation closed 13.08.23	03/03/2023	multi-year licence sought	n/a	10.23	10.97	50.13
FS007583	Wicklow County Council Dredging	Wicklow	Dredging	Determined (2024)	19/06/2023	2024	2027 (3 year licence)	0.00	12.61	0.00
FS007555	Arklow Bank Wind Park	Dublin/Wicklow	Geophysical, geotechnical, ecological, metocean, corrosion survey consisting of microbial corrosion frame	Consultation	24/04/2023	Unknown	Unknown	7.14	50.57	10.07

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
FS007546	Codling I	Dublin/Wicklow	Geotechnical, geophysical and ecological and wind, wave and tidal measurements - licence area 556 km2	Determined – Approved (12/05/2023)	19/05/2022	Unknown. Currently inactive	5 years. Currently undergoing judicial review.	0.00	0.44	0.12
FS007031	NISA I	Dublin/Louth	Geotechnical, geophysical, ecological and metiocean monitoring - licence area 22689 hectares	Determined (6/12/21)	17/12/2019	2026	2026 (5 year licence)	20.77	23.06	57.39
FS006973	SSE Renewables Braymore Point	Dublin/Louth	Geophysical, geotechnical, metocean surveys, environmental surveys comprising a benthic - licence area 37160.65 hectares	Determined (22/01/21)	19/03/2019	2026	2026 (5 year licence)	55.70	55.17	96.06
FS006862	Arklow Waste Water Treatment Plant	Dublin	Construction of waste water treatment plant and associated works. Planning permission obtained	Determined (1/3/22)	06/06/2019	2026	2037 (35 year licence)	25.26	60.32	21.50
FS006788	Hiberian Wind Power, Kilmichael Point	Wicklow	Geophysical, geotechnical, archaeological, ecological and benthic	Determined (19/12/18)	21/11/2017	Not known	2023 (5 year licence)	23.35	62.52	21.70
LIC230001	North Irish Sea Array Windfarm Limited	Dublin/Louth	Hydrographical, and Geophysical, Geotechnical, Metocean, Ecology, Archaelogical and Water Quality Monitoring	Consultation	19/10/2023	Not known	7 year licence applied for	20.77	23.06	57.39

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
PWSDZ3406/22	Pembroke Beach DAC	Dublin	Redevelopment of former glass bottle site, phase 1b	Determined	08/02/2023	2023	22/04/2028	0.32	0.85	41.28
PWSDZ4121/21	Redevelopment of former glass bottle site	Dublin	Foreshore application in respect of the replacement of the existing fendering system at Carlisle Pier.	Determined	31/08/2021	2023	2024	0.32	0.85	41.28
PWSZD3270/19	Pembroke Beach DAC - Redevelopment of former glass bottle site	Dublin	Redevelopment of former glass bottle site. PERMISSION and RETENTION: Permission for development to amend the Parent Permission and for retention permission for development on a site of c. 15.06 hectares on lands known as the Former Irish Glass Bottle & Fabrizia Sites, Poolbeg West, Dublin 4	Determined	02/06/2022	2022	2027	0.32	0.85	41.28
PWSDZ3207/21	Pembroke Beach DAC	Dublin	Phase 2 of Phase 1	Determined	28/01/2022	2022	2030	0.32	0.85	41.28
4894/22	Dublin Port Company	Dublin	Port terminal redevelopment . PERMISSION & RETENTION: Development at this site which extends from Promenade Road to Alexandra Road and includes	decided (additional information requested)	15/11/2022	2023	2028	1.11	0.34	41.66

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			the western part of Circle K Fuel Terminal1, part of Promenade Road at its junction with Terminal 10 Link Road (T10 Link Road), T10 Link Road, part of Tolka Quay Road, No. 1 Branch Road North and part of Alexandra Road. It also incorporates land comprising parts of Terminal 4 and Terminal 4 North, all at Dublin Port, Dublin 1.							
2804/19	E D & F Man Liquid Products Ireland Ltd - New Storage tank	Dublin	Planning permission for development at our existing molasses storage terminal at the corner of South Bank Road and Pigeon House Road, Ringsend, Dublin, D04 TC98. The development will consist of the construction of a new molasses storage tank within the existing bund at the existing molasses storage terminal.	Granted	18/07/2019	2019	2024	0.26	0.57	41.26
4483/19	Dublin Port Company - Port terminal redevelopment	Dublin	The proposed development will consist of the demolition of 10 no.	Decided (grant permission)	18/11/2019	2020	2025	1.11	0.34	41.66

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			redundant buildings (c. 6830sqm) and removal of temporary structures including portacabins and general site clearance (an existing substation and pump house will remain in situ) to optimise the use of the site as a multi-functional storage yard (primarily for heavy goods vehicles) and facilitate wider infrastructural upgrades to provide additional capacity within the Port.							
4507/18	Dublin Port Company - Port terminal redevelopment	Dublin	The development will consist of temporary permission for 5 years for facilities to cater for cruise ship operators to include: a marquee (c.2,250sq.m) 8m in height, 300 car parking spaces, bus and car drop off area, fencing 2m in height, mini-roundabout, 6m access off Tolka Quay Road and all associated site development works at Tolka Quay Road; and; a marquee (c.1750sq.m) c.8m in	Decided (grant permission)	20/03/2019	2019	2024	1.11	0.34	41.66

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			height at Ocean Pier.							
3649/17	Dublin Port Company	Dublin	Port terminal redevelopment	Decided (grant permission)	21/11/2017	2018	2023	1.11	0.34	41.66
ABP-304888-19	Dublin Port Company - MP2 Project	Dublin	Jetty development	Granted with conditions	11/07/2019	2020	2035 (15 year licence)	1.11	0.34	41.66
S0004-01	Dublin Port Company - Dredge disposal	Dublin	The application is for the disposal of a maximum of 4,000,000 tonnes of dredge material (consisting of a mixture of sediments predominately silt sand mix) from maintenance dredging from Dublin Port fairway, basins and berths.	Granted	01/10/2009	2011	2017 (6 year dumping)	2.85	9.61	39.04
S0024-02	Dublin Port Company - Dredge disposal	Dublin	The proposed capital dredging activities form an integral part of Dublin Port Companys MP2 Project (ABP-304888-19). The MP2 Project complements the Alexandra Basin Redevelopment (ABR) Project (29N.PA0034), which is currently under construction, in providing capacity for	Granted 27/07/2022	04/08/2020	2022	Possibly 2028	2.85	9.61	39.04

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
			growth in the Roll On Roll Off (Ro-Ro) and Load On Load Off (Lo-Lo) modes on the north side of the port and at its eastern end in addition to providing suitable infrastructure for increasing numbers of ferry passengers. No expiry date							
N/A	3FM Project	Dublin	The 3FM Project is Dublin Port Company's (DPCs) third and final Masterplan Project which qualifies as a Strategic Infrastructure Development (SID). It focuses on development in the south port area, known as the Poolbeg Peninsula, which contains nearly one-fifth of the Dublin Port estate.	In planning	n/a	n/a	n/a	2.85	9.61	39.04
FS007180	Tech Works Marine Ltd Data Buoy Deployment	Dublin	Deployment of a small Data Buoy with multiple environmental (non-acoustic) sensors to test communications technology for data acquisition.	Granted with conditions 07/05/2024	18/05/2023	2025	2029 (5 years)	0.29	7.56	34.67

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
FS007188	Dublin Array	Dublin	Site Investigations for the proposed Dublin Array Offshore Wind Farm	Granted with conditions 13/ 01/2023	01/10/2021	2024	2026 (5 years)	0.00	0.43	4.77
LIC230028	Iarnród Éireann / Irish Rail	Dublin/Wicklow	A Geotechnical Investigation (GI) and Geophysical site investigation surveys to inform design options for the proposed East Coast Rail Infrastructure Protection Projects (ECRIPP). The purpose of ECRIPP is to implement protection measures to at risk sections of the Dublin to Wexford railway line from the effects of climate change and coastal erosion.	Applied	n/a	2025	n/a	0.00	2.65	38.71
LIC230016	Microsoft Ireland Operations Ltd.	Dublin	Geophysical survey and site investigations for a proposed subsea fibre optic cable having a landfall in Dublin Port, County Dublin and to evaluate options for the route traversing Dublin Bay, across the Irish Sea to Anglesey, Wales.	Consultation	n/a	2025	n/a	0.82	0.83	41.01

Application codes	Applicant	County	Description	Status	Date Received	Expected Start Date	Licence Expires	Distance from Licence Area Boundary	Distance from Potential Onshore Substation Location	Distance from OMB
LIC230018	Microsoft Ireland Operations Ltd	Dublin	Geophysical survey and site investigations for a proposed subsea fibre optic cable having a landfall in Portmarnock, County Dublin to evaluate options for the route traversing the Irish Sea to Abergele, Wales.	Consultation	n/a	2025	n/a	10.63	10.79	49.86
LIC230007	Dublin City Council	Dublin	DCC Environmental survey and ground investigation works in order to inform the design of proposed Point Bridge and Tom Clarke Widening Project.	Applied	n/a	2025	n/a	1.51	1.99	42.26
MAC20230012	Kish Offshore Wind & Bray Offshore Wind	Dublin	ORE Operations and Maintenance facility at St. Michael's Pier, Dun Laoghaire Harbour. 60-70m pontoon; access gangway; demolition of existing RoRo ramp and part removal of existing fender structure	Applied	n/a	2025	n/a	0.66	6.42	35.48
MAC20230013	Codling Wind Park	Wicklow	Amendment to existing MAC (2022-MAC-006)	Applied	n/a	unknown	45 years	0.00	0.00	0.00

APPENDIX C LICENCE AREA COORDINATES

Table C: Coordinates of the Licence Area

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
1	53.34077	-6.19854	719963.4	733794.9	**250**	53.341905	-6.196966	720065.0	733923.9
2	53.340711	-6.198601	719959.5	733788.2	**251**	53.341927	-6.197006	720062.3	733926.2
3	53.340703	-6.198609	719959.0	733787.4	**252**	53.34194	-6.197024	720061.0	733927.6
4	53.340697	-6.198615	719958.6	733786.7	**253**	53.341959	-6.19705	720059.2	733929.7
5	53.340693	-6.198619	719958.3	733786.2	**254**	53.341994	-6.197067	720058.0	733933.5
6	53.340689	-6.198624	719958.0	733785.8	**255**	53.342012	-6.197092	720056.3	733935.5
7	53.340685	-6.198629	719957.7	733785.3	**256**	53.342019	-6.197107	720055.3	733936.3
8	53.34068	-6.198635	719957.3	733784.7	**257**	53.342018	-6.197153	720052.2	733936.1
9	53.340676	-6.19864	719956.9	733784.3	**258**	53.342009	-6.197176	720050.7	733935.0
10	53.340671	-6.198648	719956.5	733783.7	**259**	53.341996	-6.197194	720049.5	733933.6
11	53.340667	-6.198654	719956.1	733783.2	**260**	53.341982	-6.197213	720048.3	733932.0
12	53.340663	-6.19866	719955.6	733782.8	**261**	53.34197	-6.197226	720047.5	733930.6
13	53.340659	-6.198667	719955.2	733782.3	**262**	53.341954	-6.197248	720046.0	733928.8
14	53.340653	-6.198677	719954.6	733781.7	**263**	53.341947	-6.197276	720044.2	733928.0
15	53.340648	-6.198687	719953.9	733781.1	**264**	53.341944	-6.197297	720042.8	733927.6
16	53.340644	-6.198694	719953.4	733780.7	**265**	53.341944	-6.197298	720042.8	733927.6
17	53.340641	-6.198701	719953.0	733780.3	**266**	53.341943	-6.197302	720042.5	733927.5
18	53.340637	-6.198709	719952.5	733779.8	**267**	53.341941	-6.197349	720039.4	733927.2
19	53.340633	-6.198717	719951.9	733779.4	**268**	53.341936	-6.197389	720036.7	733926.5
20	53.34063	-6.198725	719951.5	733779.0	**269**	53.341922	-6.197449	720032.8	733925.0
21	53.340626	-6.198733	719950.9	733778.6	**270**	53.341919	-6.197489	720030.1	733924.5

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
22	53.340623	-6.198742	719950.3	733778.2	**271**	53.341908	-6.197507	720028.9	733923.2
23	53.340619	-6.198751	719949.7	733777.8	**272**	53.341801	-6.197558	720025.8	733911.3
24	53.340616	-6.198761	719949.1	733777.4	**273**	53.34174	-6.197581	720024.5	733904.4
25	53.340613	-6.19877	719948.5	733777.1	**274**	53.34173	-6.197584	720024.3	733903.3
26	53.340607	-6.198794	719946.9	733776.4	**275**	53.341708	-6.197591	720023.9	733900.9
27	53.340605	-6.198803	719946.3	733776.1	**276**	53.34161	-6.197673	720018.8	733889.8
28	53.340603	-6.198811	719945.8	733775.9	**277**	53.341416	-6.197791	720011.4	733868.0
29	53.340598	-6.198835	719944.2	733775.3	**278**	53.341407	-6.197798	720011.0	733867.0
30	53.340593	-6.19886	719942.5	733774.6	**279**	53.341392	-6.197808	720010.3	733865.4
31	53.340588	-6.198886	719940.8	733774.0	**280**	53.341394	-6.197906	720003.8	733865.4
32	53.340598	-6.198889	719940.6	733775.2	**281**	53.341395	-6.197963	720000.0	733865.5
33	53.340599	-6.198889	719940.6	733775.3	**282**	53.341396	-6.197966	719999.8	733865.5
34	53.340599	-6.198893	719940.3	733775.3	**283**	53.341397	-6.198058	719993.7	733865.5
35	53.340597	-6.198906	719939.5	733775.0	**284**	53.341399	-6.19814	719988.2	733865.6
36	53.340593	-6.198931	719937.8	733774.6	**285**	53.341399	-6.198143	719988.0	733865.6
37	53.340588	-6.198966	719935.5	733773.9	**286**	53.3414	-6.198172	719986.1	733865.6
38	53.340582	-6.199019	719932.0	733773.2	**287**	53.3414	-6.198191	719984.8	733865.6
39	53.34058	-6.199037	719930.8	733773.0	**288**	53.3414	-6.198215	719983.2	733865.6
40	53.340577	-6.199078	719928.0	733772.6	**289**	53.341441	-6.198232	719982.0	733870.0
41	53.340575	-6.199105	719926.3	733772.3	**290**	53.341463	-6.198192	719984.6	733872.6
42	53.340573	-6.199132	719924.5	733772.0	**291**	53.341489	-6.198234	719981.7	733875.4
43	53.340572	-6.199174	719921.7	733771.8	**292**	53.341501	-6.198254	719980.4	733876.7
44	53.340571	-6.199347	719910.2	733771.4	**293**	53.341613	-6.19822	719982.3	733889.3
45	53.340577	-6.199458	719902.8	733771.9	**294**	53.341694	-6.198187	719984.3	733898.3

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
46	53.340583	-6.199572	719895.1	733772.4	**295**	53.341851	-6.198123	719988.1	733915.9
47	53.340587	-6.199622	719891.8	733772.8	**296**	53.34199	-6.198066	719991.5	733931.4
48	53.340592	-6.199691	719887.2	733773.2	**297**	53.342122	-6.198007	719995.1	733946.2
49	53.340589	-6.199692	719887.1	733772.9	**298**	53.342225	-6.197969	719997.3	733957.7
50	53.340592	-6.199713	719885.8	733773.2	**299**	53.342276	-6.197952	719998.3	733963.4
51	53.340599	-6.199763	719882.4	733773.8	**300**	53.342276	-6.197961	719997.7	733963.5
52	53.340635	-6.200003	719866.3	733777.5	**301**	53.342365	-6.19794	719998.8	733973.4
53	53.340678	-6.20028	719847.7	733781.8	**302**	53.342361	-6.197885	720002.5	733973.0
54	53.340702	-6.200443	719836.8	733784.2	**303**	53.34236	-6.197702	720014.7	733973.2
55	53.340745	-6.200739	719817.0	733788.5	**304**	53.342355	-6.19714	720052.2	733973.6
56	53.340791	-6.201061	719795.5	733793.1	**305**	53.342309	-6.197145	720051.9	733968.5
57	53.340796	-6.201095	719793.2	733793.6	**306**	53.342238	-6.197155	720051.4	733960.5
58	53.340889	-6.201053	719795.7	733804.0	**307**	53.342226	-6.196932	720066.4	733959.6
59	53.340884	-6.201014	719798.3	733803.4	**308**	53.342297	-6.196921	720066.9	733967.5
60	53.340849	-6.200781	719813.9	733799.9	**309**	53.342308	-6.196919	720067.0	733968.8
61	53.340823	-6.200617	719824.9	733797.3	**310**	53.302534	-6.126156	724894.7	729665.0
62	53.340791	-6.200397	719839.7	733794.1	**311**	53.302626	-6.126106	724897.8	729675.3
63	53.34077	-6.200254	719849.2	733792.0	**312**	53.302633	-6.126141	724895.4	729676.1
64	53.340752	-6.200136	719857.1	733790.3	**313**	53.302542	-6.126191	724892.3	729665.8
65	53.340734	-6.200012	719865.4	733788.4	**314**	53.302557	-6.126279	724886.5	729667.4
66	53.340722	-6.199925	719871.2	733787.2	**315**	53.302529	-6.126786	724852.7	729663.3
67	53.340713	-6.199865	719875.3	733786.3	**316**	53.302607	-6.127014	724837.3	729671.6
68	53.340707	-6.199819	719878.4	733785.8	**317**	53.302625	-6.127201	724824.8	729673.3
69	53.3407	-6.199754	719882.7	733785.1	**318**	53.303104	-6.130096	724630.5	729721.5

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
70	53.340695	-6.199704	719886.0	733784.6	**319**	53.30318	-6.130558	724599.4	729729.2
71	53.340692	-6.199656	719889.2	733784.4	**320**	53.303269	-6.130541	724600.4	729739.1
72	53.340688	-6.199599	719893.1	733784.1	**321**	53.303297	-6.130549	724599.7	729742.2
73	53.340686	-6.19954	719897.0	733783.9	**322**	53.303414	-6.130684	724590.4	729755.0
74	53.340684	-6.199447	719903.2	733783.8	**323**	53.303425	-6.130722	724587.8	729756.2
75	53.340681	-6.199368	719908.5	733783.6	**324**	53.303453	-6.130971	724571.1	729758.8
76	53.340678	-6.199279	719914.4	733783.4	**325**	53.303623	-6.131179	724556.7	729777.4
77	53.340673	-6.199151	719923.0	733783.1	**326**	53.303868	-6.132062	724497.3	729803.1
78	53.340672	-6.199124	719924.7	733783.0	**327**	53.30388	-6.132171	724489.9	729804.3
79	53.340676	-6.199044	719930.0	733783.7	**328**	53.303981	-6.13323	724419.0	729813.6
80	53.340679	-6.199002	719932.9	733784.0	**329**	53.30413	-6.134874	724309.1	729827.4
81	53.340679	-6.198999	719933.1	733784.0	**330**	53.304132	-6.134996	724300.9	729827.4
82	53.340689	-6.198905	719939.3	733785.2	**331**	53.304112	-6.135256	724283.7	729824.7
83	53.340699	-6.198851	719942.9	733786.5	**332**	53.303953	-6.135786	724248.8	729806.1
84	53.340706	-6.198822	719944.8	733787.4	**333**	53.303685	-6.136649	724192.1	729774.8
85	53.340711	-6.198803	719946.0	733787.9	**334**	53.303609	-6.136898	724175.7	729765.8
86	53.340714	-6.198794	719946.6	733788.2	**335**	53.303661	-6.137123	724160.5	729771.3
87	53.340716	-6.198789	719946.9	733788.5	**336**	53.311716	-6.1715	721846.6	730608.3
88	53.340718	-6.198785	719947.2	733788.7	**337**	53.315662	-6.203074	719731.8	730993.8
89	53.34072	-6.198778	719947.6	733789.0	**338**	53.315728	-6.203586	719697.4	731000.3
90	53.340724	-6.198771	719948.1	733789.5	**339**	53.317638	-6.204751	719614.5	731210.9
91	53.340728	-6.198763	719948.6	733789.9	**340**	53.318454	-6.205064	719591.3	731301.2
92	53.340733	-6.198754	719949.2	733790.4	**341**	53.319056	-6.205772	719542.5	731367.0
93	53.340737	-6.198744	719949.8	733790.9	**342**	53.319529	-6.20585	719536.0	731419.4

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
94	53.340744	-6.198735	719950.4	733791.6	**343**	53.320923	-6.205696	719542.3	731574.7
95	53.340748	-6.198729	719950.8	733792.2	**344**	53.321004	-6.20571	719541.2	731583.8
96	53.340754	-6.198721	719951.3	733792.8	**345**	53.321614	-6.20582	719532.2	731651.4
97	53.340759	-6.198713	719951.9	733793.4	**346**	53.322167	-6.205919	719524.0	731712.8
98	53.340773	-6.198699	719952.8	733794.9	**347**	53.323495	-6.206046	719511.8	731860.4
99	53.340787	-6.198686	719953.6	733796.5	**348**	53.324996	-6.206412	719483.3	732026.7
100	53.340797	-6.198677	719954.1	733797.7	**349**	53.327202	-6.207919	719376.7	732269.6
101	53.340801	-6.198673	719954.4	733798.2	**350**	53.32912	-6.208469	719334.7	732482.1
102	53.34081	-6.198666	719954.9	733799.1	**351**	53.330332	-6.209005	719295.7	732616.0
103	53.340821	-6.198658	719955.4	733800.3	**352**	53.332058	-6.210342	719201.8	732805.8
104	53.340828	-6.198652	719955.7	733801.2	**353**	53.332752	-6.210664	719178.4	732882.6
105	53.340837	-6.198646	719956.1	733802.2	**354**	53.333398	-6.211441	719124.9	732953.2
106	53.340849	-6.198637	719956.7	733803.6	**355**	53.334103	-6.212623	719044.2	733029.6
107	53.340856	-6.198632	719957.0	733804.3	**356**	53.33445	-6.212888	719025.6	733067.7
108	53.340866	-6.198624	719957.5	733805.4	**357**	53.334452	-6.212882	719026.0	733068.0
109	53.340873	-6.19862	719957.7	733806.2	**358**	53.334875	-6.212813	719029.4	733115.2
110	53.340882	-6.198615	719958.0	733807.2	**359**	53.335292	-6.212546	719046.0	733162.0
111	53.340895	-6.198609	719958.4	733808.8	**360**	53.337177	-6.209731	719228.2	733376.4
112	53.340914	-6.1986	719959.0	733810.9	**361**	53.336726	-6.208585	719305.8	733328.1
113	53.340938	-6.198586	719959.8	733813.5	**362**	53.336541	-6.208138	719336.0	733308.4
114	53.340973	-6.198572	719960.7	733817.4	**363**	53.335826	-6.202388	719721.0	733238.4
115	53.341029	-6.198547	719962.1	733823.7	**364**	53.335826	-6.202387	719721.0	733238.5
116	53.341052	-6.198536	719962.8	733826.3	**365**	53.335654	-6.20041	719853.2	733222.6
117	53.341059	-6.198532	719963.1	733827.1	**366**	53.335649	-6.200353	719857.0	733222.1

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
118	53.341129	-6.198505	719964.7	733834.9	**367**	53.335636	-6.200213	719866.4	733220.9
119	53.341238	-6.198461	719967.3	733847.1	**368**	53.335124	-6.195245	720198.7	733172.3
120	53.341308	-6.198434	719968.9	733855.0	**369**	53.335043	-6.194753	720231.6	733164.1
121	53.341333	-6.198424	719969.5	733857.7	**370**	53.33496	-6.19342	720320.6	733157.1
122	53.341365	-6.198367	719973.2	733861.4	**371**	53.334792	-6.192062	720411.6	733140.7
123	53.341379	-6.198341	719974.9	733863.0	**372**	53.334249	-6.18767	720705.6	733087.7
124	53.341401	-6.198303	719977.4	733865.5	**373**	53.333784	-6.183908	720957.4	733042.3
125	53.341401	-6.198301	719977.5	733865.5	**374**	53.332825	-6.18454	720918.1	732934.6
126	53.341275	-6.198328	719976.1	733851.4	**375**	53.332809	-6.183393	720994.5	732934.8
127	53.341272	-6.198329	719976.0	733851.2	**376**	53.333627	-6.18286	721027.6	733026.7
128	53.341265	-6.198243	719981.7	733850.5	**377**	53.334844	-6.17698	721415.8	733172.1
129	53.341261	-6.198245	719981.6	733850.0	**378**	53.334953	-6.176455	721450.5	733185.0
130	53.341233	-6.198257	719980.9	733846.9	**379**	53.336888	-6.167099	722068.0	733416.3
131	53.341204	-6.198269	719980.2	733843.7	**380**	53.339611	-6.137237	724048.7	733770.7
132	53.341183	-6.198278	719979.7	733841.3	**381**	53.33074	-6.104195	726275.0	732841.7
133	53.341158	-6.198288	719979.1	733838.5	**382**	53.285756	-6.028919	731426.5	727972.8
134	53.34113	-6.1983	719978.3	733835.3	**383**	53.149997	-5.933343	738235.0	713049.7
135	53.341107	-6.198309	719977.8	733832.8	**384**	53.149999	-5.883338	741579.3	713147.7
136	53.341096	-6.198314	719977.5	733831.5	**385**	53.159677	-5.883337	741547.5	714224.3
137	53.341093	-6.198315	719977.4	733831.2	**386**	53.159677	-5.665523	756111.2	714677.3
138	53.341092	-6.198316	719977.4	733831.2	**387**	52.979544	-5.667927	756602.8	694633.7
139	53.341057	-6.19833	719976.5	733827.2	**388**	52.979544	-5.922672	739498.5	694107.9
140	53.341012	-6.19835	719975.3	733822.1	**389**	52.98862	-5.922673	739469.1	695117.6
141	53.340962	-6.198372	719974.0	733816.5	**390**	53.062597	-5.938412	738175.9	703316.8

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
142	53.340954	-6.198375	719973.8	733815.6	**391**	53.247141	-6.069822	728815.5	723602.3
143	53.340942	-6.19838	719973.5	733814.3	**392**	53.247248	-6.069817	728815.5	723614.2
144	53.340902	-6.198397	719972.5	733809.8	**393**	53.24733	-6.069813	728815.6	723623.3
145	53.340882	-6.198405	719972.0	733807.6	**394**	53.269903	-6.068647	728825.5	726136.7
146	53.340865	-6.198412	719971.6	733805.7	**395**	53.276792	-6.073785	728462.2	726894.0
147	53.340865	-6.19842	719971.1	733805.7	**396**	53.2816	-6.081997	727900.2	727414.1
148	53.340864	-6.198428	719970.6	733805.6	**397**	53.282525	-6.09005	727360.5	727502.7
149	53.340863	-6.198437	719970.0	733805.4	**398**	53.286749	-6.099817	726696.8	727955.2
150	53.340862	-6.198441	719969.7	733805.3	**399**	53.294572	-6.115868	725603.7	728797.3
151	53.34086	-6.198445	719969.4	733805.1	**400**	53.300024	-6.123567	725074.6	729390.3
152	53.340858	-6.198449	719969.2	733804.9	**401**	53.300703	-6.123952	725047.0	729465.2
153	53.340856	-6.198452	719969.0	733804.6	**402**	53.300856	-6.124125	725034.9	729481.8
154	53.340852	-6.198455	719968.8	733804.2	**403**	53.301008	-6.124287	725023.7	729498.5
155	53.340847	-6.198461	719968.4	733803.6	**404**	53.301175	-6.124478	725010.5	729516.7
156	53.340822	-6.198486	719966.8	733800.8	**405**	53.301363	-6.12468	724996.5	729537.3
157	53.340774	-6.198536	719963.6	733795.3	**406**	53.301543	-6.124879	724982.7	729557.0
158	53.34077	-6.19854	719963.4	733794.9	**407**	53.301595	-6.124932	724979.0	729562.6
159	53.342308	-6.196919	720067.0	733968.8	**408**	53.301737	-6.125086	724968.3	729578.2
160	53.342305	-6.196857	720071.1	733968.5	**409**	53.301797	-6.125151	724963.8	729584.7
161	53.342193	-6.194005	720261.3	733960.9	**410**	53.301952	-6.125317	724952.3	729601.7
162	53.342143	-6.194002	720261.7	733955.3	**411**	53.302115	-6.125489	724940.4	729619.6
163	53.34214	-6.194122	720253.7	733954.7	**412**	53.302224	-6.125602	724932.5	729631.5
164	53.342064	-6.194117	720254.3	733946.3	**413**	53.302401	-6.125789	724919.5	729650.8
165	53.342067	-6.193989	720262.7	733946.9	**414**	53.302412	-6.125817	724917.7	729652.1

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
166	53.341327	-6.193897	720271.0	733864.7	**415**	52.981312	-6.041036	731545.5	694081.0
167	53.341251	-6.193887	720271.8	733856.3	**416**	52.981358	-6.040848	731558.0	694086.4
168	53.341225	-6.193884	720272.1	733853.4	**417**	52.981055	-6.040081	731610.3	694054.2
169	53.341178	-6.193883	720272.3	733848.1	**418**	52.980916	-6.040005	731615.9	694038.9
170	53.341178	-6.193897	720271.4	733848.1	**419**	52.980849	-6.039658	731639.4	694032.1
171	53.341179	-6.193987	720265.4	733848.1	**420**	52.980801	-6.039669	731638.8	694026.6
172	53.341182	-6.194115	720256.9	733848.2	**421**	52.980599	-6.037998	731751.7	694007.3
173	53.341182	-6.194129	720255.9	733848.2	**422**	52.980703	-6.035459	731921.8	694023.6
174	53.341196	-6.194822	720209.8	733848.6	**423**	52.981038	-6.034915	731957.3	694061.8
175	53.3412	-6.195024	720196.3	733848.7	**424**	52.981324	-6.034597	731977.8	694094.2
176	53.341236	-6.195037	720195.3	733852.6	**425**	52.981357	-6.034564	731979.9	694097.9
177	53.34124	-6.195039	720195.2	733853.1	**426**	52.981398	-6.034607	731976.9	694102.4
178	53.341277	-6.195059	720193.7	733857.2	**427**	52.981398	-6.034607	731976.9	694102.4
179	53.341304	-6.195079	720192.3	733860.1	**428**	52.981263	-6.034952	731954.2	694086.7
180	53.341337	-6.195112	720190.0	733863.8	**429**	52.981224	-6.035839	731894.7	694080.8
181	53.34134	-6.195119	720189.6	733864.1	**430**	52.981386	-6.0371	731809.5	694096.5
182	53.341348	-6.195137	720188.3	733864.9	**431**	52.981693	-6.038228	731732.8	694128.6
183	53.341359	-6.195139	720188.2	733866.1	**432**	52.982128	-6.038943	731683.6	694175.7
184	53.341397	-6.195146	720187.6	733870.3	**433**	52.982712	-6.039477	731645.9	694239.6
185	53.341418	-6.195162	720186.5	733872.7	**434**	52.982715	-6.039479	731645.7	694239.9
186	53.341426	-6.195153	720187.0	733873.6	**435**	52.983219	-6.037281	731791.8	694300.1
187	53.34146	-6.195175	720185.5	733877.3	**436**	52.983241	-6.037182	731798.4	694302.7
188	53.341476	-6.195171	720185.7	733879.1	**437**	52.983241	-6.037182	731798.4	694302.7
189	53.341539	-6.195162	720186.1	733886.1	**438**	52.983291	-6.036965	731812.8	694308.7

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
190	53.341548	-6.195171	720185.5	733887.1	**439**	52.983403	-6.036482	731844.9	694322.0
191	53.341568	-6.195173	720185.3	733889.3	**440**	52.983433	-6.036503	731843.4	694325.3
192	53.341581	-6.195169	720185.5	733890.8	**441**	52.983726	-6.035214	731929.0	694360.2
193	53.341616	-6.195158	720186.1	733894.8	**442**	52.983324	-6.034436	731982.5	694317.0
194	53.341621	-6.195164	720185.8	733895.3	**443**	52.983284	-6.034358	731987.9	694312.7
195	53.341641	-6.195158	720186.1	733897.5	**444**	52.983275	-6.034394	731985.5	694311.6
196	53.341657	-6.195165	720185.6	733899.3	**445**	52.983216	-6.034551	731975.1	694304.8
197	53.34166	-6.195182	720184.5	733899.5	**446**	52.982944	-6.034171	732001.4	694275.2
198	53.341666	-6.195194	720183.6	733900.2	**447**	52.98258	-6.033674	732035.9	694235.6
199	53.341669	-6.195199	720183.3	733900.5	**448**	52.982475	-6.033531	732045.9	694224.2
200	53.341691	-6.195203	720183.0	733902.9	**449**	52.982157	-6.033101	732075.7	694189.6
201	53.341727	-6.195219	720181.8	733907.0	**450**	52.982172	-6.033081	732076.9	694191.3
202	53.34176	-6.195224	720181.4	733910.6	**451**	52.981992	-6.032842	732093.6	694171.7
203	53.341763	-6.195222	720181.5	733911.0	**452**	52.981828	-6.032914	732089.3	694153.3
204	53.341798	-6.195206	720182.5	733914.9	**453**	52.981856	-6.033044	732080.4	694156.3
205	53.341822	-6.1952	720182.8	733917.6	**454**	52.98181	-6.033002	732083.4	694151.2
206	53.341843	-6.19521	720182.1	733919.9	**455**	52.981686	-6.032928	732088.7	694137.5
207	53.341856	-6.195206	720182.3	733921.4	**456**	52.981549	-6.032833	732095.5	694122.4
208	53.341877	-6.1952	720182.6	733923.7	**457**	52.981506	-6.032853	732094.3	694117.6
209	53.34191	-6.195264	720178.3	733927.2	**458**	52.98156	-6.032928	732089.1	694123.5
210	53.341913	-6.19527	720177.9	733927.6	**459**	52.981454	-6.033021	732083.2	694111.5
211	53.341912	-6.195277	720177.4	733927.5	**460**	52.981417	-6.033054	732081.1	694107.4
212	53.341901	-6.195284	720177.0	733926.2	**461**	52.981439	-6.033084	732079.0	694109.8
213	53.341905	-6.195293	720176.4	733926.7	**462**	52.98142	-6.033134	732075.7	694107.5

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
214	53.341904	-6.195329	720174.0	733926.5	**463**	52.981293	-6.033027	732083.3	694093.6
215	53.341893	-6.195337	720173.5	733925.3	**464**	52.981054	-6.033061	732081.7	694067.0
216	53.341892	-6.195373	720171.1	733925.1	**465**	52.981028	-6.033061	732081.8	694064.1
217	53.341891	-6.195393	720169.8	733924.9	**466**	52.980815	-6.03352	732051.6	694039.5
218	53.341894	-6.19544	720166.6	733925.2	**467**	52.9808	-6.033685	732040.6	694037.6
219	53.34189	-6.195512	720161.8	733924.6	**468**	52.980676	-6.033732	732037.8	694023.7
220	53.341895	-6.195574	720157.7	733925.1	**469**	52.980582	-6.034041	732017.3	694012.6
221	53.341901	-6.195613	720155.0	733925.7	**470**	52.980565	-6.034352	731996.5	694010.2
222	53.341909	-6.195662	720151.8	733926.5	**471**	52.980555	-6.034574	731981.7	694008.7
223	53.341913	-6.195749	720146.0	733926.7	**472**	52.98041	-6.034544	731984.1	693992.6
224	53.34191	-6.195785	720143.6	733926.4	**473**	52.980165	-6.034967	731956.5	693964.6
225	53.341894	-6.195834	720140.4	733924.6	**474**	52.980222	-6.035481	731921.8	693970.0
226	53.341894	-6.195877	720137.5	733924.4	**475**	52.980223	-6.035492	731921.0	693970.1
227	53.341899	-6.195891	720136.6	733925.0	**476**	52.98023	-6.035493	731921.0	693970.9
228	53.341898	-6.195899	720136.0	733924.8	**477**	52.980234	-6.035527	731918.7	693971.2
229	53.341895	-6.195926	720134.3	733924.5	**478**	52.980256	-6.035715	731906.0	693973.3
230	53.3419	-6.195956	720132.3	733925.0	**479**	52.980265	-6.035814	731899.3	693974.2
231	53.341902	-6.195964	720131.7	733925.2	**480**	52.980306	-6.036567	731848.6	693977.3
232	53.341899	-6.195984	720130.4	733924.8	**481**	52.980289	-6.036808	731832.5	693974.9
233	53.341901	-6.196017	720128.2	733925.0	**482**	52.980285	-6.03748	731787.4	693973.3
234	53.341901	-6.196043	720126.4	733924.9	**483**	52.980302	-6.037694	731772.9	693974.8
235	53.341895	-6.196061	720125.3	733924.3	**484**	52.980418	-6.038497	731718.7	693986.3
236	53.341894	-6.196077	720124.2	733924.1	**485**	52.980531	-6.039604	731644.0	693996.7
237	53.341893	-6.196108	720122.1	733923.9	**486**	52.980577	-6.040235	731601.5	694000.7

ID	Latitude	Longitude	X (ITM)	Y (ITM)	ID	Latitude	Longitude	X (ITM)	Y (ITM)
238	53.341893	-6.196116	720121.6	733923.9	**487**	52.980664	-6.040585	731577.7	694009.8
239	53.341894	-6.196134	720120.4	733924.0	**488**	52.9807	-6.04073	731567.9	694013.5
240	53.341895	-6.196177	720117.6	733924.1	**489**	52.980671	-6.040838	731560.7	694010.1
241	53.341904	-6.196229	720114.0	733925.0	**490**	52.980738	-6.041103	731542.7	694017.1
242	53.341912	-6.196264	720111.7	733925.8	**491**	52.981007	-6.041551	731511.8	694046.2
243	53.341908	-6.196416	720101.6	733925.0	**492**	52.981023	-6.041528	731513.3	694047.9
244	53.341901	-6.196431	720100.6	733924.3	**493**	52.981026	-6.041524	731513.6	694048.3
245	53.34191	-6.196453	720099.1	733925.3	**494**	52.981045	-6.041557	731511.3	694050.4
246	53.341908	-6.196652	720085.9	733924.7	**495**	52.981069	-6.041569	731510.4	694053.0
247	53.341901	-6.196749	720079.5	733923.7	**496**	52.981175	-6.041623	731506.5	694064.7
248	53.341901	-6.196876	720071.0	733923.5	**497**	52.981303	-6.041074	731542.9	694079.9
249	53.341896	-6.196934	720067.1	733922.9	**498**	52.981312	-6.041036	731545.5	694081.0