MARESCONNECT

Maritime Usage Licence Application for Site Investigations for the MaresConnect interconnector reference: MUL240008

Assessment of Impact on the Maritime Usage report

P2578_R6411_Rev1 | 17 June 2024

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DOCUMENT RELEASE FORM

MaresConnect

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Rev No	Date	Reason	Author	Checker	Authoriser
Rev 0	10/05/2024	Initial issue	[redacted]	[redacted]	[redacted]
Rev 1	17/06/2024	Comments addressed following legal review	[redacted]	[redacted]	[redacted]

CONTENTS

GLOSSARY

AA
Appropriate Assessment

AIS
Automatic Identification System

BIM
Bord Iascaigh Mhara

BSA
Biologically Sensitive Area

CTSP
Celtic Sea Trout Project

CITES
Convention on the International Trade in Endangered Species

COLREGS
International Regulations for the Prevention of Collisions at Sea

CO_2
Carbon dioxide

CPT
Cone Penetration Test

DAHG
Department of Arts, Heritage and the Gaeltacht

DECC
Department of Environment, Climate and Communications

DHLGH
Department of Housing, Local Government and Heritage

ECA
Emission Control Areas

EC
European Commission

EENL
Etchea Energy Nominees Limited

EIA
Process of undertaking an Environmental Impact Assessment as defined in the EIA Directive

EIA Directive
Directive 2011/92/EU as revised by Directive 2014/52/EU.

EIA Screening
Process of Screening Annex II projects for likely significant effects on the environment

EIAR
Environmental Impact Assessment Report

EMODnet
European Marine Observation Data Network

EMP
Environmental Management Plan

EPA
Environmental Protection Agency

EPS
European Protected Species

EU
European Union

European Sites
SACs (and candidate SACs) and SPAs (and proposed SPAs) designated under the Habitats Regulation

EUNIS
European Nature Information System

ESD
Effort Sharing Decision

EENL
Etchea Energy Nominees Limited

FLAA
Foreshore Licence Application Area

FLO
Fisheries Liaison Officer

Foreshore Acts
Foreshore Act 1933-2022

Foresight
Foresight Group Holdings Limited

GB
Great Britain

GHG
Green House Gas

GT
Gross Tonnage

ha
Hectare

Habitats Regulations
SI 477/2011 EC (Birds and Natural Habitats) Regulations 2011, as amended.

HDD
Horizontal Directional Drilling

HF
High Frequency (Cetaceans)

HWM
High Water Mark

HZ
Hertz

IBTS
Irish Bottom Trawl Survey

ICES
International Council for the Exploration of the Seas

ICG-C
Intercessional Correspondence Group on Cumulative Effects

IMO
International Maritime Organization

IMAGIN
Irish Sea Marine Aggregate Initiative

IUCN
International Union for Conservation of Nature

IS&EFPO
Irish South & East Fish Producers Organisation

IWDG
Irish Whale and Dolphin Group

JUB
Jack Up Barge

kHz
Kilohertz

kW
Kilowatt

LF
Low Frequency (Cetaceans)

LiDAR
light detection and ranging

LSE
Likely Significant Effect

MBES
Multibeam Echosounder

MCL
MaresConnect Ltd

MHW
Mean High Water

MW
MegaWatt

MSFD
Marine Strategy Framework Directive

MSO
Maritime Safety Office

MU
Management Units

MUL
Maritime Usage Licence

MULA
Maritime Usage Licence Area

NHA
Natural Heritage Areas

NBDC
National Biodiversity Data Centre

NIS
Natura Impact Statement

NM
Nautical Mile

NMPF
National Marine Planning Framework

NNS
Northern North Sea

NPWS
National Parks & Wildlife Service

OSPAR
Oslo and Paris Conventions

OWF
Offshore Windfarm

PCW
Phocid Carnivores in Water

PAH
Polycyclic Aromatic Hydrocarbons

PTS
Permanent Threshold Shift

RNLI
Royal National Lifeboat Institution

RYA
Royal Yachting Association

SAC
Special Area of Conservation

SBP
Sub-bottom Profiler

SCT
Seascape Character Type

SEAI
Sustainable Energy Authority of Ireland

SERIFF
South-East Regional Inshore Fishermen's Forum

SISAA
Supporting Information for Screening for Appropriate Assessment

STECF
Scientific, Technical and Economic Committee for Fisheries

SI
Statutory Instrument

SMRU
Sea Mammals Research Unit (UK)

SNS
Southern North Sea

SPA
Special Protection Area

SSS
Side Scan Sonar

TSS
Traffic Separation Scheme

TTS
Temporary Threshold Shift

VC
Vibrocore

VMS
Vessel Monitoring Services

WFD
Water Framework Directive

WHO
World Health Organisation

ZOI
Zone of Influence

1. INTRODUCTION

The MaresConnect Interconnector (MaresConnect) is a proposed 750-megawatt (MW) electricity interconnector connecting the Great Britain (GB) and Republic of Ireland (ROI) electricity transmission networks. It is being developed by MaresConnect Limited (MCL), a special purpose vehicle incorporated in Ireland and joint owned by Foresight Group Holdings Limited (Foresight) and Etchea Energy Nominees Limited (EENL). The construction of the interconnector is scheduled to commence in 2027, with testing and full operation from 2029.

MCL is currently exploring the potential for an electricity interconnector off the coast of County Dublin, with consideration given to five potential landfall zones: Ardgillan, Balcarrick, Loughshiny, Robswalls, and Rush.

The proposed site investigations and survey works are the subject of this MUL and are independent of any potential future development of the MaresConnect project. Within the jurisdiction of Ireland, this includes a geographic area that extends seaward from the High-Water Mark (HWM) extending out to Ireland’s EEZ boundary, a geographic area of approximately 106,366.6 hectares in total. Due to the timing of these proposed survey works and changes in the regulatory consenting regime in recent years the works within Ireland’s jurisdiction is now subject to two separate consenting processes.

In the first instance, MCL submitted and was granted a foreshore licence (FS007635) to carry out the relevant works within the foreshore, as defined in the Foreshore Act 1933, as amended (the Foreshore Acts) (the “Foreshore Licence”). The application for the Foreshore Licence was accompanied by an Environmental Report, Annex IV Species Risk Assessment and Natura Impact Statement, all of which assessed the works to be carried out within the foreshore. (i.e. from the Irish High Water Mark seaward to the 12nm limit of the foreshore).

Subsequent to the submission of the Foreshore Licence application, sections Part 5 of the Maritime Area Planning Act 2021, as amended (the “MAP Act”) was commenced, requiring MCL to obtain an MUL to carry out works in the area beyond the seaward limit of the foreshore (i.e. beyond the 12nm limit of the foreshore seaward to the EEZ boundary). This MUL Application forms the application for the MUL.

The MUL Application is for site investigation and survey works to determine the suitability for cable routeing. The Maritime Usage Licence Area (MULA) is presented in Maritime Usage Licence Map 1 (Drawing Ref: P2578-LOC-001-A). The MULA covers approximately 332.96 km^2 (33,296 hectares) and, as noted above, extends from the 12nm limit of the ‘foreshore’ seaward to the EEZ boundary.

MCL received a letter from the Department of Environment, Climate and Communications (DECC) on the 28th May 2024, which strongly supports this MaresConnect MUL application this letter will accompany the MUL application and its supporting documents.

This MUL application is focused on conducting site investigation surveys to assess various factors, including seabed suitability and stability for routing cables and other electrical infrastructure associated with the interconnector project from the 12nm limit to the EEZ. The surveys and associated works are envisioned as temporary and short-term in nature. Additionally, it is expected that the data collected during these surveys will serve as baseline information for future environmental assessments, should the MaresConnect project progress to the planning and consenting stage. It's important to note that these site investigation surveys and works are independent of any potential future development of the MaresConnect project.

The Maritime Usage Licence Area (MULA) is presented in MUL Map 1 (Drawing Reference: P2578M-LOC-001). The MULA covers approximately 332.9km^2 (33,296 hectares) and extends from the 12nm limit of the foreshore, as defined in the Foreshore Acts, out to the EEZ.

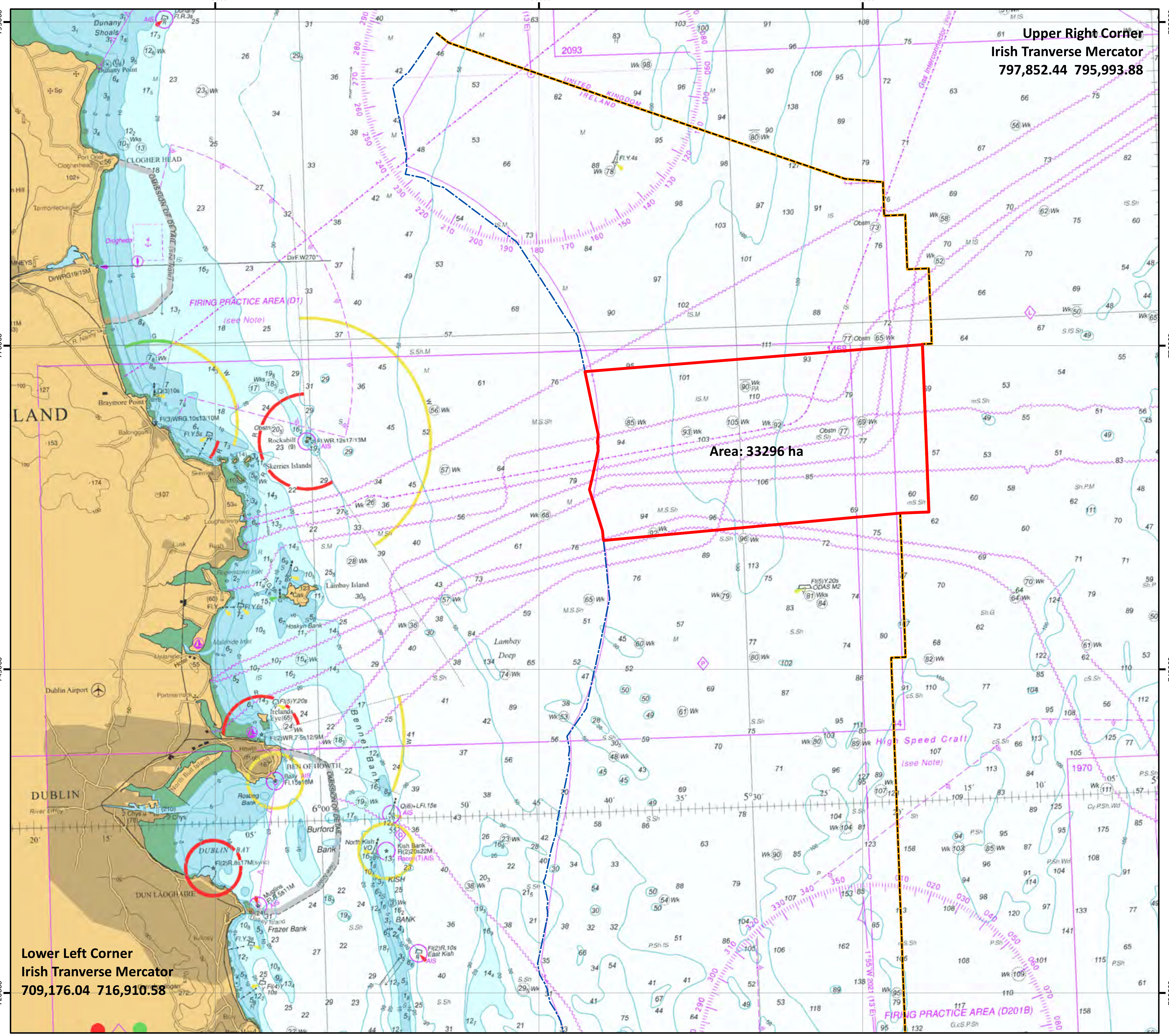
1.1 Aim of this report

This report has been prepared to provide information to support the determination of a MUL application. This document provides a high-level characterisation of the environmental baseline within the MULA and surrounding area and identifies any potential environmental sensitivities in the region which may be impacted. To determine any potential environmental effects, a significance assessment in accordance with the Environment Protection Agency (EPA) (2022) definitions of significance has been carried out. This report assesses first the works to be carried out within the MULA alone, before going on to consider these works in combination with the entirety of the survey works to be carried out as part of the cable routeing exercise, including the survey works within the foreshore and the survey works to be carried out outside of Ireland's EEZ and located within the jurisdictional waters of the United Kingdom . The in-combination assessment then goes on to consider the survey project in combination with other plans or projects

A Supporting Information for Screening for Appropriate Assessment (SISAA) report has been completed to inform the AA process in determining whether the proposed site investigations, both alone and in combination with the MaresConnect Foreshore Licence (Reference: FS007635) other plans or projects, are likely to have a significant effect on any European Site. This is provided as a separate document (P2578-R6410). Account has been taken of the SISAA in the preparation of this document.

This Assessment of Impact on the Maritime Usage (AIMU) report provides the following:

- Programme of survey works (Summary in Section 1.5 and Appendix A);
- Environmental baseline and overview of environmental sensitivities in the region (Section 2);
- Assessment of potential effects of the proposed site investigations including any proposed mitigation to reduce the significance of effects (Section 3);
- Conclusions and summary of all proposed site-specific mitigation (Section 4); and
- Appendix A - Programme of survey works;
- Appendix B – Extract from "Guidance to Manage the Risk to Marine Mammals from Man-made sound sources in Irish Waters".



MARITIME USAGE LICENCE MAP 1

LOCATION OVERVIEW

MaresConnect Interconnector MUL Boundary

Drawing No: P2578M-LOC-001	B

Legend

- Maritime Usage Area
- EEZ Boundary
- 12 NM Territorial Sea Limit

N
W E
S

Note: Coordinates listed in Irish Transverse Mercator EPSG 2157

Map prepared by:
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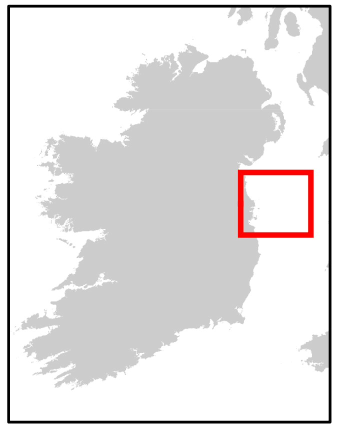

NOTE: Not to be used for Navigation

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1.2 Consideration of Directives

1.2.1 EIA Directive

The EIA Directive 2011/92/EU as revised by Directive 2014/52/EU applies to project types listed in Annex I or Annex II (see Articles 2 and 4 of the EIA Directive 2011/92/EU as revised by Directive 2014/52/EU). Proposed projects not listed in Annex I or Annex II of the EIA Directive and/or the corresponding project types listed in Schedule 5, Parts 1 and 2 of the Planning and Development Regulations 2001, as amended, are not subject to the EIA Directive or to the requirement for EIA Screening or EIA under the Foreshore Acts.

The proposed site investigation works and surveys, as described more fully below, do not fall within any project type listed in Annex I or Annex II of the EIA Directive or Schedule 5 of the Planning and Development Regulations 2001, as amended, giving a broad purposive interpretation to the project types. The proposed drilling of boreholes for the purposes of investigating the stability of the soils, subsoils, seabed, and substrata, are expressly exempted from Annex II, and Part 2 of Schedule 5.

The proposed site investigation works and surveys are independent of any potential future development of the MaresConnect project.

Accordingly, there is no requirement for EIA Screening or for EIA of the Maritime Usage Licence application.

This document, therefore, is not an EIA Screening report. It is an Assessment of Impacts of Maritime Usage report which has been prepared utilising, on a non-statutory basis, the headings and assessment of significance methodologies described in the EPA Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA) (2022).

1.2.2 Water Framework Directive (WFD)

The Water Framework Directive (WFD), officially known as Council Directive 2000/60/EC, was unanimously adopted by all member states in October 2000, marking a pivotal moment in European water policy. Since its inception, the WFD has stood as the cornerstone of water protection legislation across Europe. It casts a wide net, encompassing inland, transitional, and coastal surface waters, as well as groundwaters, with the aim of promoting a holistic approach to water management that respects the integrity of entire ecosystems. By targeting specific pollutants and establishing corresponding regulatory standards, it strives to maintain the health of water bodies.

Central to the WFD is its river basin district approach, which fosters collaboration among neighbouring countries in managing shared rivers and water resources. The directive outlines key objectives in Article 4, mandating Member States to utilize River Basin Management Plans (RBMPs) and Programs of Measures (PoMs) to safeguard and, where necessary, restore water bodies to achieve good status and prevent degradation. Good status, as defined by the directive, encompasses both chemical and ecological health.

While the WFD serves as the primary legal framework, it is complemented by directives such as the Groundwater Directive and others aimed at safeguarding surface water quality. Meanwhile, in a separate context, the MaresConnect Interconnect project, which may make landfall at various points along the coast of North Co. Dublin, does not directly intersect with coastal waters within the scope of its application. Instead, its focus lies entirely on offshore waters, as discussed in Section 2.3 regarding Marine Water baseline and potential impacts within the license application area.

1.2.3 Marine Strategy Framework Directive

In 2008, the EU introduced the Marine Strategy Framework Directive (MSFD) with the aim of fostering the health, productivity, and resilience of marine ecosystems while promoting the sustainable utilisation of marine resources. Under the MSFD Directive, Member States are tasked with crafting national marine strategies aimed at achieving or preserving 'good environmental status'. This status was anticipated to be attained by 2020.

These marine strategies encompass a range of activities, including routine assessments of the marine environment, establishment of objectives and targets, implementation of monitoring programs, and the adoption of measures to enhance the condition of marine waters. It is imperative that these actions be carried out in close collaboration with neighbouring countries at the regional sea level, as emphasized by the European Commission (2020).

Section 2 provides a comprehensive overview of the baseline marine environment and conducts an analysis of the probable effects of the proposed site investigation activities on 'good environmental status' (GES).

1.3 Project Overview

The MULA is located off the eastern coast of Ireland in the Irish Sea. The MULA limit extends from the 12nm limit to the EEZ maritime boundary (Figure 1-1, Drawing Reference: P2578M-LOC-001). The proposed site investigation work and surveys will extend from the mean high water (MHM) to the 12nm jurisdiction of the Foreshore Acts and to the EEZ, as detailed (Figure 1-2, Drawing Reference: P2578M-LOC-04). Our approach to assessing the project will be multi-phased to ensure comprehensive evaluation. First, we will assess the MULA works alone, treating them as an independent project. Next, we will evaluate the survey project, including the MULA works in combination with the consented foreshore works. Finally, we will consider the project including both the MULA and foreshore works, in combination with other plans or projects, including those in UK waters. This structured methodology ensures that all aspects and potential impacts are thoroughly assessed, providing a robust foundation for informed decision-making.

A feasibility study has been carried out to identify the MULA site boundary, development constraints, potential cable routes and landfall sites. These studies have used publicly available data. The objectives of the proposed site investigation works and surveys include *inter alia* the investigation of the stability of soils, including the seabed and substrata, and to provide a greater understanding of the environmental conditions to inform design and engineering studies. The proposed activities are not listed under the EIA Directive and soil stability drilling is expressly exempted from Annex II, and Part 2 of Schedule 5.

The proposed site investigations and surveys for this application (geophysical, geotechnical, archaeological, and environmental surveys) will enable:

- Detailed mapping of seabed relief and features (i.e., sandwaves, rock outcrops, features of archaeology interest);
- Baseline environmental mapping (i.e., habitats and species); and
- Greater understanding of bird, marine mammal and reptile presence and densities.

The knowledge gained from the proposed site investigations and surveys would be used to minimise uncertainty in ground conditions at an early design stage and optimise cable routeing.

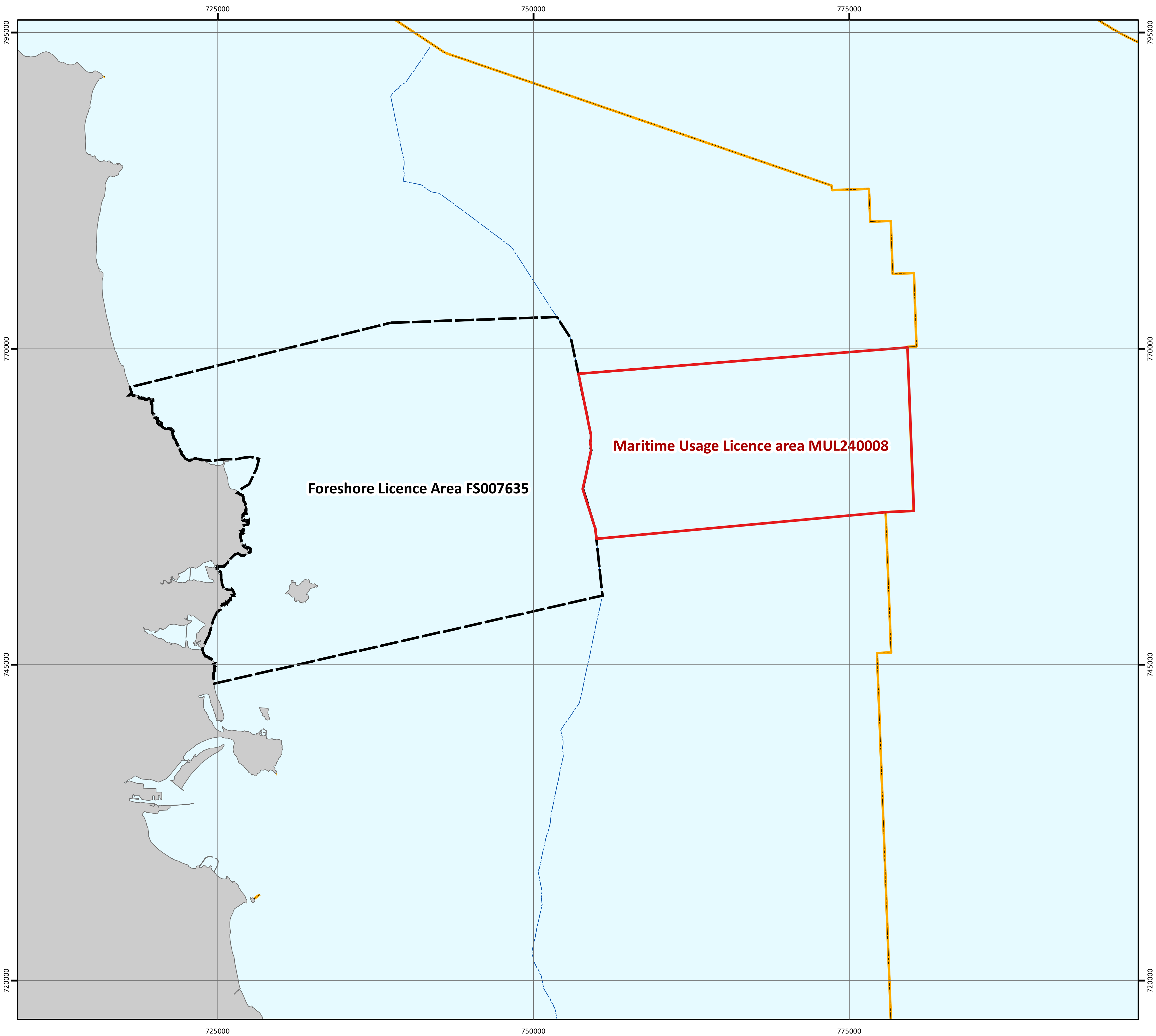
It is anticipated that data acquired during the proposed site investigations and survey would be used to inform the early design stage of the proposed MaresConnect project, by minimising uncertainty with respect to ground conditions (soil stability and characteristics), to optimise cable routeing, and to inform any environmental assessments required to be carried out as part of a future Maritime Area Consent (MAC) application for the development of MaresConnect.

Should the MaresConnect project be taken forward to a consent application in the future, the data acquired from the proposed site investigations and surveys should help to inform the baseline for any necessary environmental assessments, against which any likely significant effects may be identified described and assessed, and the design of appropriate mitigation and monitoring proposals.

MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

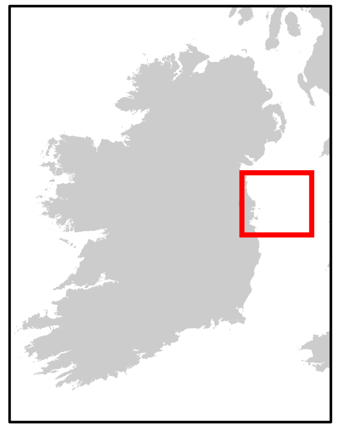
LOCATION OVERVIEW
FLA and MUL

Drawing No: P2578M-LOC-004	A



Legend
Maritime Usage Area
Foreshore Licence Area
Administrative Boundaries
12nm Territorial Sea Limit
EEZ Boundary

N E S W



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Reviewed By	[redacted]
Approved By	[redacted]

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1.4 Needs and alternatives

1.4.1 The project need

The Republic of Ireland (ROI) is at present connected to the United Kingdom(UK) via the East-West interconnector (County Dublin, ROI to North Wales) and Moyle interconnector (County Antrim, Northern Ireland to Ayrshire, Scotland), which provide a means of transferring electricity between the two countries. Another interconnector is currently under construction (Greenlink, operating from Pembrokeshire, Wales to County Wexford, ROI). This links two energy markets – Great Britian (GB; England, Scotland, and Wales) and the Single Electricity Market (Northern Ireland + ROI). As outlined in section 1, MCL received a letter of support from DECC, this letter will accompany MCL's MUL application.

Demand for interconnector capacity across the Irish Sea is influenced by weather conditions. Typically, Atlantic depressions move in a north easterly direction across Ireland. In periods of high wind generation there is downward pressure on wholesale prices as renewables displace higher-cost generation leading to a widening of the wholesale price differential between Ireland and GB for three to four hours creating power flows from Ireland to GB, and then reversing as the depression move to the UK.

The ability to transmit these renewable energy flows between Ireland and GB provides a strong economic, environmental and security of supply argument for the building of interconnector capacity.

The Government of Ireland published its policy statement on Electricity Interconnection in July 2023, this policy outlines the primary drivers of Irelands interconnectivity, which include:

- "Creating the necessary export opportunities to match the State's growing renewable energy generation capacity."
- "Ensuring electricity security and resilience through diversified energy supply and market access."
- "Lowering energy prices by gaining access to other electricity markets."
- "Facilitating the achievement of a Net Zero power system."
- "Supporting the carbon budget programme."

Source: Government of Ireland, 2023

MaresConnect will help the Irish government on its journey to net zero, this will be achieved by increasing Irelands interconnectivity which will enable Irelands renewable energy ambitions and improve Irelands security of supply. MaresConnect will reduce curtailment of surplus wind power by providing a stepping-stone to neighbouring markets and stimulate the development of proposed offshore wind farms in the west of Ireland and the Irish Sea. The location of MaresConnect will reinforce the security of the current electricity supply by utilising the County Dublin and North Wales – route and allow for electricity to be transported to where it is required most.

The main benefits from the MaresConnect interconnector are expected to be:

- Strategically placed to reinforce the East of Ireland by connection to Wales, creating synergy with existing interconnectors East West Interconnector (EWIC) and Moyle connecting the centre and north of Ireland to GB and the Greenlink interconnector which is currently under construction;
- Provides additional import and export capacity for the island of Ireland;
- Greater market integration;
- Downward pressure on wholesale energy prices;

- Greater sharing of reserve, generation capacity and ancillary services between GB and the island of Ireland; and
- Reduce Carbon Dioxide (CO_2) emissions.

1.4.2 Alternatives

MCL commissioned Intertek to provide a marine route selection report for the MaresConnect interconnector. The report identifies possible marine cable routes between north Co. Dublin, ROI to Denbighshire, Wales. The most suitable route will be the shortest and least constrained route. However, there is a balance to be achieved between the length and environmental, technical, and economic constraints.

Each constraint was identified and categorised according to the likely impact on installation of the interconnector cable. Constraints were categorised as 'major', 'moderate' or 'minor' with remaining space classified as 'no constraint'. The aforementioned constraint categories were mapped, and routes were drawn to fit around them, where possible and if necessary.

The outcome was the development of fifteen separate routes between five landfall sites in ROI and three landfall sites in Wales. The routes vary in length due to the avoidance of different constraints for each set of routes.

The routing has endeavoured to avoid marine protected sites where possible, however due to the high level of designation along coast in north Co. Dublin, complete avoidance cannot be achieved. It is the intention that data acquired during the proposed marine survey campaign will allow identification of sensitive habitats and subsequent micro-routing and/or development of appropriate mitigation.

1.5 Schedule of survey works

The intention is to commence the proposed site investigation activities as soon as feasible following award of a MUL, taking into consideration any proposed mitigation requirements. The survey works will preferably be undertaken in the months feasible from the summer and/or autumn months in 2025 onwards following award of the MUL and subject to weather conditions and vessel availability. Figure 1-3 (Drawing reference: P2578M-LOC-002) below outlines the indicative geotechnical and environmental sampling locations. A Programme of Survey Works can be seen in Appendix A.

The following Licensable Activities are proposed (note that all sample numbers are indicative and include an extra 20% for a conservative estimate):

- **Geotechnical**: Up to, 93 shallow-water CPTs and shallow-water vibrocores (VCs) will be acquired to evaluate the nature and mechanical properties of the seabed sediments. Up to 19 boxcores or Van Veen grabs may be used to characterise shallow soils if the sediment is found to be very soft. The geotechnical survey may be carried out over several campaigns to determine site characteristics and cable positioning. Surveys will be undertaken at any time of the year (subject to weather conditions). Campaigns are likely to be within a two-to-four-month period at any time of the year -(subject to weather conditions).Positioning of samples will be informed by the geophysical survey. Indicative geotechnical sample stations are provided in Figure 1-3 (Drawing Ref: P2578M-LOC-002).
- **Geophysical survey:** The geophysical survey will comprise multibeam echosounder (MBES), sidescan sonar (SSS), sub-bottom profiler (SBP) and magnetometer surveys to determine seabed conditions within the MULA. Surveys can be undertaken at any time of the year (subject to weather conditions) and are likely to be carried out over a period of up to five-months (including downtime).
- **Environmental (benthic sampling) and Intertidal**: The benthic sampling campaign is likely to be conducted alongside the geophysical survey, however if this is not possible the benthic

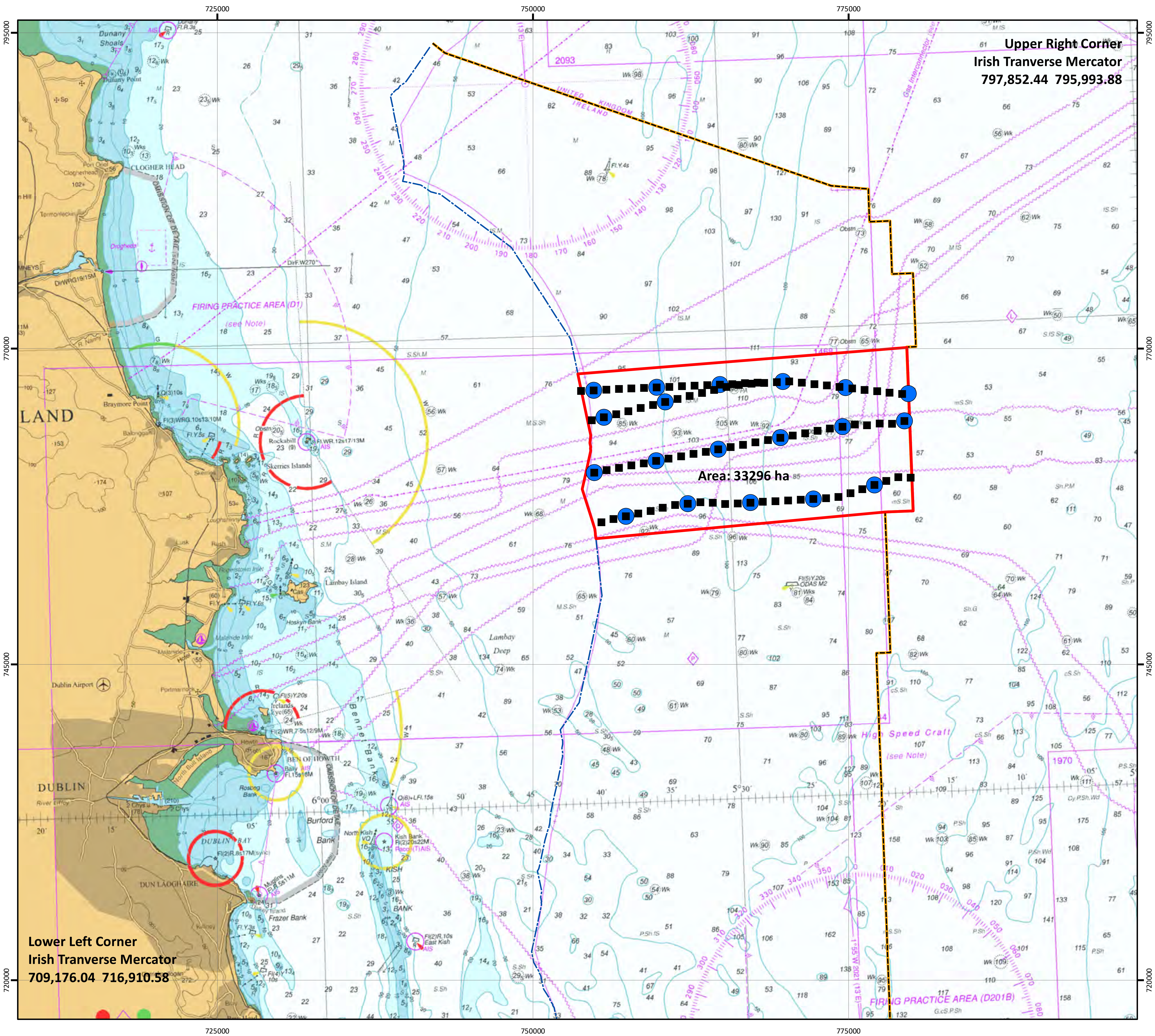
sampling would be carried out separately. It is likely that three grab samples will be taken at each station (19 stations in total); two for faunal analysis and one for sediment and chemical analysis (57 samples in total). and additional drop-down camera (DDC) and video transects, will be acquired to characterise seabed habitats and sensitive features. A DDC will be deployed to prevent damage to environmentally sensitive features and to allow for further ground-truthing information.

- **Archaeological survey:** A desktop study exercise will be undertaken to inform the approach to assessment of offshore cultural heritage interests. A qualified, marine archaeologist will review all geophysical survey data ahead of geotechnical sampling to evaluate sampling positions for features of underwater importance. Geotechnical sampling stations will be moved if potential features of interest are identified. The archaeological survey will take 1-2 days to complete at each site.

It should be noted that other survey activities will be taking place, but these are not licensable under the Foreshore Act

- **Birds and Marine Mammal Surveys -** Boat based and aerial/drone surveys will be conducted offshore and from landfall vantage points to determine usage of the survey area by birds, marine mammals, and other megafauna. Species type and distribution within the MULA will be recorded.

Indicative sample stations are provided in Figure 1-3 (Drawing Ref: P2578-LOC-002).



MARITIME USAGE LICENCE MAP 2

LOCATION OVERVIEW

MaresConnect Interconnector MUL Boundary

Indicative Sampling Locations

Drawing No: P2578M-LOC-002 | **B**

Legend

- Maritime Usage Area
- EEZ Boundary
- 12 NM Territorial Sea Limit
- Drop-down Camera, Grab and Box Core (5km intervals)
- Vibrocore and CPT (1km interval)

N E S W

19 Env Locations

93 Vibrocore and CPT Locations

Note: Coordinates listed in Irish Transverse Mercator EPSG 2157

Map prepared by:
[redacted], MRes Ecosystem-Based Management of Marine Systems, BSc (Hons) Marine Biology

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NOTE: Not to be used for Navigation

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Approved By	[redacted]

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2. ENVIRONMENTAL BASELINE

2.1 Introduction

An understanding of the potential effects of an operation on the environment requires a clear understanding of the present state of the environmental baseline. This section delineates the environmental baseline of receptors that may be influenced by the proposed site investigation and survey activities, while also providing an evaluation of the impacts these activities may have on the environmental receptors.

The description of the environment is based on publicly available data sources, as referenced in the text. As per the guidance issued by MARA on MUL applications, the following topics have been assessed:

1. Land and Soils
2. Water
3. Biodiversity – marine benthos, Natura 2000 Sites, marine mammals, birds, and fish ecology
4. Commercial Fisheries and aquaculture
5. Marine Processes
6. Air Quality
7. Noise & Vibration
8. Landscape and Seascape
9. Marine Traffic
10. Archaeology and Cultural Heritage
11. Population and Human Health including tourism and recreation
12. Major Accidents and Disasters
13. Climate
14. Waste
15. Material Assets

2.2 Land and soils

All proposed site investigations in this application, occur exclusively within the offshore marine environment, posing no potential impact on land or soils.

2.3 Water

2.3.1.1 Water quality

Water quality in Ireland is regulated by the EU Water Framework Directive (WFD) and is monitored by the EPA. Coastal waters in Ireland have the highest percentage of waters in high or good ecological status (81% of waters) (Trodd, O'Boyle and Gurrie, 2022). However, in the period 2016-2021 there was still a 9.5% decline in coastal water bodies in satisfactory condition (since the previous period 2013-2018) (Trodd, O'Boyle and Gurrie, 2022).

In 2021 the EPA released a report on the water quality indicators in Ireland, this reported on the levels of nitrogen and phosphate in estuaries and coastal waters (EPA, 2021b). Nitrate enters waters mainly from agriculture through fertilisers and from urban wastewater (EPA, 2021b). This can cause algal blooms which overall can decrease the health of estuarine waters by reducing oxygen levels and effecting the ecology of the estuary (EPA, 2021b). The report highlighted that high levels of nitrogen are present in a fifth of Irelands estuarine coastal waters.

Phosphate can enter rivers and be carried into coastal waters from sources such as sewerage, industrial discharge and leaking from agriculture land where inorganic fertilisers have been used. Generally, phosphate is needed in estuarine systems as it can control the growth of algae and aquatic plants as it is a limiting nutrient in lower salinity waters (EPA, 2021b). However, if concentrations are too high it can cause eutrophication in waterbodies. The EPA reported that phosphate levels in 98% of estuaries in Ireland were in satisfactory condition.

The main operational coastal water monitoring stations can be found at Portmarknock, Rush, Balbriggan, and Skerries (EPA, 2023).

The proposed site investigation activities discussed in this application will take place entirely in the offshore area, necessitating a temporary increase in vessel traffic within the MULA. While this heightened activity theoretically raises the potential for accidents and subsequent fuel spills, it's important to note that all vessels involved in the survey activities will be carrying fuel and lubricants onboard the vessels during the survey operation, which will have contingences plans in place in case of spillage as per the Environmental Management Plan (EMP). In adherence to strict safety protocols, any other potentially harmful substances are stored in specialized storage containers or facilities designed for this purpose, ensuring minimal risk. These storage facilities are securely maintained at all times. Notably, operations undertaken by MaresConnect do not involve the production of any substances nor do they entail bulk transportation of oil or chemical substances, further mitigating any potential environmental risks.

Survey vessels will not intentionally release harmful substances. Compliance with maritime regulations and standards, both internationally and nationally, will minimise the risk of accidental releases. All vessels will be International Convention for the Prevention of Pollution from Ships (MARPOL) compliant and certified by the Maritime Safety Office (MSO), further reducing the likelihood of pollution incidents.

In alignment with the objectives of the WFD, the proposed site investigation and survey activities are not expected to degrade designated water bodies or protected areas, nor hinder the achievement of good ecological and chemical status. This commitment ensures the responsible conduct of maritime operations, safeguarding the marine environment.

2.4 Biodiversity

2.4.1 Benthic ecology

Intertidal and benthic ecology comprises the habitats and species (flora and fauna) present in, on or closely associated with the seabed. A high-level assessment of the key sensitive intertidal and benthic habitats and species within the MULA has been made by reviewing:

- EMODnet Seabed Habitats project (www.emodnet-seabedhabitats.eu) - EUSeaMap broad-scale predictive mapping based on physical hydrographic information within different habitats areas and water depths.
- European Nature Information System (EUNIS) marine habitat classification 2021 (https://www.eea.europa.eu/data-and-maps/data/eunis-habitat-classification-1) – The classification provides habitat identification and descriptions of the biological zones and substrate types.

This data is predictive rather than definitive; however, it does provide some indication to the types of benthic habitats that may be found within the MULA. The habitats identified within the MULA, along with their EUNIS code, are listed in Table 2-2 and shown in Figure 2-1 (Drawing Reference: P2578M-HAB-001) below.

As illustrated in Figure 2-1 (Drawing Reference: P2578M-HAB-001), the main habitat within the offshore section of the MULA (330km2) is A5.37 “Deep circalittoral mud” with an estimated 260,682km^2 area coverage within the MULA (78.21% of the total MULA). A5.27 Deep circalittoral sand” is the second predicted habitat type in the MULA with 72,389km^2 area coverage (21.7% of the total MULA). There is a small area of A5.15 “Deep circalittoral coarse sediment on the southern boundary of the MULA which makes up 0.1% of the MULA which equates to 53km^2.

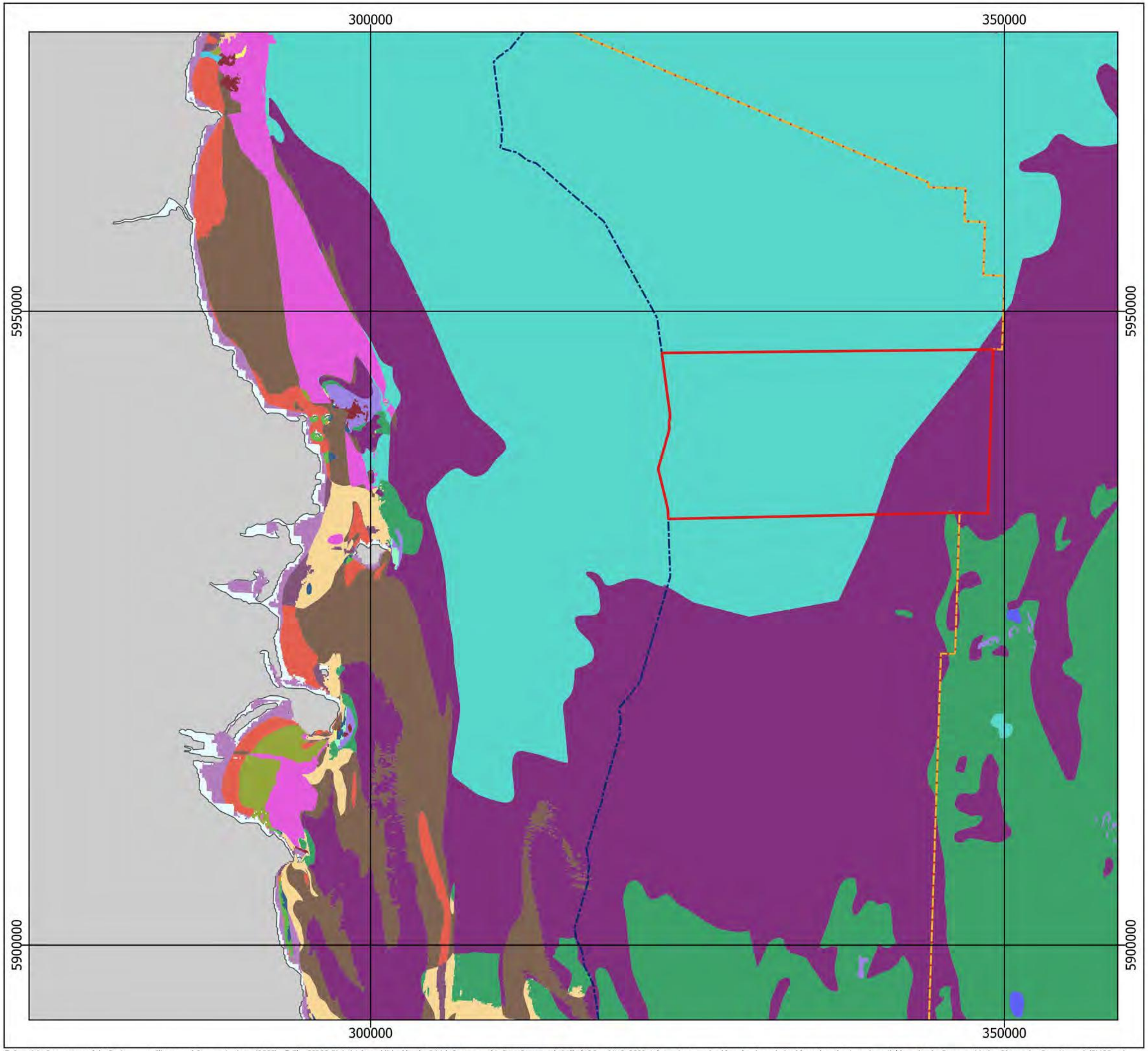
The A5.37 communities are typically dominated by polychaetes but often with high numbers of bivalves such as Thyasira spp., echinoderms, and foraminifera. This habitat type occurs in most of the western and central parts of the MULA and A5.27 Deep circalittoral sand present in the eastern extent of the MULA (Figure 2-1, Drawing Reference: P2578-HAB-001).

Table 2-1 Habitats Present within the MULA

EUNIS code	Total coverage area of the MULA (km^2)	EUNIS name	Typical fauna
A5.27	72389.07	Deep circalittoral sand	Offshore (deep) circalittoral habitats with fine sands or non-cohesive muddy sands. Very little data is available on these habitats however they are likely to be more stable than their shallower counterparts and characterised by a diverse range of polychaetes, amphipods, bivalves, and echinoderms.
A5.37	260682.5	Deep circalittoral mud	In mud and cohesive sandy mud in the offshore circalittoral zone, typically below 50-70m, a variety of faunal communities may develop, depending upon the level of silt/clay and organic matter in the sediment. Communities are typically dominated by polychaetes but often with high numbers of bivalves

EUNIS code	Total coverage area of the MULA (km^2)	EUNIS name	Typical fauna
			such as *Thyasira* spp., echinoderms, and foraminifera
A5.15	53.069	Deep circalittoral coarse sediment	This habitat covers large areas of the offshore continental shelf, although there is relatively little quantitative data available. Such habitats are quite diverse compared to shallower versions of this habitat and generally characterised by robust infaunal polychaete and bivalve species. Faunal communities in this habitat are closely related to offshore mixed sediments.

Offshore muds at shallow to moderate depths in the Irish Sea are characterised by species such as the burrowing urchin *Brissopsis lyrifera* and the brittle-star *Amphiura chiajei.* In the offshore sandy muds at shallow to moderate depths, communities are typified by the brittle-star *Amphiura filiformis*, the burrowing urchin *Echinocardium cordatum* and the turret shell *Turritella communis*. A community characterised by the bivalve *Abra alba* and polychaete *Lagis koreni* occurs in small pockets in shallow nearshore muddy sands/muds with rich organic contents (DCENR 2011).



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

BENTHIC HABITATS

EUNIS 2007-11 Habitat Classes

Drawing No: P2578M-HAB-001	A

Legend

- Maritime Usage Area
- 12nm Territorial Sea Limit
- Exclusive Economic Zone (EEZ) Boundary

EUNIS Classes (2007-2011)

- A3
- A3.1
- A3.2
- A3.3
- A4
- A4.1
- A4.12
- A4.2
- A4.27
- A4.3
- A4.33
- A5.13
- A5.14
- A5.15
- A5.23 or A5.24
- A5.25 or A5.26
- A5.27
- A5.33
- A5.35
- A5.37
- A5.43
- A5.44
- A5.45
- Na

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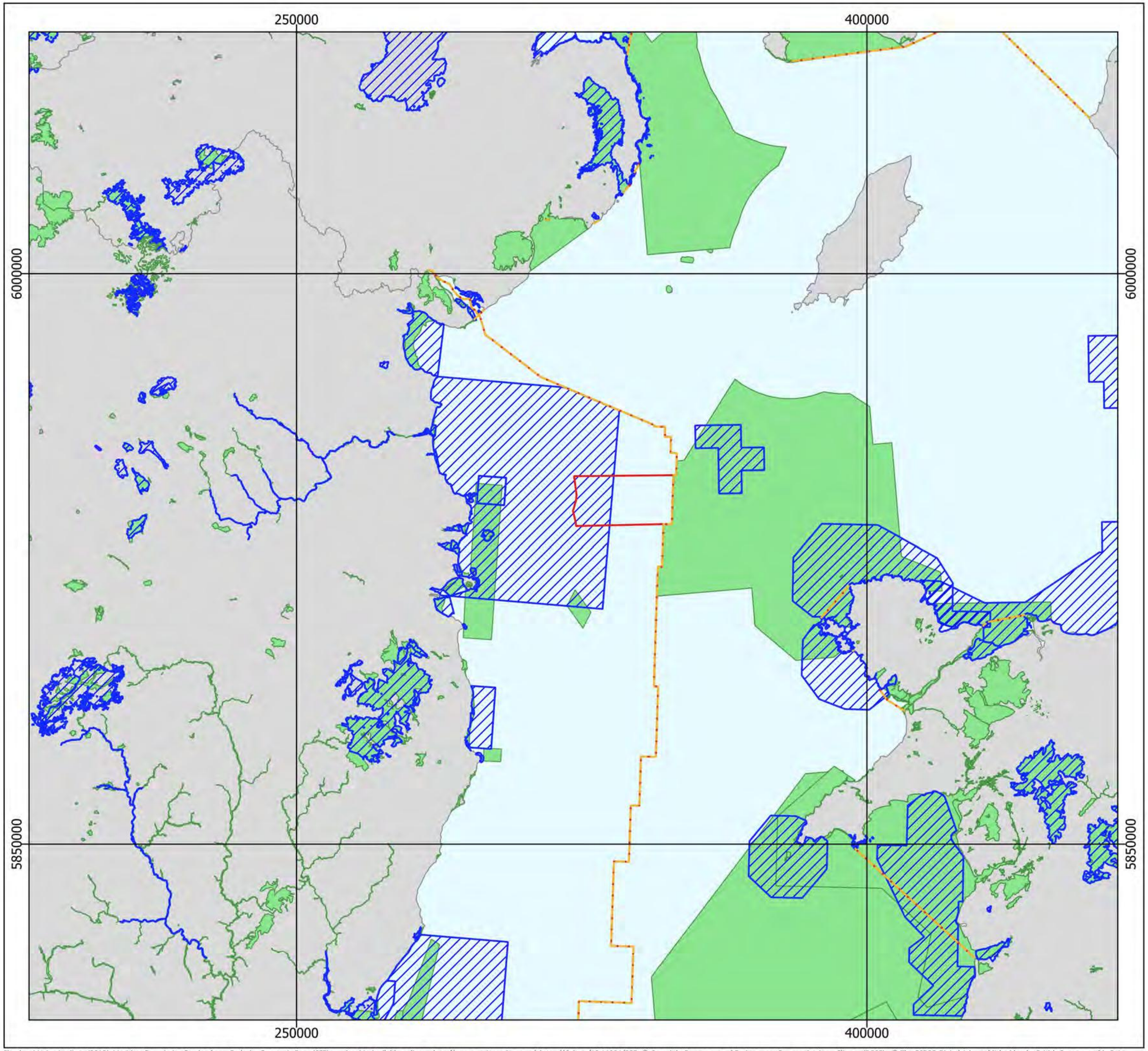
2.4.2 Natura 2000 Sites

In accordance with the provisions of Article 6(3) of the EC Habitats Directive (Directive 92/42/EEC), transposed into Irish statute by the EC (Birds and Natural Habitats) Regulations 2011, SI 477/2011,Transposed into Irish law by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) (as amended) (the 2011 Regulations). Supporting Information for Screening for AA (SISAA) (Stage 1) has been undertaken for Natura 2000 sites and is presented in the additional documents submitted with this MUL Application entitled "Supporting Information for Screening for AA" (P2578-R6410).

Solely for the purposes of this AIMU document and distinct from the approach taken in the SISAA report (reference P2578_R6410_Rev0), a 15km search radius for Natura 2000 sites was applied to the MULA. There is only 1 SPA which lies within the MULA boundary, this is North West Irish Sea SPA (Site code: 004236), there is no other Natura 2000 sites within 15km of the in MULA in Irish waters, the closest SPA after the North West Irish Sea SPA is Rockabil SPA which is 17.9km from the MULA boundary, the closest SAC to the MULA boundary in Irish waters is the Codling Fault Zone SAC (site code: 0003015) located 16.8km away (Figure 2-1 drawing ref: P2578-PROT-001).

There are three transboundary Natura 2000 sites within 15Km of the MULA boundary, North Anglesey Marine / Gogledd Môn Forol SAC, Croker Carbonate Slabs SAC and Irish Sea Front SPA

The 'Supporting Information for Screening for AA' document submitted with this application (P2578-R6410) identify and consider all Natura 2000 sites with a potential source-pathway-receptor connection to the proposed site investigation and survey works, not limited to those located within 15km of the boundary of the MULA.). The SISAA considered 102 Natura 2000 Sites (P2578-PROT-001) that are either within the direct zone of influence (ZOI) of the proposed site investigation works or contain mobile Annex II species which could potentially travel into the MULA.



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

PROTECTED SITES

Protected Sites Within 100km of Maritime Usage Area

Drawing No: P2578M-PROT-001	A

Legend

- Maritime Usage Area
- 100km Buffer

Adminstrative Boundaries

- 12nm Territorial Sea Limit
- EEZ

Environmental Designation

- SAC
- SPA

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Reviewed By	[redacted]
Approved By	[redacted]

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Flanders Marine Institute (2019). Maritime Boundaries Geodatabase: Exclusive Economic Zone (EEZ), version 11. Available online at http://www.marineregions.org/. https://doi.org/10.14284/387; © Copyright Department of Environmen, Communications, Climate (DECC); © The GEBCO Digital Atlas published by the British Oceanographic Data Centre on behalf of IOC and IHO, 2003; ©Esri; Collated and published by JNCC © Contains public sector information licensed under the Open Government Licence v3.0. Contains derived data from BGS © NERC. Contains derived data from Ordnance Survey © Crown copyright. (2017).

2.4.3 Marine Mammals

Marine mammals present in the MULA are restricted to cetaceans (whales, dolphins, and porpoises), pinnipeds (seals) and *Chelonians* (marine turtles) are the only type of reptile that may potentially be encountered. All cetaceans and marine turtles are European Protected Species (EPS) protected under Annex IV of the EC Habitats Directive (Directive 92/43/EEC), which lists species of Community Interest in need of strict protection. It is an offence under the Habitats Regulations to deliberately capture, kill, injure, or disturb animals classed as EPS. Harbour porpoise, bottlenose dolphin, grey seal and common/harbour seal are listed under Annex II of the Habitats Directive, which lists species whose conservation requires designation of an SAC. A separate Risk Assessment for Annex IV Species (Document reference: P2578-R6412) has been completed and submitted with this MUL application and has been considered in the preparation of this AIMU report.

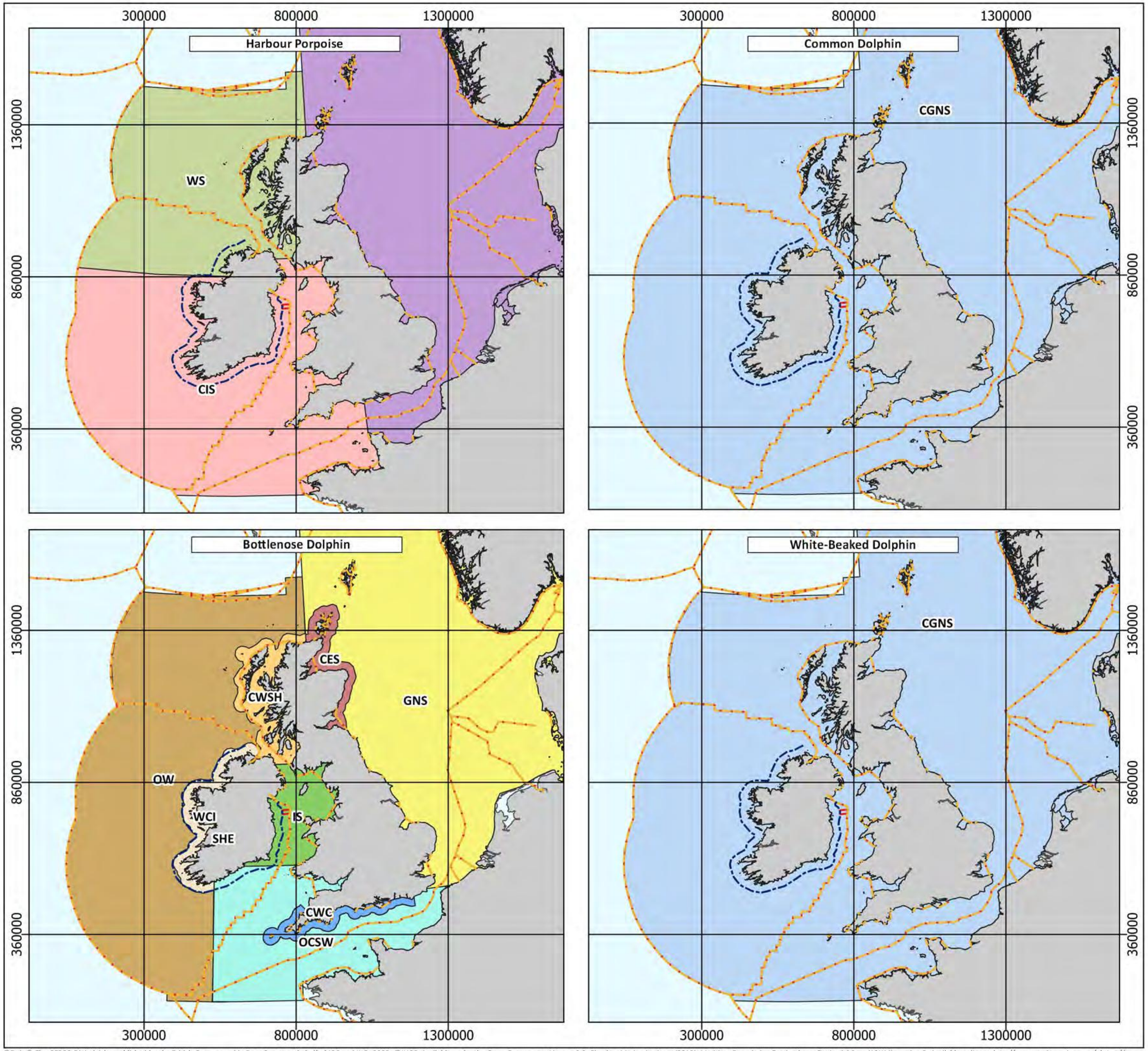
2.4.3.1 Cetaceans

Of the 25 species of cetacean recorded in Irish waters, approximately 5 of these have been recorded off the east coast and may be present in the MULA at least on a seasonal basis. These species are listed in Table 2-5. The most commonly sighted species are short-beaked common dolphin (*Delphinus delphis*), common bottlenose dolphin (*Tursiops truncates*) and harbour porpoise (*Phocoena phocoena*), with other species rare, or occasional visitors. It is unlikely that deep water species such as the sperm whale (*Physeter macrocephalus*) and long-fined pilot whale (*Globicephala melas*) will be present (Reid et al. 2003).

The Irish Whale and Dolphin Group (IWDG) website (http://www.iwdg.ie/) was used to determine the number of whales and dolphin sightings within the MULA using the interactive mapper. There were no observations reported within the boundary of the MULA, a total of 264 individual records were submitted to the IWDG for the period of 28th April 2023 to 26th April 2024 (Table 2-2). Records were concentrated in Dublin Bay (outside of the MULA). Harbour porpoises are the most frequently recorded species in the vicinity of the MULA (total max observed 1651), dolphin species were also recorded on various occasions throughout the MULA.

In the neritic waters off Dundalk to Waterford on Irelands east coast, sightings data from aerial surveys conducted between 2015-2017 for the ObSERVE programme recorded several groups of porpoises, ranging from one to five individuals, in both the summer and winter months (Rogan et al., 2018). A group of bottlenose dolphins, ranging from one to five individuals, was also observed in the area during winter of 2016, as well as two groups of Risso's dolphins, ranging between one and five and six and twenty individuals during the summer. Multiple groups of minke whale, ranging from one to five individuals, were also sighted within the region during the summer of 2015 and 2016 (Rogan et al., 2018). Harbour porpoises were recorded with the highest frequency indicating that the neritic waters off Ireland's east coast is of greater importance to these species (Rogan et al., 2018).

Most cetaceans are wide-ranging, and individuals encountered within the Irish Sea form part of much larger biological populations whose range extend into adjacent jurisdictions. As a result, management units (MUs) have been outlined for seven of the common regularly occurring species following advice from the Sea Mammals Research Unit (SMRU) (DECC 2016) and the International Council for the Exploration of the Sea (ICES). These provide an indication of the spatial scales at which impacts of anthropogenic activities should be taken into consideration. The relevant MUs are shown in Figure 2-2 and 2-3 (Drawing Reference: P2578M-MGU-001 and P2578M-MGU-002).



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

MANAGEMENT UNITS

Management Unit of Cetaceans in UK and Irish Waters (Sheet 1 of 2)

Drawing No: P2578M-MGU-001	A

Legend

N

- Maritime Usage Area

Adminstrative Boundaries

- 12nm Territorial Sea Limit
- EEZ

Management Unit Defined by the Inter-Agency Marine Mammal Working Group (IAMMWG)

- Coastal East Scotlnd (CES)
- Celtic Greater North Seas (CGNS)
- Celtic Irish Seas (CIS)
- Coastal West Channel (CWC)
- Coastal West Scotland Hebrides (CWSH)
- Greater North Sea (GNS)
- Irish Sea (IS)
- Offshore Channel, Celic Sea and South West England (OCSW)
- Offshore Channel, Celic Sea and South West England (OCSW)
- Offshore Waters (OW)
- West Coast of Ireland (WCI)
- West Coast of Ireland (WCI)

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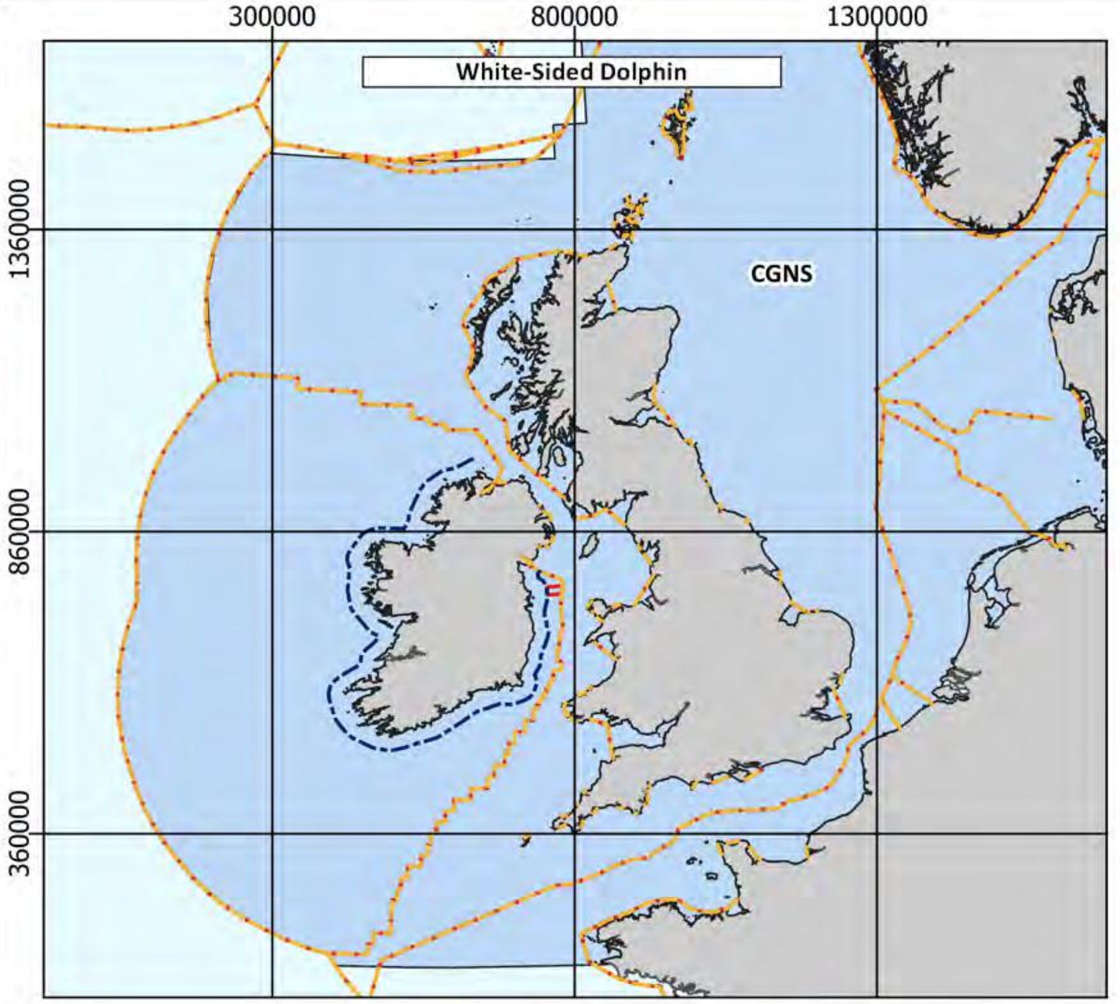

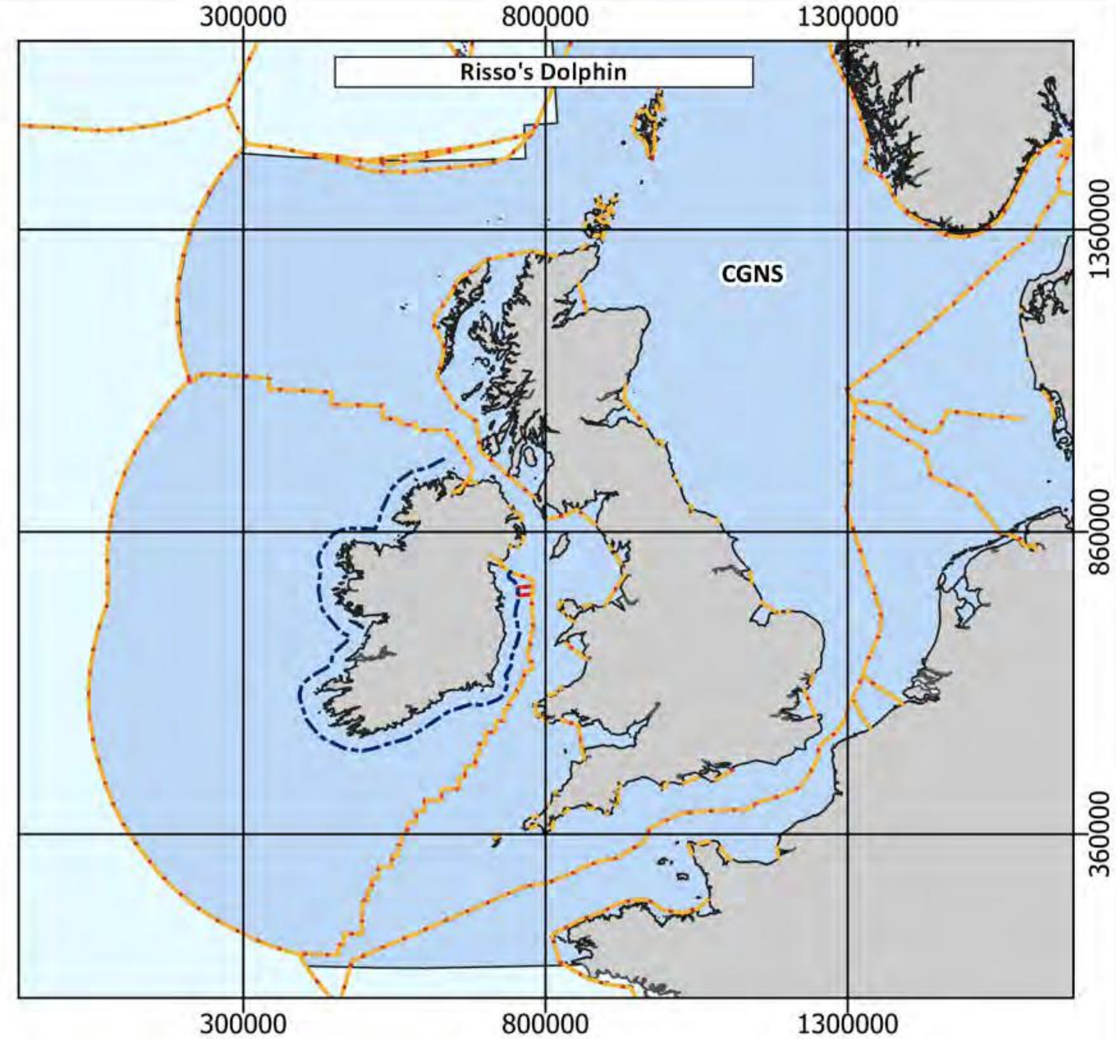

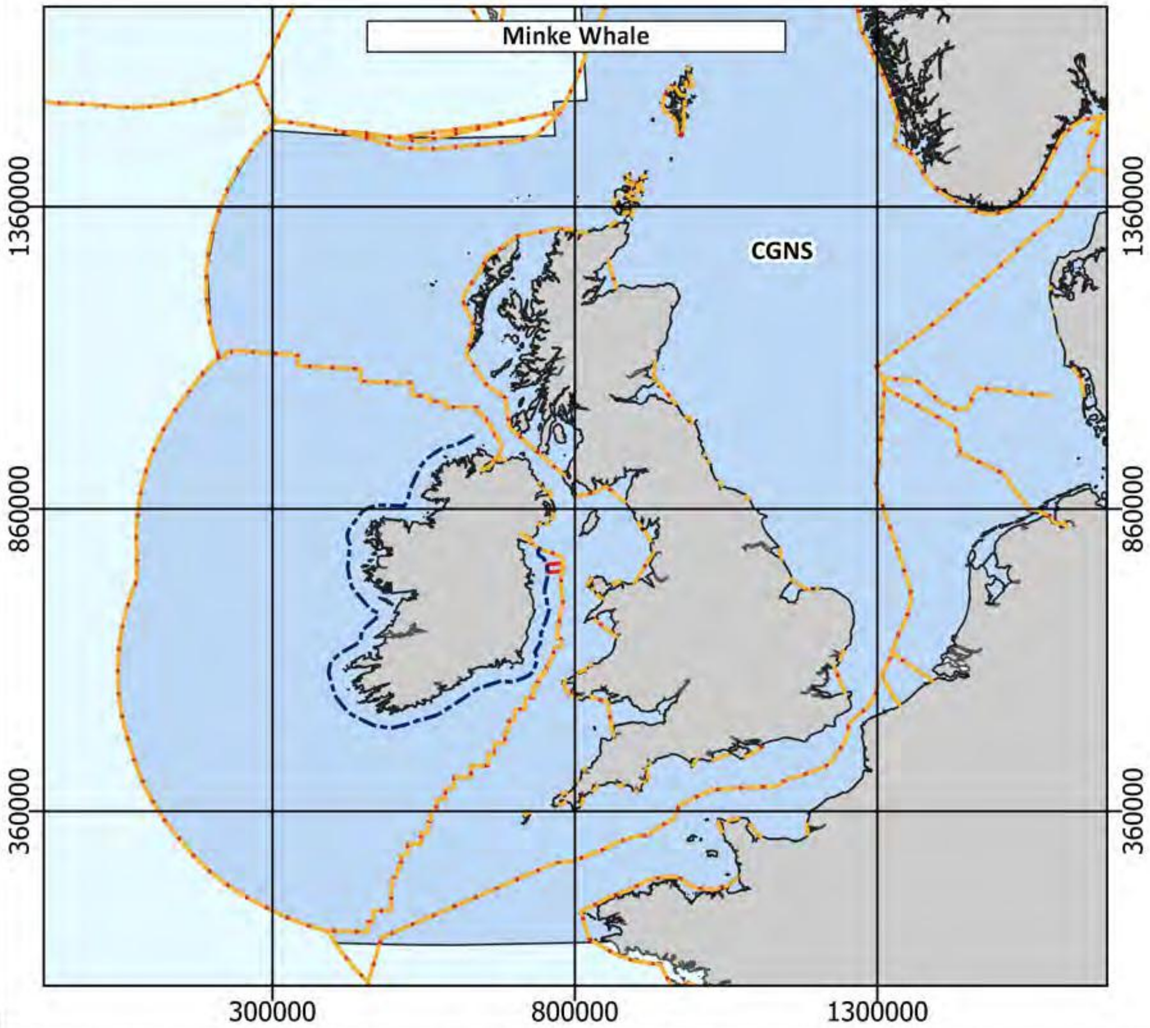

MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

MANAGEMENT UNITS

Management Unit of Cetaceans in UK and Irish Waters (Sheet 2 of 2)

Drawing No: P2578M-MGU-002 | A

Legend

Maritime Usage Area

Adminstrative Boundaries

12nm Territorial Sea Limit

EEZ

Management Unit Defined by the Inter-Agency Marine Mammal Working Group (IAMMWG)

Coastal East Scotlnd (CES)

Celtic Greater North Seas (CGNS)

Celtic Irish Seas (CIS)

Coastal West Channel (CWC)

Coastal West Scotland Hebrides (CWSH)

Greater North Sea (GNS)

Irish Sea (IS)

Offshore Channel, Celic Sea and South West England (OCSW)

Offshore Channel, Celic Sea and South West England (OCSW)

Offshore Waters (OW)

West Coast of Ireland (WCI)

West Coast of Ireland (WCI)

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Table 2-2 Sightings and Strandings for commonly occurring cetaceans within the MULA and surrounding waters

Species	Frequency of sightings*	IWDG sightings (approx.) (Apr 2023 –Apr 2024)**	Estimation of density within MU (animals/km²) ***	Applicable MU****	Abundance of animals in MU****
Toothed whales (odontocetes)					
Harbour porpoise (*Phocoena phocoena*)	Common from June through the autumn/winter. Peak period in August.	1051 sightings; All year, Jan – Jan (includes recordings of “dolphins species possibly harbour porpoise”) Largest Pod sighting max 50 individuals. Recorded in August 2023	0.094 – 0.157	Celtic and Irish Seas	62,517
Short-beaked common dolphin (*Delphinus delphis*)	Peak period is spring and summer and winter peak on the south coast associated with prey items.	191 sightings; March – September (Including recordings of “common or striped dolphin”) Largest Pod sighting max 45 individuals. Recorded in October 2023	0.038 – 0.115	Celtic & Greater North Seas	102,656
Bottlenose dolphin (*Tursiops truncatus*)	Common year round but most frequent in summer.	No sightings	0	Irish Sea	293
Risso’s dolphin (*Grampus griseus*)	Peak period in April - Sept	No sightings	0.003 – 0.018	Celtic & Greater North Seas	12,262
White-beaked dolphin (*Lagenorhynchus albirostris*	Irregular in Irish Sea. More regular in late summer – autumn.	No sightings	0.018 – 0.044	Celtic & Greater North Seas	43,951
Long-finned pilot whale (*Globicephala melas*)	Most frequent between April and September	No sightings	No data available	N/A	No data available
Killer whale (*Orcinus orca*)	Occasional sightings in Irish Sea waters.	No sightings	No data available	N/A	No data available
Baleen whales (mysticetes)					
Minke whale (*Balaenoptera acutorostrata)*	Peak period July and August	No sightings	0.009 – 0.018	Celtic & Greater North Seas	20,118
Humpback whale (*Megaptera novaeangliae*)	Occasional sightings in Irish Sea waters.	No sightings	No data available	N/A	No data available
Fin whale (*Balaenoptera physalus*)	Unclear, contradictory evidence with sightings during summer months, and acoustic monitoring data	No sightings	No data available	N/A	No data available

Species	Frequency of sightings*	IWDG sightings (approx.) (Apr 2023 –Apr 2024)**	Estimation of density within MU (animals/km²) ***	Applicable MU****	Abundance of animals in MU****
	suggest a peak in November – December.				

Sources: * Marine Institute (2021), Reid et al. (2003) ** IWDG (2021); *** Calculated by dividing animal abundance in MU**** by MU area; and **** JNCC 2022, 2023.

2.4.3.2 Pinnipeds

Two species of seal are resident within Irish waters - grey seal (*Halichoerus grypus*) and harbour (or common) seal (*Phoca vitulina*). Grey seal typically breeds on remote uninhabited islands or coasts and in small numbers in caves between September and December. Grey seal moulting occurs approximately 3-5 months after the end of the breeding season. Harbour seal often haul out onto tidally exposed sandbanks to rest, moult and suckle their young. Pupping tends to occur between June and July, followed by moulting which takes approximately 4-5 weeks. The estimated at sea distribution of grey and harbour seal has been mapped in a study by Russel et al.(2017) and is shown in Figures 2-4 and 2-5 below. As the figures illustrate, the estimated mean at sea grey seal and Harbour seal usage within the MULA ranges between <1 individuals per 5km^2 .

There is one Natura 2000 site which lists grey seal as Qualifying Interests close to the MULA. The closest SAC'S designated for grey seal is Lambay Island SAC, this is located 22km away from the MULA.

Figure 2-4 Grey seal at-sea usage: mean

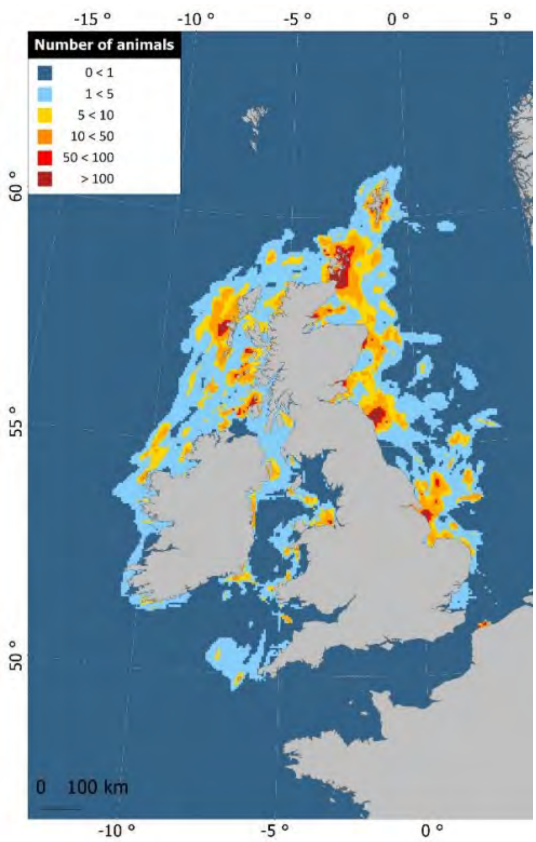
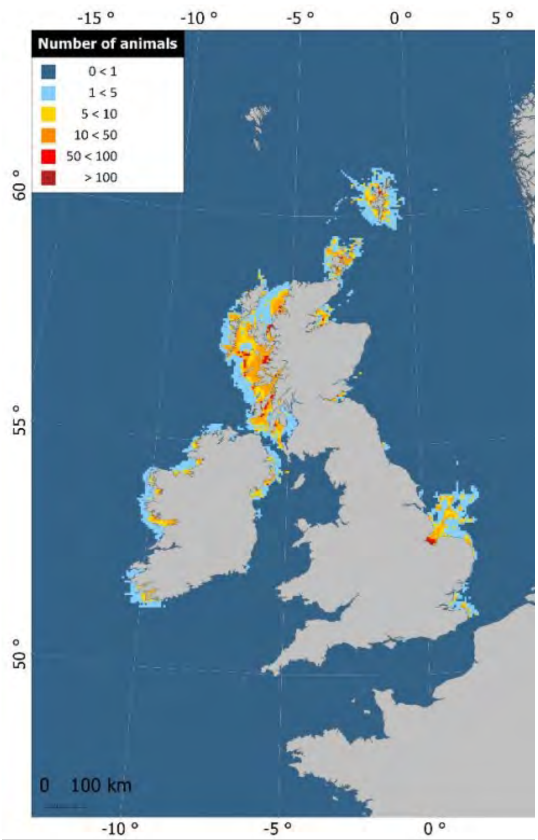


Figure 2-5 Harbour seal at-sea usage: mean



Source: Russel et al. 2017

2.4.4 Marine Reptiles

There are few recordings of sea turtle species in Ireland. Of the seven sea turtle species, leatherbacks (*Dermochelys coriacea*) are most common in Ireland, recorded annually in Irish waters as they forage widely for jellyfish in temperate waters visiting Irelands coast in summer and autumn.

A study of leatherback relationships with jellyfish aggregations in Irish and Welsh waters was conducted by Houghton et al. in 2006 who reported from a historical dataset from the TURTLE Database; between 1950-2005 there were 143 individuals observed between the Irish and Welsh waters (Houghton et al., 2006). The seasonality of the sightings was between July and September (number of individuals sighted: 125). Biodiversity Ireland highlights the distribution of leatherback records around the coast of Ireland but with low numbers. The coast of Ireland has one record per 10km with only one hotspot off the coast of Cork which indicates higher records (70-111).

The NBDC has 4 observations of live occurrences of leatherback turtles within the MULA (NBDC, 2024). However, as highlighted by Pierpoint (2000) a lack of inclusivity in the TURTLE database means it is likely that the Ireland stranding, and live observations are underrepresented.

Loggerhead turtle (*Caretta caretta*) have also been recorded in Irish waters and the NBDC reports 97 cases in total, with the latest record in 2023. However, whilst leatherback turtles come to Irish waters looking for jellyfish, loggerhead turtles are usually transported into the area as juveniles carried by the Gulf Stream (The Guardian 2020). A 2020 study conducted by Botterall et al. 2020 highlighted that the loggerhead observations in UK and Irish waters tend to be juveniles. The reason for the warm water juveniles to be encountered in Irish waters is due to them being carried north from their usual grounds by currents or stormy weather (Mallinson, 1991; Pierpoint, 2000).

2.4.5 Ornithology

The coastal sea cliffs, estuaries and offshore islands of Ireland are host to nationally and internationally important bird species, with many areas designated as SPAs.

At least 24 species of seabird (including divers and grebes) have been recorded during at-sea surveys in Irish waters, of which 23 species regularly breed around Ireland (Birdwatch Ireland, 2023, Pollock et al 2008, Mackey et al 2004). In addition, a further 59 species of waterfowl and wader regularly occur at coastal sites such as estuaries around Ireland; including five grebe species, two heron species, 26 species of wildfowl and 26 wader species (Crowe 2005). Some of these species are migratory and are present only during migration periods in spring and autumn; others come to Ireland to breed or to spend the winter, while some are resident all year round.

Aerial surveys of Ireland's offshore and coastal waters were completed by Rogan et al. (2018) across summer and winter in 2015 and 2017 (Coughlan et al., 2020). Over the survey period, a total of 24 seabird species or species groups were identified. Some seabird species were sighted infrequently, including great skua (*Stercorarius skua*), black guillemot (*Cepphus grille*) and scoter (*Melanitta* spp.), with other species observed during all seasons. Auk species (comprising razorbill, *Alca torda*, common guillemot, *Uria aalge*, guillemots, and Atlantic puffin, *Fratercula arctica*), northern fulmar (*Fulmarus glacialis*), northern gannet (*Morus bassanus*), and black-legged kittiwake (*Rissa tridactyla*) were the most frequently sighted and abundant species across all surveys. Shearwaters, terns, and petrel species were mostly limited to summer surveys, while scoters, divers, and gull species were more common in winter surveys.

In relation to the MULA, species of high density include, Kittiwake (*Rissa tridactyla*) and Gannet (*Morus bassanus*) European Shag, Common Guilliemot and Razorbil. Petrels were present in highest densities within 300km of the coast during the summer breeding period, particularly in the Celtic Sea off the south coast of Ireland. Furthermore, auk species were widely distributed in winter through the Celtic Sea, particularly to the south-east of Ireland. The continental shelf waters of the Celtic Sea are an area of high-seabird density and consistently have the highest summer densities and abundance compared to other areas off the coast of Ireland (Rogan et al., 2018).

The most important bird populations are protected with designated sites including SPAs, Ramsar sites and Natural Heritage Areas (NHA). There are no SPAs within the boundary of the MULA, however there 18 SPAs within the vicinity of the MULA which have been assessed within the MaresConnect Foreshore Licence Application, some of which are also designated as a Ramsar site or proposed as an NHA (both within and adjacent to the MULA). All SPAs are designated for a combination of breeding and over-wintering bird species (Table 2-4).

Further details on the 18 sites are provided in the additional supporting document - Supporting Information for Screening for AA (P2578-R6410).

2.4.6 Invasive Species

Invasive Species Ireland and National Biodiversity Data Centre Ireland (NBDC, 2021; ISNI, 2022) have complied a catalogue of non-native species in Ireland which includes additional species such as the Chinese mitten crab (*Eriocheir sinensis*). Invasive Species Northern Ireland lists three species which are of concern in Irish waters which are the carpet seaquirt (*Didemnum vexillum*), slipper limpet (*Crepidula fornicata*) and Asian rapa whelk (*Rapana venosa*). The Asian Rapa whelk is not established and is listed as a potential invasive species which could be introduced to Irish Waters by ballast water, aquaculture, and hull fouling.

In addition, the Invasive Species Northern Ireland website (ISNI, 2022) lists the below invasive species as established in Irish waters:

- Wire weed (*Sargassum muticum*)
- Wakame (*Undaria pinnatifida*)
- Smooth cordgrass (*Spartina anglica*)
- Slipper limpet (*Crepidula fornicate*)
- Pacific oyster (*Magallana gigas*)
- Leathery sea squirt (*Styela clava*)
- Japanese skeleton shrimp (*Caprella mutica*)
- Devil’s tongue weed (*Grateloupia turuturu*)
- Carpet sea squirt (*Didemnum vexillum*)

2.5 Fish and Shellfish

2.5.1 Irish Sea Overview

The Irish Sea supports a wide diversified range of fish and shellfish species, including many commercially important species. Fish communities in the Irish Sea areas are generally well described with distinct assemblages associated with different seabed substrata. Sandy inshore areas support large numbers of juvenile flatfish and sand eels, with seasonal populations of sprat, herring, and juvenile gadoids. Rockier areas are dominated by small species such as wrasse, gobies, and blennies, as well as juvenile pollock and saithe. Pelagic fish such as mackerel and herring range widely within the region, migrating between summer feeding grounds, spawning grounds, and overwintering ground (DCCAE 2015). According to Dolton et al. (2020), the basking shark is known to roam and migrate through the Irish Sea, feeding on the nutrient-rich stratified waters. It is also a crucial habitat for critically endangered shark and ray species like the angel shark (*Squatina squatina*) and flapper skate (*Dipturus intermedius*). Other important species include megafauna that burrow, such as the ocean quahog (*Arctica islandica*) (de Jong Cleyndert et al., 2022).

2.5.1.1 Spawning and nursery grounds

Spawning areas, spawning grounds, and spawning beds are defined as places where fish species that are significant for commerce lay their eggs for fertilisation. Fish gametes, or reproductive cells, make up spawn, some of which will fertilise and have offspring. Typically, during the spawning process, females release ova (unfertilized eggs) into the water, frequently in vast quantities, while males release spermatozoa (milt) simultaneously or sequentially to fertilise the eggs. Spawning grounds provide information about a species' distribution within a commercially significant fish population.

Marine nursery areas are habitats that promote the survival of young commercially important fish species. Many of these creatures are important to humans in fisheries and seafood. These habitats are essential for the reproduction and understanding of the geographical species distribution. Take them away or degrade them, and the production of commercially harvested species will decline or cease altogether.

The MULA is within the spawning and nursery grounds for eleven different types of fish species (Figure 2-6, Drawing Reference: P2578M-FISH-002 and Figure 2-7, Drawing Reference: P2578-FISH-003). A summary of the spawning and nursery periods of these commercially important fish species is outlined in Table 2-3. The MULA is a primary spawning ground for cod (*Gadus morhua*), sandeel, whiting (*Merlangius merlangus*), plaice (*Pleuronectes platessa*), Dublin Bay prawn (*Nephrops*), sole (*Microstomus kitt*) and sprat (*Sprattus sprattus*).

Sandeels are a demersal species and adults spend winters buried in the sediment emerging to spawn and lay eggs on the substrate. They have a high level of habitat specialisation, and studies show preference to medium/coarse grained sands with sandeel absent from silty sediments (Wright et al., 2000; Holland et al.,2005; Green, 2017) sandeels display burrowing behaviour which is thought to help avoid displacement by underwater currents to less suitable areas, to aid with avoiding predation, and to conserve energy (Green, 2017). Additionally, sandeels, and herring, are demersal spawners and lay their eggs directly onto the substrate (Wright et al., 2017; Wright, 2019). Planktonic larvae are then transported by currents and settle back into the sand as juveniles (Wright et al., 2017; Wright, 2019). The presence of sandeel eggs and burrowing sandeels of different life stages, make these habitats susceptible to disturbance, particularly siltation. Sandeel are known for their patchy distribution. There are indications that sandeels have a high level of site fidelity and are not successful re-colonisers (Jensen et al. 2011), although some research (Haynes and Robinson 2011) indicates that patch fidelity amongst young sandeel in particular, may be short term. A study conducted by Holland et al (2005) indicated sandeel have strong preference for seabed habitats with a lot of medium and coarse sand fractions (particle size 0.25 to 2 mm), which is the same particle size range that Wright et al (2000). indicated as their preferred range (2000).

Spawning for Sandeel in the Irish Sea has been recorded between November and February (Ellis *et al.* 2012).

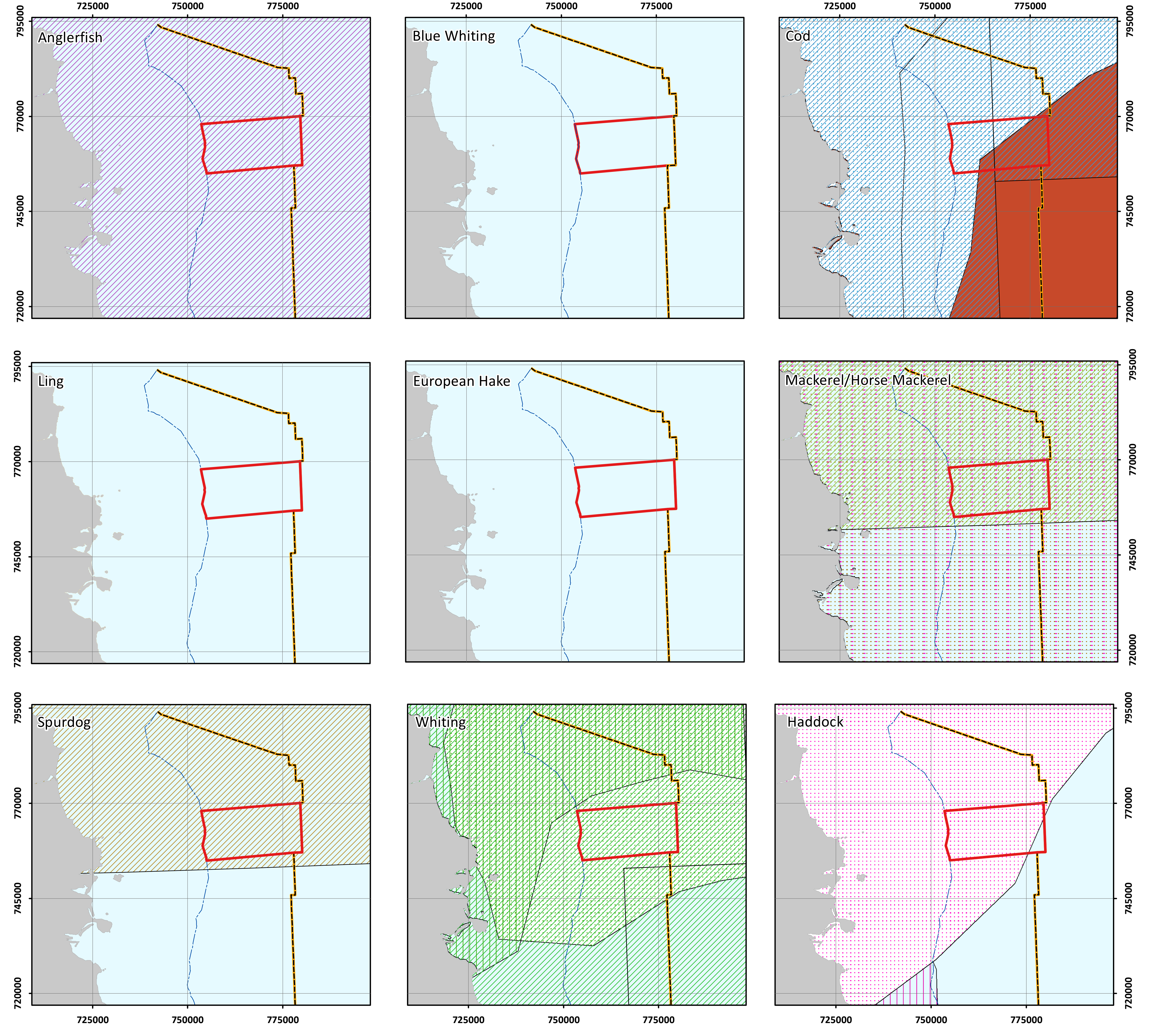
Table 2-3 Summary of spawning and nursery periods for commercially important fish species within the MULA

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Nephrops Ground	SN	SN	SN	SN	SN	SN	SN	SN	SN	SN	SN	SN
Mackerel (*Scomber scombrus*) (N)					S	S	S	S				

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Angler Fish (*White-bellied*) (*Lophius piscatorius)*	N	N	N	N	N	N	N	N				
Horse Mackerel *Trachurus trachurus* (N)		N	N	N	N	N	N	N	N	N		
Atlantic Herring *(Clupea harengus* (S) (N)	SN	S*N	S*N	SN	N	N			S*	S	S	S
Haddock (*Melanogrammus aeglefinus*((S) (N)		SN	SN	SN	SN	N	N					
Cod *(Gadus morhua)* (S) (N)	SN	S*N	S*N	SN	N	N						
Plaice *(Pleuronectes platessa)* (S) (N)	S*	S*	S									S
Sandeels *(Ammodytes tobianus)* (S) (N)	S	S									S	S
Lemon Sole *(Microstomus kitt)*				SN	SN	SN	SN	SN	SN	N	N	
Sprat *(Sprattus sprattus)*					S*	S*	S	S				
Whiting *(Merlangius merlangus)* (S) (N)		SN	SN	SN	SN	SN	N	N				
Spurdog *(Squalus)*	Viviparous species (gravid females can be found all year)											

S = Spawning, N = Nursery, SN = Spawning and Nursery, Blank = No Data, *peak spawning, -=unavailable.

Source: Coull *et al*. 1998; Ellis *et al.* 2012.



MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

FISH & FISHING ACTIVITY
Fish Spawning and Nursery Areas (Sheet 1 of 2)

Drawing No: P2578M-FISH-002	A

Legend

Maritime Usage Area

Administrative Boundaries

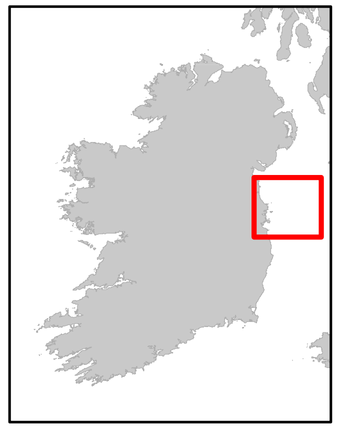
12nm Territorial Sea Limit
EEZ Boundary

CEFAS Nursery Grounds (2010)

Anglerfish
Cod
Mackerel
Plaice
Sandeel
Spotted ray
Spurdog
Thornback ray
Tope shark
Whiting

CEFAS Spawning Grounds (2010)

Cod
Hake
HorseMackerel
Ling
Mackerel
Plaice
Sandeel
Sole
Whiting



NOTE: Not to be used for Navigation

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Projection	Transverse Mercator
Datum	IRENET95
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Reviewed By	[redacted]
Approved By	[redacted]

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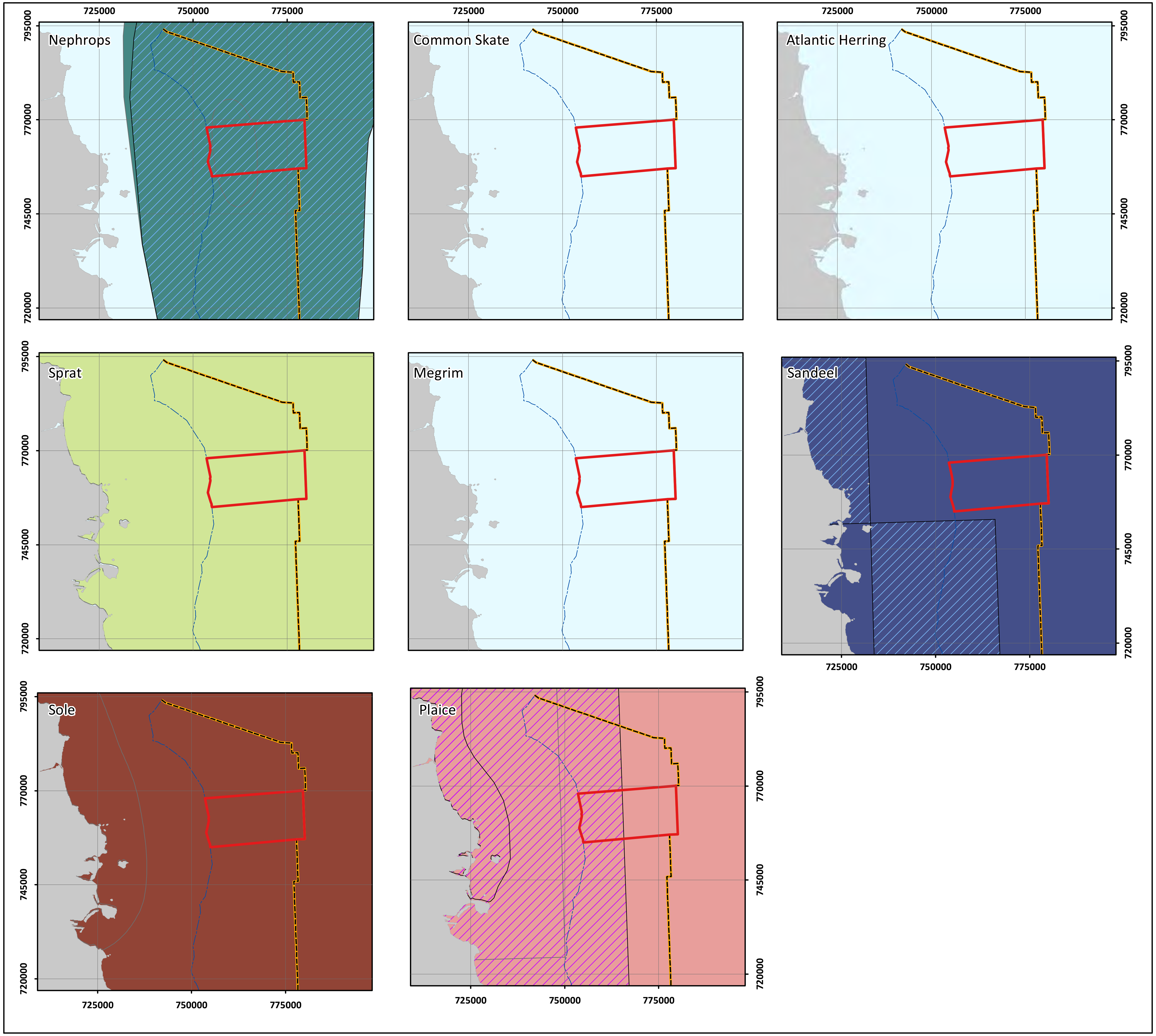


MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

FISH & FISHING ACTIVITY
Fish Spawning and Nursery Areas (Sheet 2 of 2)

Drawing No: P2578M-FISH-003	**A**

Legend

- Maritime Usage Area

Administrative Boundaries

- 12nm Territorial Sea Limit
- EEZ Boundary

CEFAS Nursery Grounds (2010)

- Herring
- Plaice
- Sand Eel

CEFAS Spawning Grounds (1998)

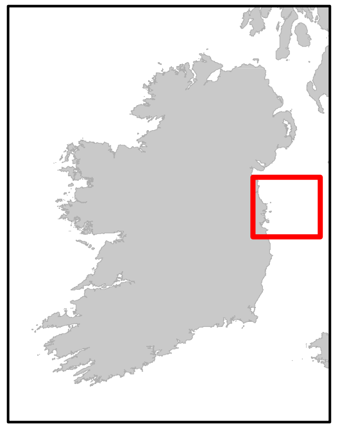
- Nephrops
- Plaice
- Sole
- Sprat

CEFAS Nursery Grounds (1998)

- Nephrops
- Whiting

CEFAS Spawning Grounds

- Plaice
- Sandeel
- Sole



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Created By	[redacted]
Reviewed By	[redacted]
Approved By	[redacted]

0 10 20 30 40 km

2.5.1.2 Elasmobranchs (sharks, skates, rays, basking shark)

Elasmobranchs are among the most vulnerable marine fish to anthropogenic impacts due to their slow growth rates, late maturity, low fecundity, and productivity which limits their capacity to recover from population declines. All sharks and rays are on the Oslo and Paris Conventions (OSPAR) List of Threatened and/or Declining Species and Habitats (Agreement 2008-06) (OSPAR, 2008). In Irish waters there are 28 species of Skates and Rays (ORCA Ireland, 2019). The Irish Bottom Trawl Survey (IBTS) reports catch of different elasmobranch species such as spotted dogfish (*Scyliorhinus canicular*), cuckoo ray, (*Leucoraja naevus*), spurdog (*Squalus acanthias*), angel shark (*Squatina squatina*), tope (*Galeorhinus galeus*), smooth hound (*Mustelus mustelus*), thornback ray (*Raja clavate*), spotted ray (*Raja montagui*), nurse hound (*Scyliorhinus stellaris*) (ICES, 2018). Dedman et al., (2015) modelled abundance hotspots for Irish Sea rays and the study results predict that species such as Cuckoo Ray (*Leucoraja naevus*), Thornback Ray (*Raja clavate*), Blonde Ray (*Raja brachyura*), Spotted Ray (*Aetobatus narinari*) could be found within the MULA (Dedman et al., 2015; Dedman et al., 2017). According to the NBDC, 2024, all of these species have been recorded in the MULA.

Flapper (Common) Skate (*Dipturus batis*) and angel shark (*Squatina squatina*) are species listed as Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. There have been recordings of flapper skate in Irish waters, however no sightings have been observed around the MULA (NBDC, 2024).

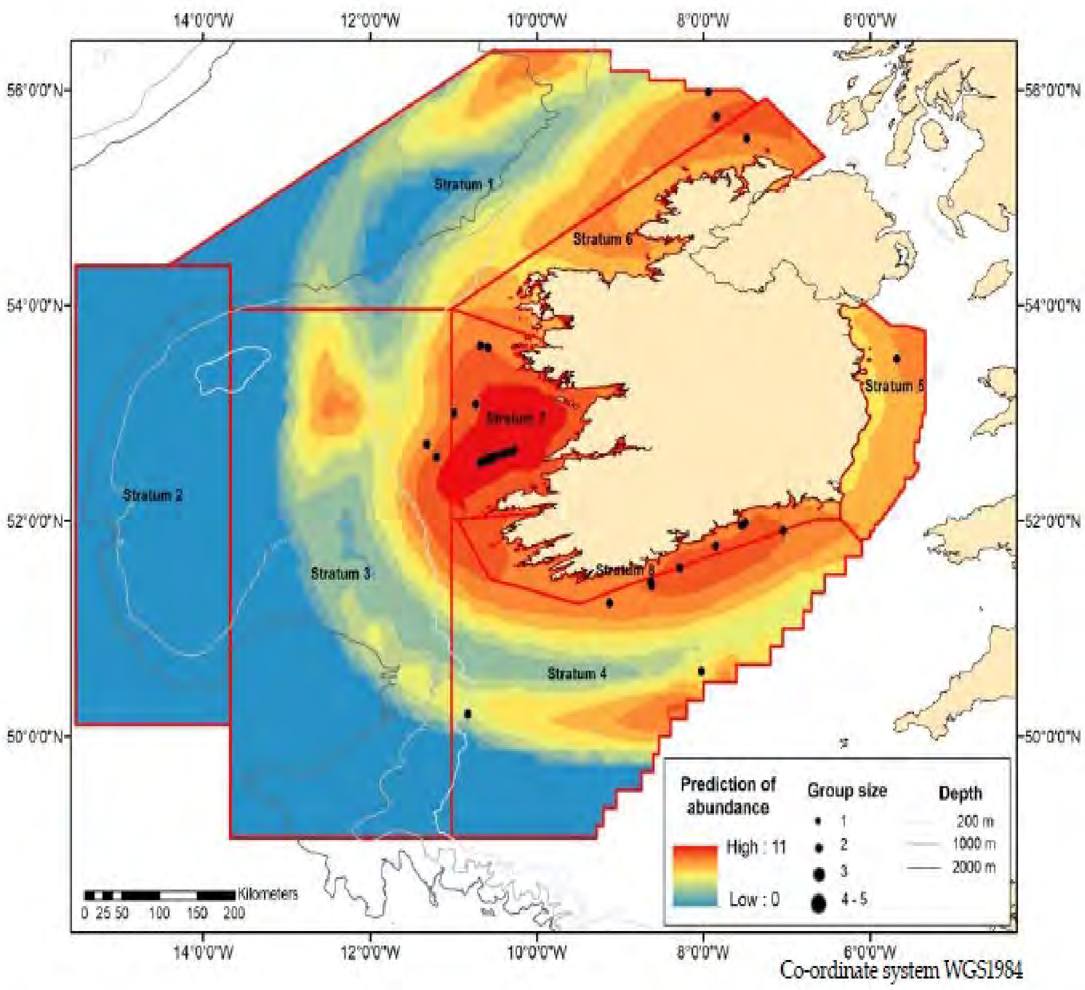
2.5.1.3 Basking Shark

The Basking shark (*Cetorhinus maximus*) are a filter-feeding fish species which can grow up to 12m in length and is the largest fish in the North Atlantic and the second largest in the world. This species is distributed globally in warm temperate waters and is known for seasonal surface feeding behaviours in coastal waters (Sims, 2008). Higher densities occur in areas of high primary productivity, such as in thermal and shelf sea fronts (Speedie, Johnson and Witt, 2009; Sims and Quayle, 1998). Basking sharks are usually present in Irish waters in the summer months and studies of migratory pattens indicate an extensive migration from deep water to coastal waters in April with migrations northwards due to increasing sea surface temperature until August (IBSG, 2021, Gore et al., 2008; Skomal et al., 2009; Doherty et al., 2017). A study conducted by Doherty et al. (2019), identified basking shark occupying shallow waters off West Coast Scotland and north Northern Ireland during July-August with a migration to the west of Ireland and Irish and Celtic Seas in autumn (September-October). NBDC, 2024 has 2418 records of Basking Sharks in Irish waters since 1986 to 2023 in Irish waters. Studies of their behaviour during their seasonal hotspot residences indicates this species spends 36% of its time on the surface (Sims et al, 2003), although areas of high basking shark activity are not always characterised by visible feeding behaviour (Southall et al, 2005).

Basking sharks are listed on the OSPAR list of threatened and/or declining species and receive further protection through the Bonn Convention. Additionally, they are listed on Appendix II of the Convention on the International Trade in Endangered Species (CITES). In Ireland, as of October 2022, basking shark were afforded official protection status under Section 23(3) of the Wildlife Act 1976. This makes it an offence to hunt, injure or wilfully interfere or destroy the breeding or resting places of protected animals.

Results from the ObSERVE 1 project (a three-year aerial survey programme aimed to collect data on the distribution of cetaceans, seabirds, and other marine megafauna in Irish offshore waters) have recorded basking shark in low numbers, with one sighting in the Irish Sea (Berrow and Heardman 1994; Solandt and Chassin 2014; Rogan et al. 2018) (Figure 2-8). Most sightings occur in summer months, but it is less clear where they spend the winter. Modelled data from the ObSERVE 1 Project indicates a moderate to high summer density of basking shark within the MULA.

Figure 2-8 Predicted distribution of Basking shark (Summer distribution has been modelled as sightings were almost exclusively reported in this season)

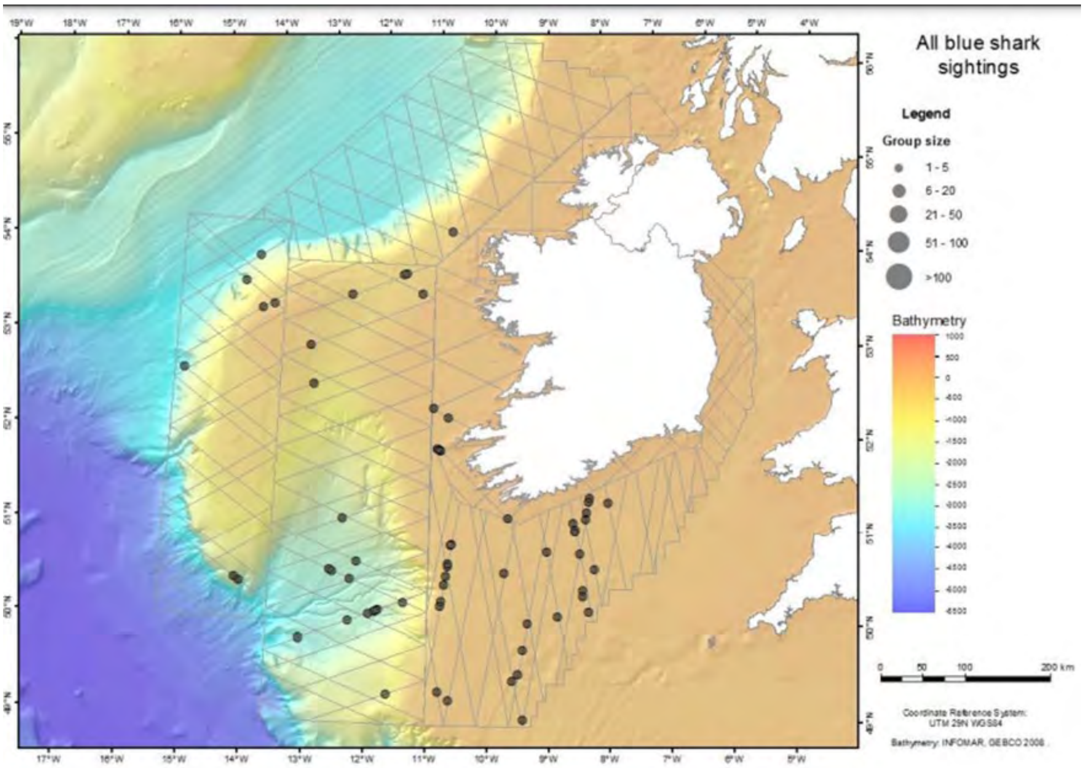


Source: ObSERVE, Rogan et al. 2018

2.5.1.4 Blue Shark

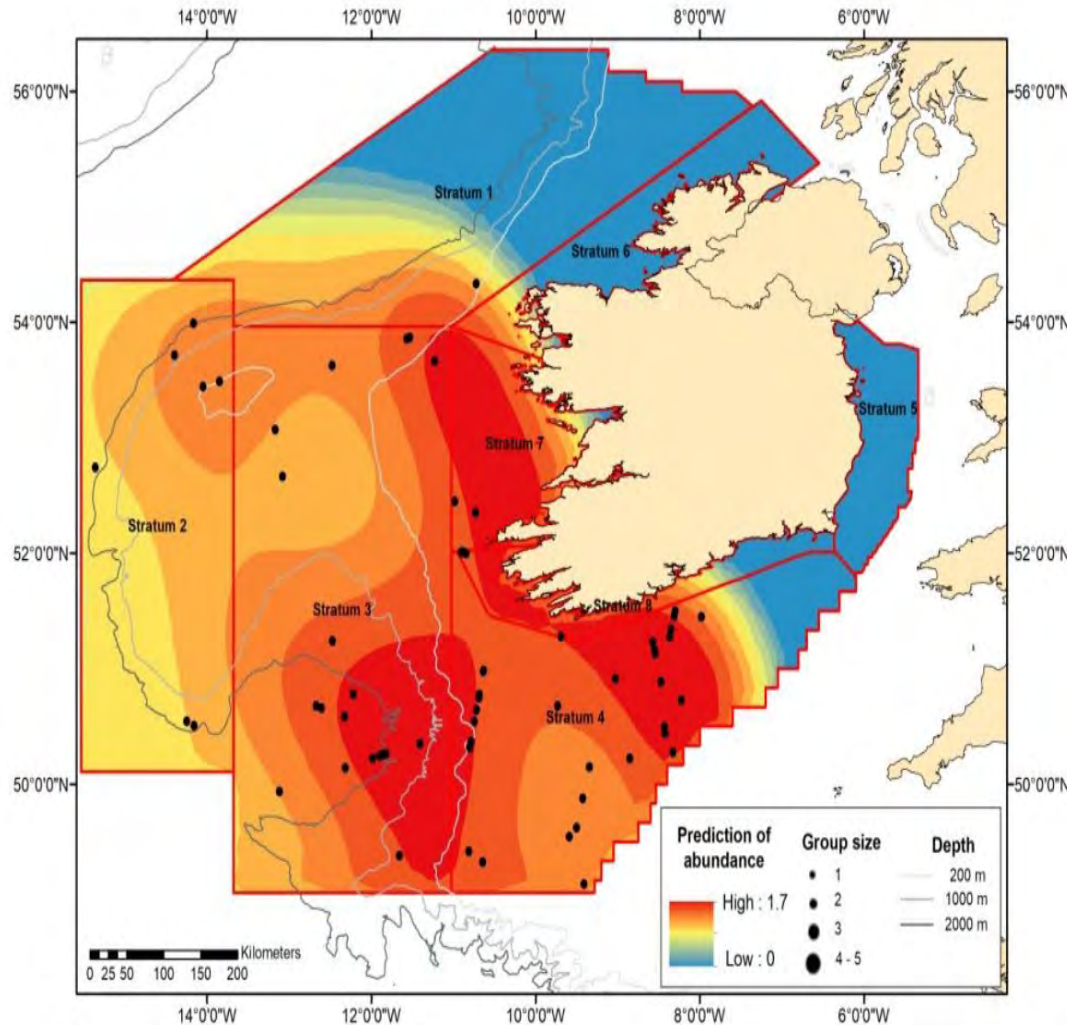
The blue shark (*Prionace glauca*) was not recorded in the Irish Sea or near the MULA (ObSERVE, 2015) (Figure 2-9). This species is on the IUCN Red List of Threatened Species as near threatened (IUCN, 2018).

Figure 2-9 Blue shark sightings



Source: ObSERVE, Rogan et al. 2018

Figure 2-10 Predicted distribution of blue shark (Summer distribution has been modelled as sightings were almost exclusively reported in this season)



Source: ObSERVE, Rogan et al. 2018

2.5.1.5 Shellfish

The Norway lobster/Dublin Bay Prawn (*Nephrops norvegicus*) are common around the Irish coast occurring in geographically distinct sandy/muddy areas where the sediment is suitable for them to construct their burrows (Doyle et. al., 2014). Brown, or edible, crabs are distributed throughout the continental shelf area to the north and west of Ireland and the rocky areas of the Irish and Celtic Sea. Populations of scallops and queen scallops may also occur in areas of gravelly sediments (DCENR 2015). Fisheries data from the Marine Management Organisation and Scientific, Technical and Economic Committee for Fisheries (STECF) fisheries (landings and activity) has found that the Irish Sea is important for lobster, Nephrops, shrimp, crabs, scallops, razor clams and whelks (STECF, 2018; Elliott and Holden, 2018; Marine Space, 2018).

There are no aquaculture sites within the MULA. There are two Designated Shellfish Water sites F57-62 and F57- 56 within the vicinity of the MULA, however these have been assessed with the Foreshore Licence application (Ref:FS007635)) these sites are designated for Razor Clams (Marine Institute, 2022).

2.5.1.6 Annex II listed species

The EC Habitats Directive Annex II listed species, sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), twaite shad (*Alosa fallax*) and Atlantic salmon (*Salmo salar*) are listed as Qualifying Interests of the River Barrow and River Nore SAC (95.9km from MULA), and Slaney River Valley SAC (80.9km from MULA). All of these (except for brook lamprey as this species do not migrate to the sea and therefore will not be observed in the MULA) are migratory species that may be found in the MULA at certain times of the year:

- Sea lamprey – late April to early June
- River lamprey – September to June
- Twaite shad – year-round and migrate into rivers from April-July
- Atlantic salmon – May to June and autumn months.
- Allis shad – April to June

High sensitivity hearing species such as clupeids (e.g., herring, sprat, twaite shad and allis shad) have specialisations of the auditory apparatus where the swim bladder and inner ear are intimately connected. These species can detect sound pressure as well as particle motion and are able to detect frequencies up to 3 kilohertz (kHz); with optimum sensitivity between 300Hz-1kHz (Nedwell et al. 2007). Clupeids of the shad family (*Alosinae*) in particular, have shown sensitivity to a range of frequencies that can extend to >100kHz. (Mann et al., 2001). Teague & Clough (2011) recorded positive significant reactions in juvenile twaite shad to sound frequencies of between 30kHz - 60kHz with a peak at 45 kHz. Twaite shad have known spawning grounds at the upper tidal reaches in the River Barrow and River Nore SAC. Spawning fish move to these areas in shoals to spawn annually in late May – early June. Telemetry investigations by Inland Fisheries Ireland indicate that the fish do not move in a single event to spawning areas but make a series of up- and down river migrations, dropping far down into the Waterford Harbour area, at least, prior to settling for a short period in the spawning areas (IFI, 2021). The telemetry work and sampling in the near-shore marine areas indicate that the adult shads migrate in and out of the estuarine areas and open sea, presumed to be feeding movements. The telemetry study has also shown movements from one estuary to another, one fish moving from the Munster Blackwater to Waterford Harbour over the course of two to three days immediately after spawning. Comments received from Inland Fisheries Ireland in relation to the Greenlink interconnector indicates that they consider that shad movements are occurring all of the time between the open sea area and the estuarine area around Hook Head (Greenlink Interconnector Limited, 2019).

Species, such as Atlantic salmon and sea and river lamprey have a lower sensitivity to sound as their swim bladder is located far from the ear (Popper et al 2014). Therefore, these species will only be sensitive to sound sources with a rapid pressure change, i.e., unexploded ordnance detonation, which is not proposed under this Investigative MUL Application.

Additionally, the allis shad, also an Annex II species, is a large member of the herring family and spends much of its life in coastal waters. This species enters freshwater to breed, with significant occurrence in large rivers reported on the continent. There is some evidence of allis shad entering Irish rivers, with one fish recorded some 40 km from the sea in the Slaney River. Nonetheless, only a small number of allis shad have ever been recovered from Irish freshwaters and while there is good evidence of the presence of breeding populations of twaite shad in Irish rivers, the only evidence of breeding by allis shad is the presence of allis/twaite hybrids.

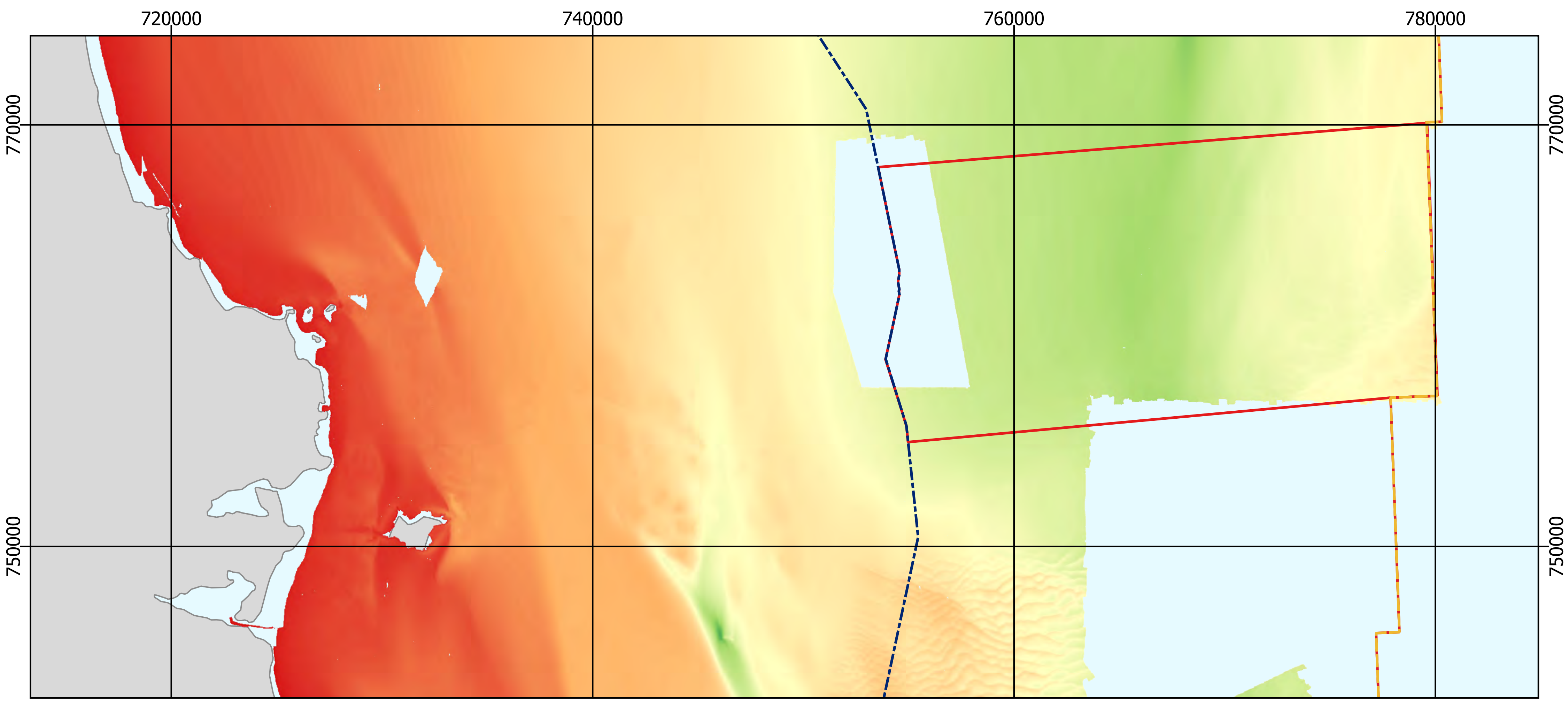
Other diadromous species that may be present are the European eel (*Anguilla anguilla*) and the seatrout (*Salmo trutta trutta*), which are prevalent in Irish rivers and lakes and have a marine phase of their life cycle. The European eel spawns in the Sargasso Sea and then grows up in freshwater as an elva (IFI, 2021). Adult sea trout, on the other hand, spawn in fresh water and then travel to the sea to feed after a few years. The Celtic Sea Trout Project (CTSP) (conducted by Inland Fisheries Ireland, 2016) reports sea trout catch within the Slaney River (CTSP, 2016). Given that both species have a marine stage, it's feasible that they'll be found in the FLAA at different times of the year. There is not a lot of information to suggest that rivers close to the proposed marine cable route contain European eel, however NBDC records shows observations of European Eel within rivers on the Irish mainland, therefore, it is possible that fish migrating from further north out to the Atlantic may pass through the area.

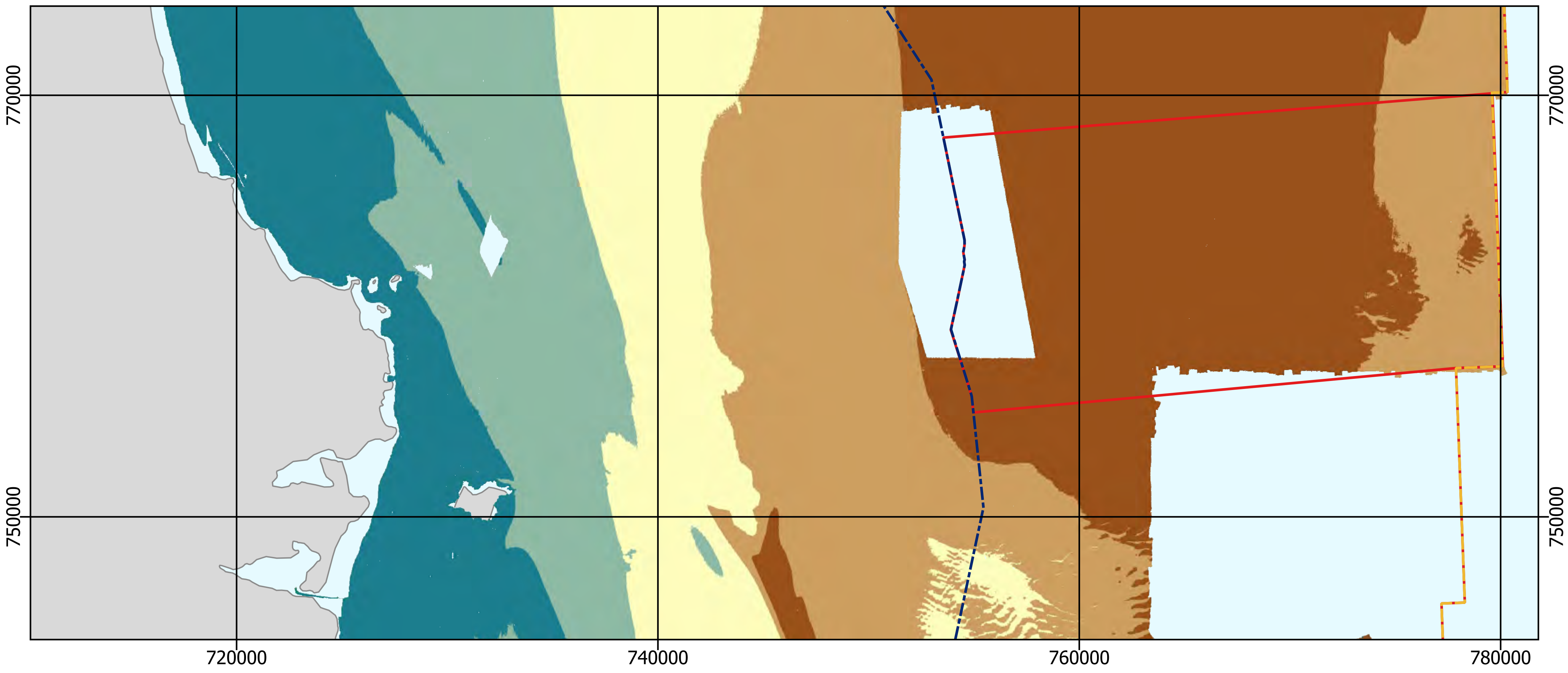
2.6 Marine Processes

2.6.1 Bathymetry

Integrated Mapping for the Sustainable Development of Ireland's Marine Resource (INFOMAR) survey data were reviewed as part of a constraints assessment of the MaresConnect Electricity Interconnector.

Slope data is used to assess where areas may exceed critical thresholds for example seabed slopes that are greater than 5 degrees which may cause stress on the cable if it is in suspension. Coughlan et al. (2020) state that a slope greater than 5° is considered a significant seabed gradient (in the Irish Sea). Generally, the MULA is relatively flat, with slopes in the eastern half of the MULA. Slope is illustrated in Figure 2-11 (P2578M-BATH-003-A). Generally, the MULA is relatively flat and seabed levels across the site vary from 85m depth at the 12nm limit to 100m at the EEZ boundary.





MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

BATHYMETRY
INFOMAR Survey Bathymetry

Drawing No: P2578M-BATH-001	A

Legend

N

- Maritime Usage Area

Adminstrative Boundaries

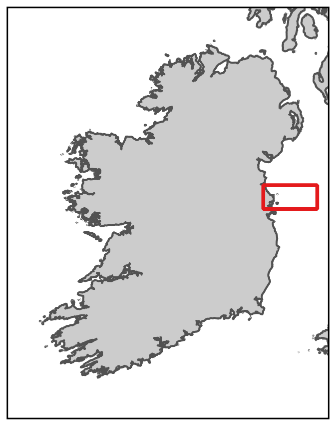
- 12nm Territorial Sea Limit
- EEZ

Bathymetry (Classified) m below LAT

- < 20
- 20 - 40
- 40 - 60
- 60 - 80
- > 80

Bathymetry (Stretched) m below LAT

- 0
- 150



NOT TO BE USED FOR NAVIGATION

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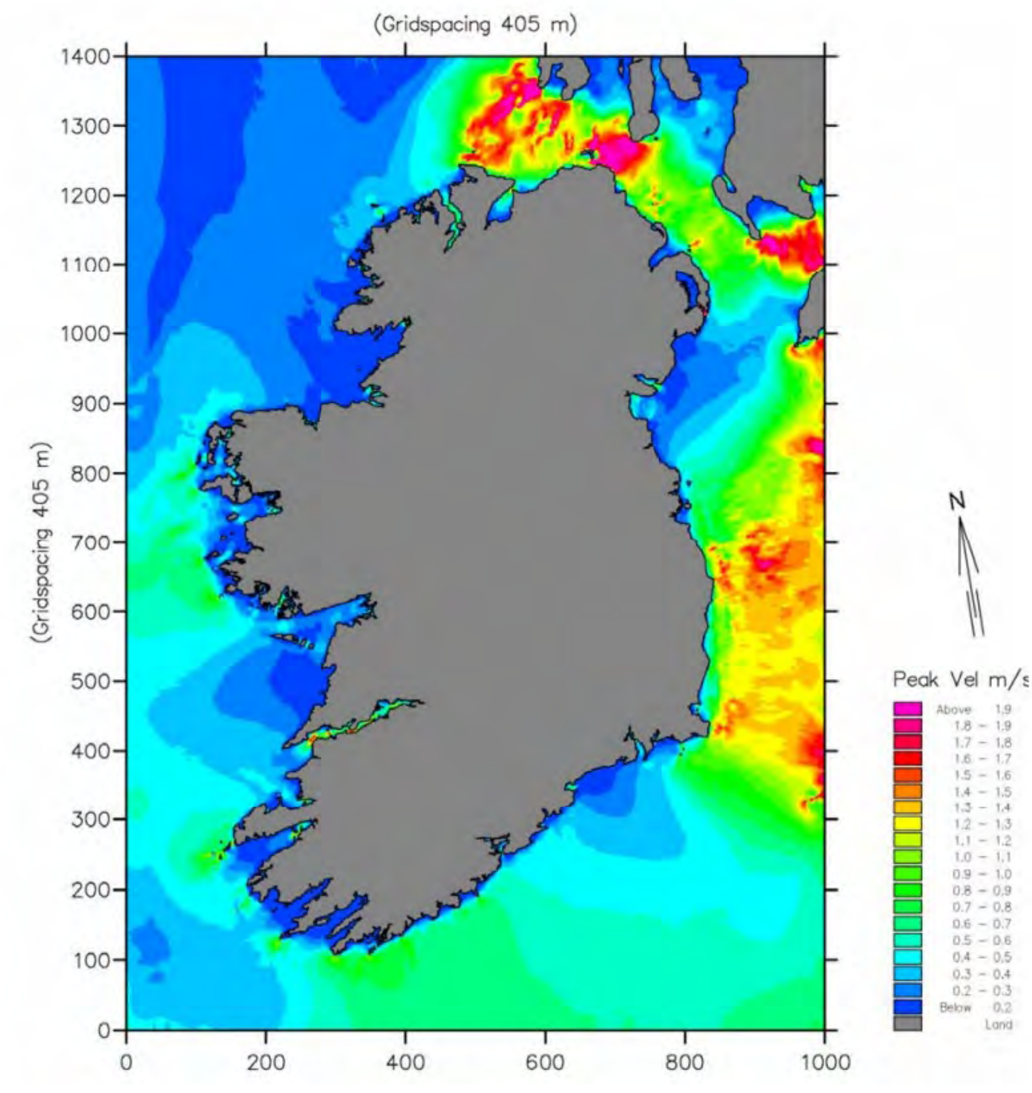
Created By	[redacted]
Reviewed By	[redacted]
Approved By	[redacted]

0 3 6 9 12 km

2.6.2 Tidal currents

A report for Sustainable Energy Authority of Ireland (SEAI) was written to assess the Tidal and Current Resource around the coast of Ireland (SEI, 2004). A model using the programme Mike 21, developed by the Danish Hydrographic Institute, employed a main grid spacing of 405m enabling the local bathymetry and seabed conditions to be more accurately modelled (SEI, 2004; O'Rourke, 2010). A numerical model of the tidal currents around Ireland was created displayed in Figure 2-12 (SEI, 2004; O'Rourke, 2010). In general, around the east coast of Ireland the tidal velocity is quite low (0.2-0.6 peak vel m/s).

Figure 2-12 Depth Averaged Peak Spring Tidal Currents



Source: SEI, 2004

2.6.3 Waves

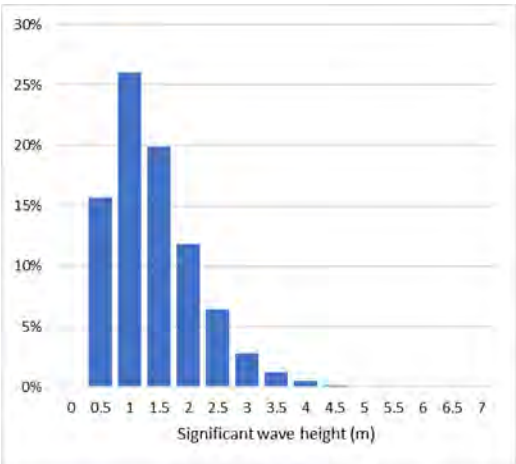
Marine Institute Ireland wave buoy data (Irish Data Buoy Network, 2020) was reviewed to determine wave height and direction across the site. The M2 weather buoy is located approximately 5km south of the southern boundary of the MULA, details of the weather buoy are shown in Table 2-4. Energetic waves and currents can adversely affect site investigations surveys therefore a high level Metocean analysis of the M2 weather buoy in the Irish Sea was undertaken to explore histograms of wave height (indicating wave energy) and wave direction (Figure 2-13). This Metocean dataset covers a time period from October 2001 to January 2021 with data bins every 0.5m for wave height and every 30 degrees for wave direction. The M2 weather buoy was analysed as there is currently no buoys within the Irish Wave Buoy network on the East Coast of Ireland.

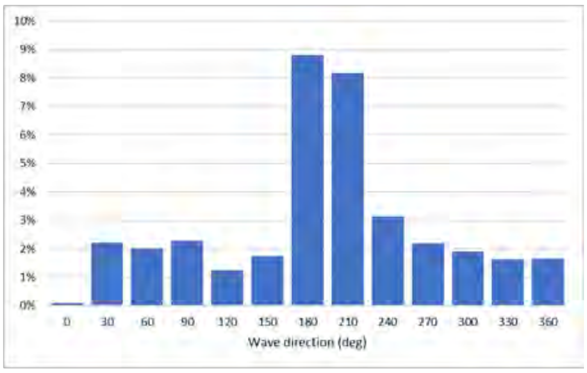
Figure 2-13 indicates that significant waves heights at the M2 wave buoy are typically around 1m, and waves are most likely to be originating from the south (180 degrees) and the south-west (230 degrees). Therefore, any site investigations carried out to the east of the MULA is more likely have its operations hindered, however these wave heights are not substantial.

Table 2-4 M2 Wave Buoy Details

Site	Lat/Long (deg WGS84)	Duration	Frequency	Parameters
Irish Sea Approximately 20 nautical miles (37Km) east of Howth Head	53.480 -5.425	Since 2009	60 Minutes	Air Temperature (C) Relative Humidity (%) Mean Wind Speed (kt) Mean Wind Direction (˚) Maximum Gust (kt) MSL Pressure (hPa) Sea Temperature (C) Significant Wave Period (s) Sig Wave Height (m) Max Wave Height(m) Wave Direction (degrees)

Figure 2-13 Recorded significant wave height and direction at M2 marine data buoy from 2001 to 2024





2.7 Air Quality

2.7.1 Maritime Air Quality

At present in Ireland marine air quality is not monitored, While the MARPOL Convention provides for Emission Control Areas (ECAs) a Sulphur ECA (SECA) and Nitrogen ECA (NECA) limiting certain pollutants from vessels, there are no ECAs in Irish waters (EMSA, 2021).

2.8 Noise & Vibration

Sounds in the ocean originate from natural causes such as earthquakes, rainfall, and animal noises; and anthropogenic activities such as construction, shipping, fishing, seismic survey, research, sonars, and recreation. As sound waves travel through water, they spread, dissipate, and reflect off the sea surface and seabed. The local oceanographic conditions will affect the path of the sound in the water column, how much sound is transmitted, and the levels received by the receptor at distance from the source. Variables such as water depth, source and receiver depths, temperature gradients, salinity, seabed ground conditions and many other factors can affect received levels.

Although some sound sources can be identified, the sources of others cannot, and they are considered part of the background noise. How a receptor is affected by a change in underwater sound is linked to the current exposure levels and associated background noise.

Measurements on anthropogenic sounds were recorded to quantify background noise levels in the UK, as part of the EU Marine Strategy Framework Directive (MSFD) (Merchant et al. 2016). These were taken across locations in the Celtic Sea, southern North Sea (SNS) and northern North Sea (NNS). Recordings were taken at four frequency ranges (63Hz, 125Hz, 250Hz and 500Hz). Noise levels in the Celtic Sea ranged from 99.9dB (500Hz) to 102.9dB re1µPa (250Hz) (RMS1) (Merchant et al. 2016). These levels are lower on average than the NNS and SNS, noting that only one location was recorded in the Celtic Sea in comparison to ten in the NNS (Merchant et al. 2016).

There is only limited information on the current baseline of underwater noise in the Irish Sea. However, the area where the MULA is situated is thought to have a moderate level of background noise due to the vessel densities. A 2014 study mapped the spatio-temporal distribution of underwater noise in Irish waters (Sutton et al., 2014). This report found that noise within the Irish sea was higher than 60 dB ref. 1µPa^2 at the recommended nominal central frequency of 125hz. These were largely due to environmental sources including waves as the primary contributor, anthropogenic sound was also recorded, generally above 100 dB ref. 1µPa^2 at 125hz, which accounted for 2-3% of the sound spectral density (Sutton et al., 2014). These results include considerations for the sediment attenuation and bathymetry, which is relatively shallow and tends to concentrate sound (Sutton et al., 2014).

2.9 Seascape and Landscape

2.9.1 Seascape

The seascape within the study area off the coast of County Dublin is defined by its unique and varied visual qualities, which contribute to the overall maritime aesthetic and sense of place. The key characteristics are as follows:

Open Waters:

- The Irish Sea offers vast expanses of uninterrupted water, creating a sense of openness and natural beauty. This area is largely free from major visual obstructions, allowing for long-distance views.

  - The horizon line is a significant feature, often forming a seamless boundary between sea and sky, enhancing the perception of scale and distance.
- Coastal Features:
  - Cliffs: Prominent coastal cliffs, such as those found at Howth Head and Skerries provide dramatic and rugged natural features that are visible from both land and sea. These cliffs are characterised by their steep, rocky faces and are important landmarks in the coastal seascape.
  - Beaches and Dunes: Sandy beaches and dune systems, like those at Portmarnock and Rush north and south beaches, contribute to the natural beauty and recreational value of the coast. These features are dynamic, changing with tides and weather conditions, and provide a contrast to the open waters.
  - Headlands and Bays: Coastal headlands, including Howth Head and Bray Head, and bays such as Dublin Bay, create distinctive visual markers and focal points in the seascape. These features are important for navigation and offer picturesque views.
- Maritime Activity:
  - Shipping Routes: Regular commercial shipping routes pass through the Irish Sea, with vessels often visible from the coast. These include large cargo ships, ferries, and occasional cruise liners, which can temporarily dominate the seascape.
  - Fishing Activities: Fishing vessels, both large trawlers and smaller boats, are a common sight. Their presence reflects the traditional and economic importance of fishing in the region.
  - Recreational Boating: The area is popular for recreational boating, including sailing, kayaking, and jet skiing, especially during the summer months. Recreational vessels add to the diversity of maritime activity and are an integral part of the coastal seascape.

2.9.2 Landscape

The coastal landscape of County Dublin features a blend of natural and developed elements, each contributing to the region’s visual and cultural identity:

- Natural Landscapes:
  - Coastal Cliffs: The cliffs, such as those at Howth Head, are significant natural features, providing habitats for wildlife and offering dramatic viewpoints. The cliffs are often covered with vegetation, including grasses and shrubs, which add texture and colour.
  - Beaches and Dunes: Sandy beaches like Portmarnock Beach and Bull Island are key natural features. These areas are valued for their recreational use and ecological importance, hosting diverse plant and animal species.
  - Estuaries and Wetlands: Areas such as the North Bull Island are important wetlands that support rich biodiversity. These landscapes are characterized by tidal flats, salt marshes, and reed beds, contributing to the visual and ecological diversity of the coast.
- Developed Areas:
  - Urban Zones: Dublin city and its suburbs extend along the coast, contributing to a more developed and urbanized landscape. Key urban features include residential areas, commercial centres, and infrastructure such as roads and railways.
  - Port Facilities: Dublin Port is a major feature of the coastal landscape, with extensive docklands, warehouses, cranes, and shipping activity. The port is a vital economic hub and a prominent visual element in the landscape.

  - Recreational Areas: Promenades, parks, and golf courses along the coast offer open spaces for leisure and recreation, contributing to the amenity value of the landscape.
- Protected Areas:
  - Natural Heritage Sites: Sites such as the North Bull Island Special Protection Area (SPA) and Howth Head Special Area of Conservation (SAC) are designated for their ecological and geological significance. These areas are managed to preserve their natural features and biodiversity.
  - Cultural Heritage Sites: Coastal areas with historical and cultural significance, including ancient monuments and protected structures, add to the landscape's cultural depth. Examples include Martello towers and historic lighthouses.

The interplay between these natural and developed elements creates a diverse and dynamic coastal landscape. The visual experience is shaped by the changing light, weather conditions, and the interaction between land and sea, making it a unique and valued environment.

2.10 Traffic & Transport (including navigation)

The following sections provide an overview of the shipping activities and navigational features within or near the MULA.

2.10.1.1 Navigational features

The following points summarise the main navigational features identified in proximity to the MULA:

- The nearest commercial ports to the MULA are Dublin Port (approx. 41km), and Howth Harbour (approx. 33km)
- The closest large ferry port is Dublin Port, Co. Dublin which is located approximately 41km west of MULA. Additionally, there are smaller ferry ports located approximately 82km from the FLAA which is Strangford to Portaferry, in Northern Ireland.
- There are various fishing ports located outside of the MULA, Balbriggan is located 33km away from the western boundary of the MULA. Skerries and Howth Harbour, Co. Dublin are located approximately 30km and 33km from the MULA.
- There are three Royal National Lifeboat Institution (RNLI) Lifeboat stations located in the vicinity of the MULA. These are situated at the fisheries ports Skerries and Howth Harbour with the closest situated at Skerries (30km from MULA). There is also station located in, Dun Laoghaire, Co. Dublin (approx. 40km from MULA)).
- Ireland's Marine Atlas displays the nearest Aid to Navigation (AtoN) is 1.8km north of the MULA and there is a metocean buoy licence issued by the Commissioners of Irish Lights for the M2 weather buoy located as approximately 5.5 km south of the southern boundary of the MULA. .

2.10.1.2 Marine traffic analysis

2021 European Marine Observation Data Network (EMODNet) Vessel density data (all ship types) ranges from <0.05 to 10-29 vessel hours per month (per km^2) within the MULA. In the summer months of June, July, August and September, there is increased vessel density in the MULA of 50-100 hours per month (per km^2). Vessel density Automatic Identification System (AIS) data is mandatory for vessels larger than 12m in length, therefore, certain smaller vessels (e.g., fishermen and pleasure craft) are not likely to be recorded.

2.10.1.3 Fishing

Marine Institute Data highlights fishing vessels are active across the MULA. Ireland's Marine Atlas (http://atlas.marine.ie/) identifies Irish bottom trawl and bottom otter trawl efforts as being the most prevalent in the MULA. Concentrations of pelagic fishing nearshore is distributed across the site, with areas of high-density fishing effort close to Howth Harbour and Malahide Marine.

2.10.1.4 Cargo

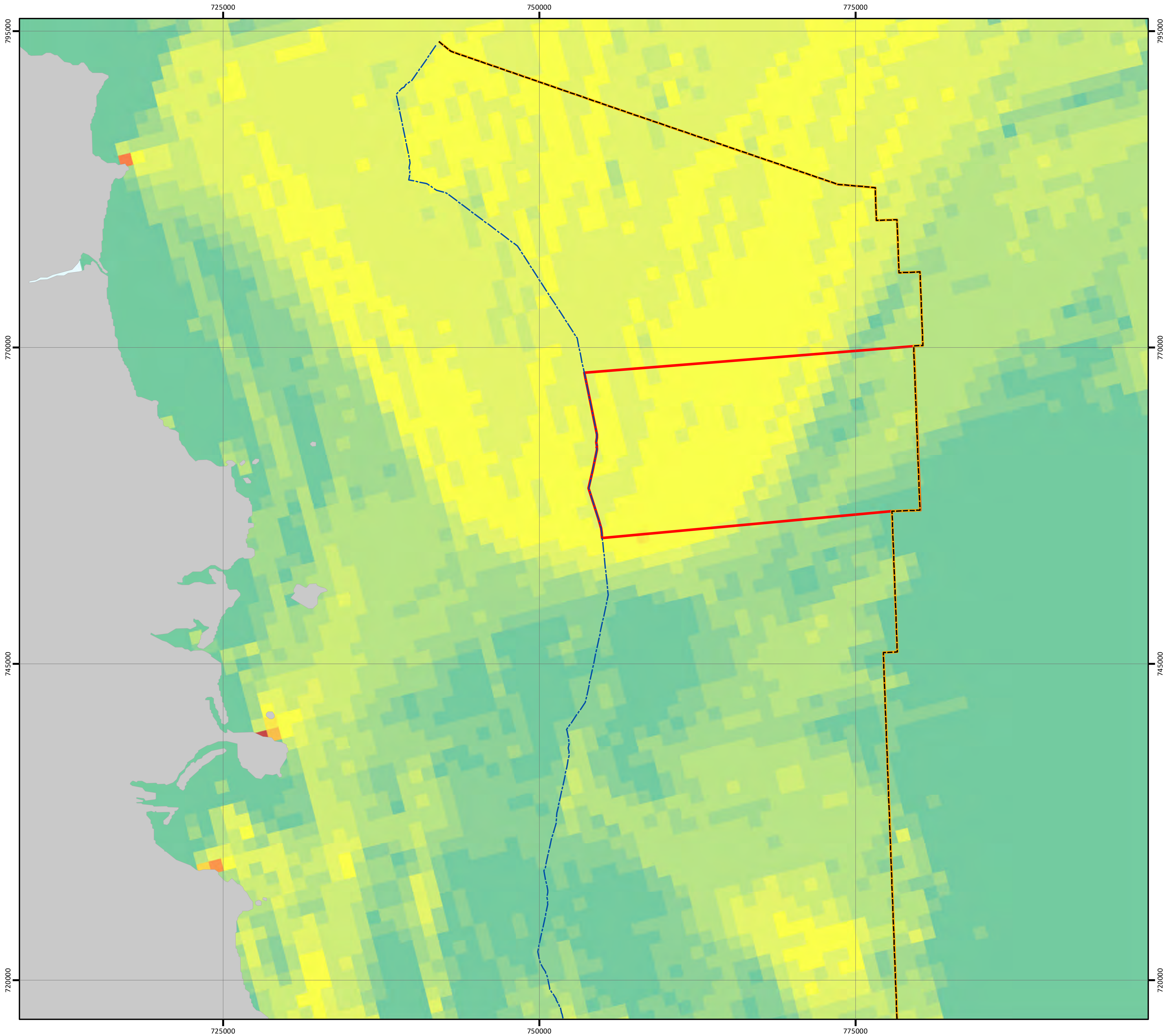
AIS data presented in the Marine Atlas shows that cargo vessel density in the MULA is generally low throughout the MULA, there appears to be a shipping lane running north-south through the centre of the MULA. Which has a density of 2-10 hours per km^2. The Cargo vessel density appears to stay very similar throughout the entire year.

2.10.1.5 Recreational boating

Pleasure craft activity within MULA is generally limited to within 10km of the shoreline with recorded low to medium intensity of recreational boating as recorded by Royal Yachting Association (RYA), as shown in Figure 2-17 (Drawing Reference: P2578M-AIS-005).

2.10.1.6 Ferry routes

There is four Ferry Routes located near the MULA these are Dublin-Liverpool, Dublin-Holyhead and Dublin-Douglas and Dublin-Cherbourg ferry routes are located at Dublin Port. The route that transits closest the MULA is approximately 16km south of the southern boundary of the MULA southern boundary , this is depicted by the high vessel tracks transiting from Dublin Port. The Marine Atlas does not display any national ferry routes within the area.



MARITIME USAGE LICENCE MAP 2

AIS VESSEL DENSITY
Average Monthly Vessel Hours (2022)
All Vessels

Drawing No: P2578M-AIS-001	A

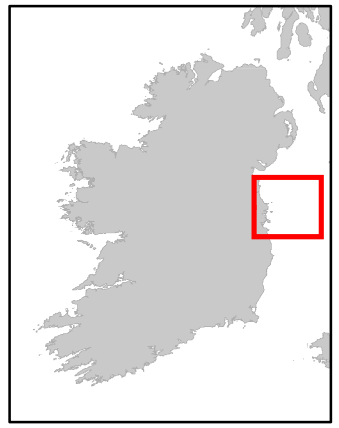
Legend

- Maritime Usage Area
- EEZ Boundary
- 12 NM Territorial Sea Limit

2022 Vessel Density

Vessel Hours (per km²)

- < 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 20
- 20 - 50
- 100 - 200
- 200 - 500
- > 500



NOTE: Not to be used for Navigation

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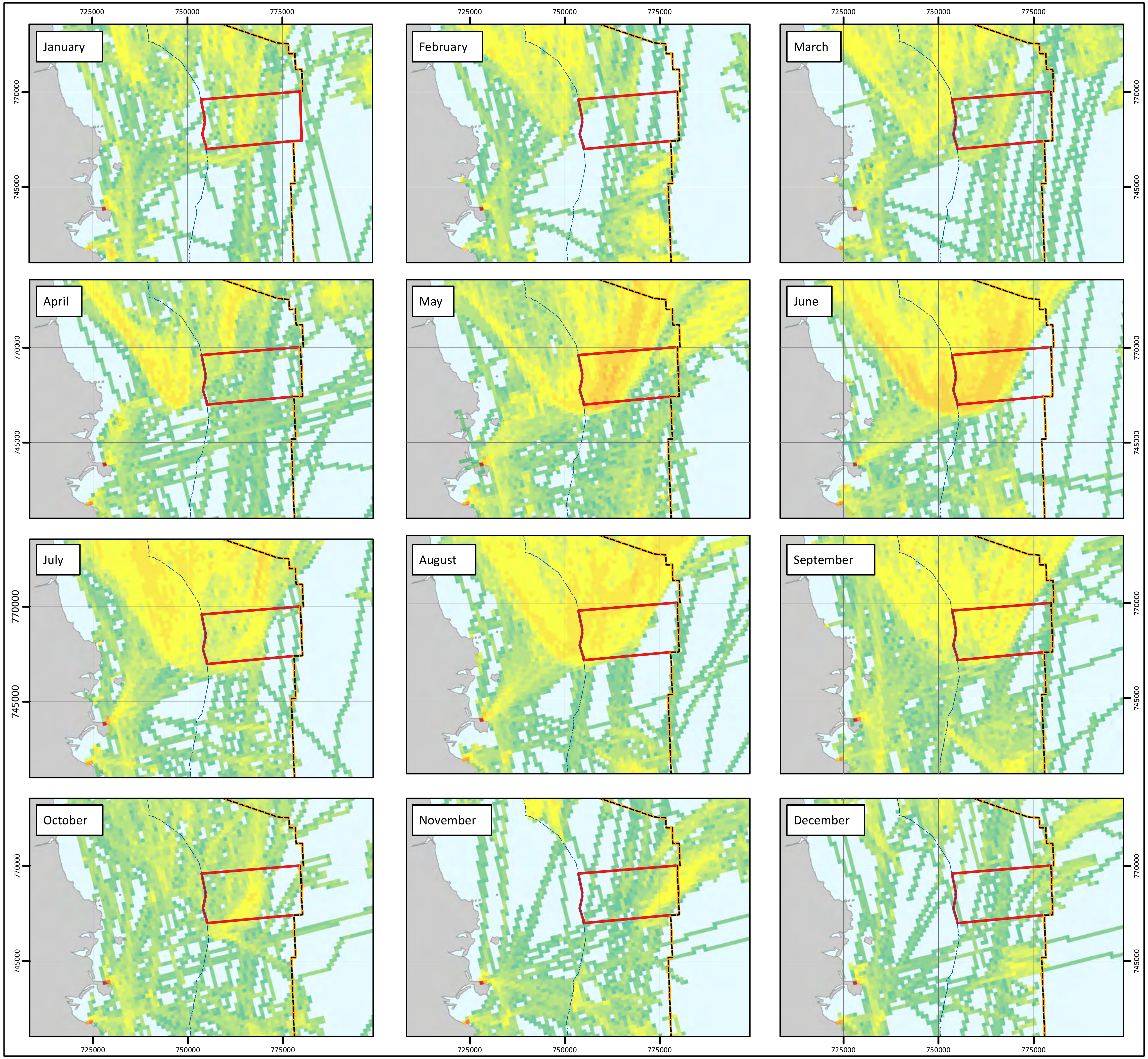
Created By	[redacted]
Reviewed By	[redacted]
Approved By	[redacted]

0 2 4 6 8 km

mation has been derived from data that is made available under the European Marine Observation Data Network (EMODnet) Human Activites project (https://emodnet.ec.europa.eu/en/about_emodnet), obtained by Collecte Localisation Satellites (CLS) and financed by the European Union under Regulation (EU) No and Fisheries Fund.; © ESRI; © The GEBCO Digital Atlas published by the British Oceanographic Data Centre on behalf of IOC and IHO, 2003



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

AIS VESSEL DENSITY
Monthtly Vessel Densities (2022)
Fishing Vessels

Drawing No: P2578M-AIS-003	A

Legend

- Maritime Usage Area

Administrative Boundaries

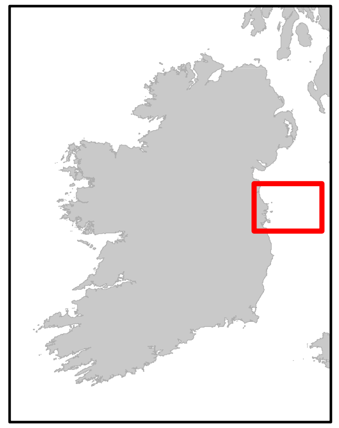
- 12nm Territorial Sea Limit
- EEZ Boundary

Vessel Density

Vessel Hours (per km²)

- < 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10- 20
- 20 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- > 500

N W E S



NOTE: Not to be used for Navigation

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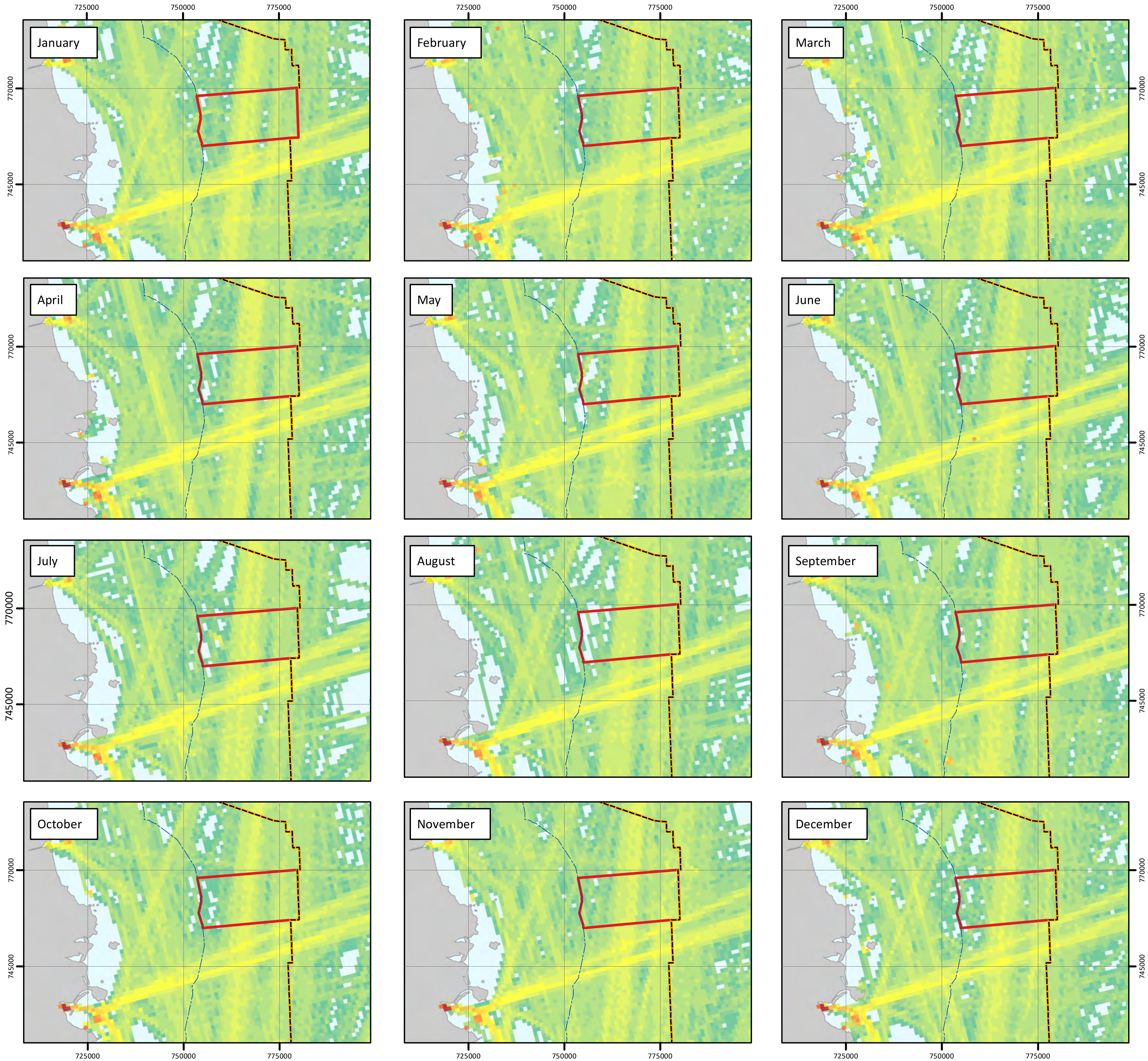
0 9 18 27 36 km



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

AIS VESSEL DENSITY
Monthtly Vessel Densities (2022)
Cargo Vessels

Drawing No: P2578M-AIS-004 | **A**

Legend

Maritime Usage Area

Administrative Boundaries

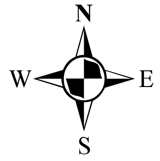
12nm Territorial Sea Limit

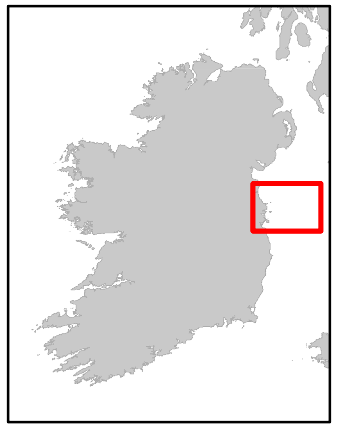
EEZ Boundary

Vessel Density

Vessel Hours (per km²)

- < 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10- 20
- 20 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- > 500





NOTE: Not to be used for Navigation

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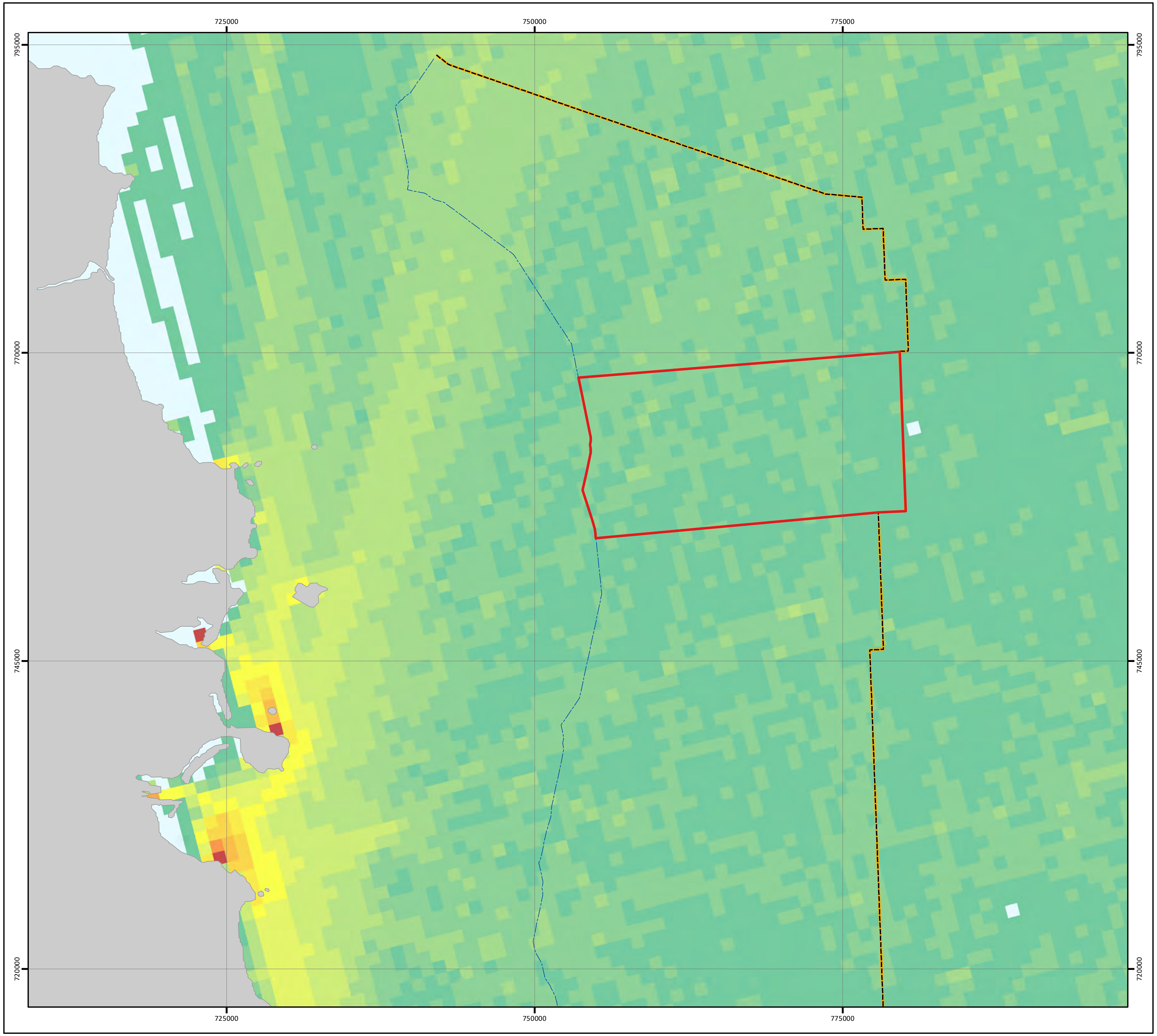
0 10 20 30 40 km



MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE
AIS VESSEL DENSITY
EMODnet Human Activities
Sailing AIS Density (2022)

Drawing No: P2578M-AIS-005	A

Legend

Maritime Usage Area

Administrative Boundaries

12nm Territorial Sea Limit

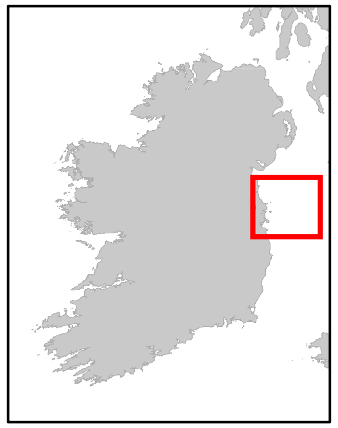
EEZ Boundary

AIS Intensity (Sailing)

Vessel Hours (per km²)

- < 0.05
- 0.05 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1
- 1 - 2
- 2 - 5
- 5 - 10
- 10- 20
- 20 - 50
- 50 - 100
- 100 - 200
- 200 - 500
- > 500

N W E S



NOTE: Not to be used for Navigation

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Approved By	

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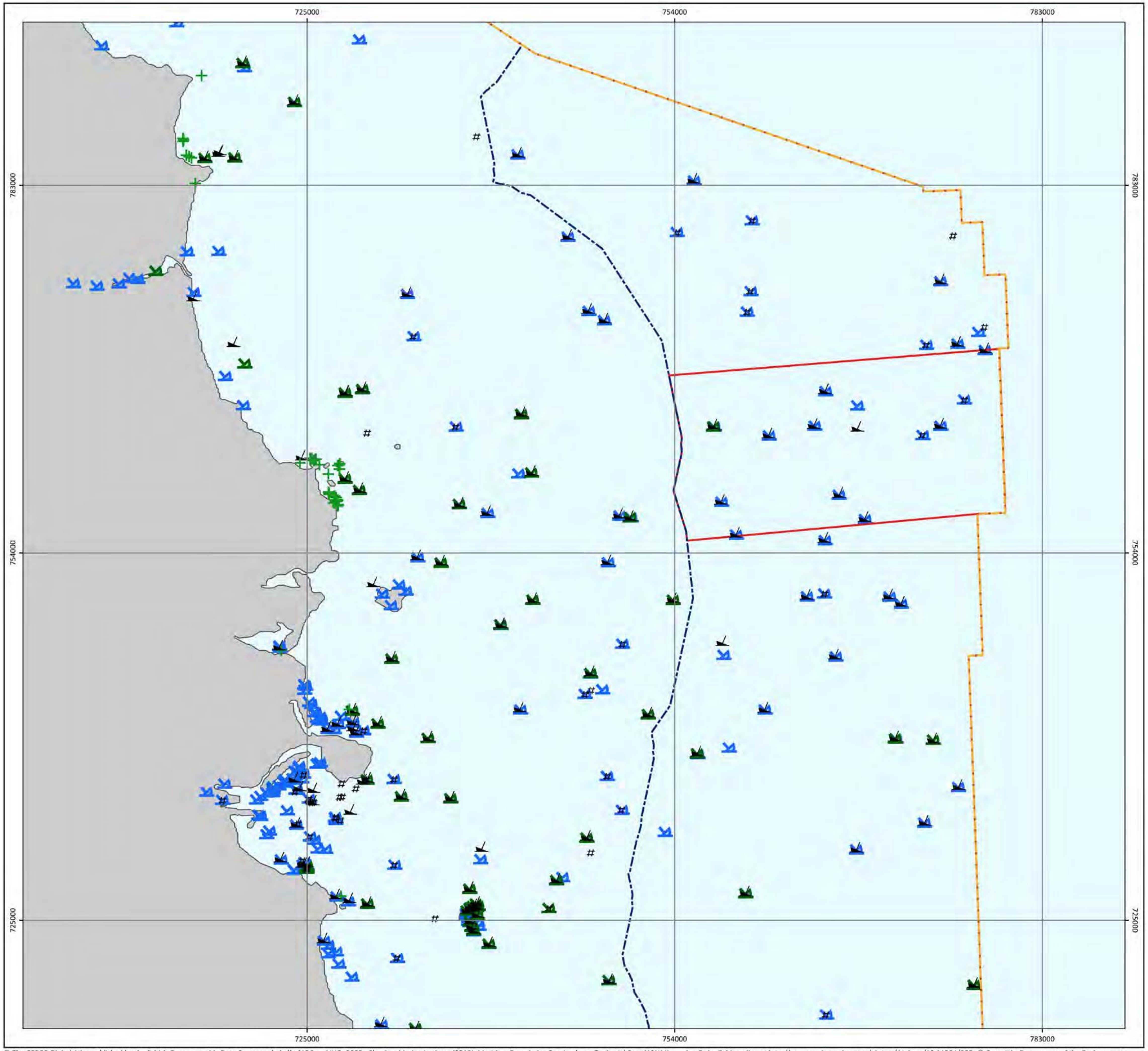
0 2 4 6 8 km

tal Atlas published by the British Oceanographic Data Centre on behalf of IOC and IHO, 2003; ©ESRI; Vessel density information has been derived from data that is made available under the European Marine Observation Data Network (EMODnet) Human Activites project
S) and financed by the European Union under Regulation (EU) No 508/2014 of the European Parliament and of the Council of 15 May 2014 on the European Maritime and Fisheries Fund.

2.11 Cultural Heritage (including underwater archaeology)

Ireland's National Monument Services (NMS) database identifies 13 wrecks within the MULA. Wrecks are protected under the National Monuments Act 1930-2014. The named wrecks, identified on the National Monuments Service Wreck Viewer mapping tool, which are within the MULA are identified in Figure 2-18 (Drawing Reference: P2578M-ARCH-001).

As well as wrecks, there are 50 submerged archaeological sites around the coast of Ireland (Westley and Woodman, 2020). A database of submerged archaeological sites has been created throughout Ireland, SPLASHCOS, including all known examples of subtidal or intertidal assemblages with prehistoric material (Bailey and Sakellariou 2012). There are no submerged sites within the MULA with the nearest sites located in the River Liffey in Dublin city and a second site located off the coast of Dun Laoghaire, Co. Dublin.



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

ARCHAEOLOGY

Wrecks

Drawing No: P2578M-ARCH-001	A

Legend

N

- Maritime Usage Area
- Obstruction
- Underwater rock
- Wreck
- Wreck (INFOMAR)
- Wreck (NMS)

Administrative Boundary

- 12nm Territorial Sea Limit
- EEZ

NOT TO BE USED FOR NAVIGATION

Date	2024-06-26 15:37:59
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Created By	[redacted]
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0 3 6 9 12 km

2.12 Population & Human Health

This is a broad factor and involves assessing the existence, activities and health of people, usually considering people as groups or 'populations.

2.12.1 Commercial Fishing

The seas around Ireland are among the most productive and biologically sensitive areas (BSA) in European Union (EU) waters. In 2010, an estimated 1.3 million tonnes of fish were taken by the fishing fleets of EU member states from the waters around Ireland (ICES Sub-areas VI & VII) (Marine Institute 2022).

There are under 2000 registered fishing vessels operating around the Irish coasts, the majority of which are under 12m (Perry, Jackson, Burmanje, and Rihan, 2023).). The Irish fishing fleet is engaged in a variety of fisheries and targets a wide range of commercial species. Of the fisheries active, the most important are for demersal and shellfish. Demersal target species include: cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), ling (*Molva molva*), monkfish species (*Lophius*), plaice (*Pleuronectes platessa*), ray and skate (*Elasmobranchii*) and sole (*Solea solea*); whilst shellfish species include lobster (*Nephropidae*); crayfish (*Palinuridae*); spider (*Macrocheira kaempferi*), brown (*Cancer pagurus*), green (*Carcinus maenasl*) and velvet (*Necora puber*) crabs; scallops (*Pectinidae*); surf (*Spisula solidissima*) and razor clams (*Siliqua patula*); periwinkles (*Littorina littorea*); and whelks (*Buccinidae*) (DCCAE 2015). The leading fishing ports in Ireland are Kilmore Quay (approx. 143km from MULA), Dunmore East (approx. 153km from MULA), Castletownbere (approx. 324km from MULA), Dingle (approx. 315km from MULA), Killybegs (approx. 183km from MULA) but fishing vessels also land into other small ports around the coast. In accordance with annual reporting data for 2022 from the Sea Fisheries Protection Authority (SFPA), Killybegs reported the largest landings that year with a tonnage of 187,012 (worth €136,413,476) (SFPA, 2022). The two ports from the list of leading ports in Ireland that are closest to the MULA, Dunmore East and Howth, reported landings of 6,329 tonnes (valued at €17,461,078), the fifth highest in the country, and 3,354 tonnes (valued at €14,336,138), making Dunmore East the fourth highest and Howth the sixth highest landing ports in Ireland for that year (SFPA, 2022).

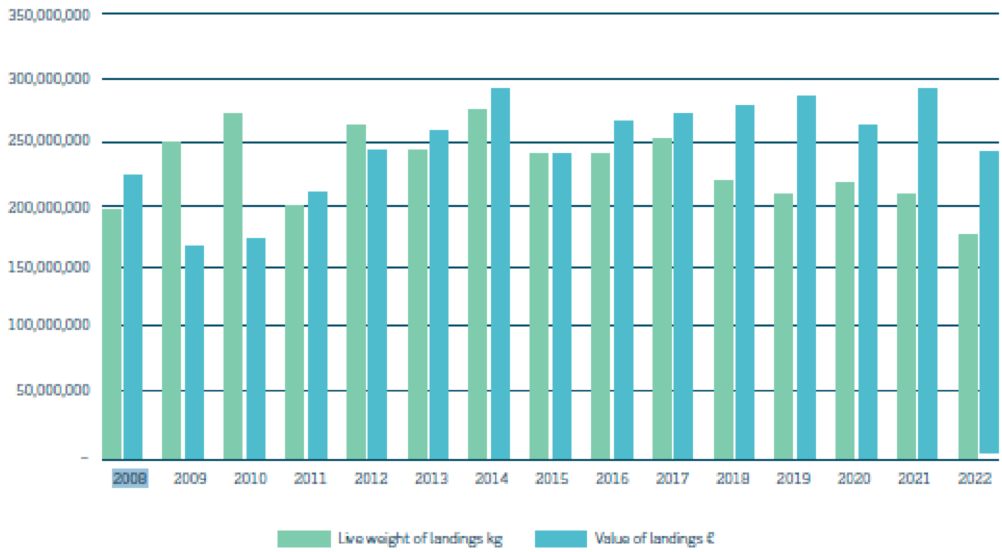
The MULA is located within the International Council for the Exploration of the Sea (ICES) Celtic Sea Ecoregion, division 7.a Irish Sea (ICES, 2022). Commercial species frequently caught in this division are herring (*Clupea harengus*), Atlantic mackerel (*Scomber scombrus*), horse mackerel (*Trachurus trachurus*), whiting (*Merlangius merlangus*), haddock (*Melanogrammus aeglefinus*), seabass (*Dicentrarchus labrax*), nephrops (*Nephrops norvegicus*), plaice, sole, cod skates and rays

An Bord Iascaigh Mhara (BIM) produce the Annual Fisheries Report which the latest report gives insight into Irelands fisheries industry in 2023. An approximate 1,351 Irish fishing vessels were operational, with a combined capacity of 63,652 Gross tonnage (GT) and 184,473 kilowatt (kW) Most of these vessels—about 81%—operate in inshore waters and are under 12m in length (Perry, Jackson, Burmanje, and Rihan, 2023).

With the exception of *Nephrops* and wild blue mussel (*Mytilus*) seed, which is re-laid for on-growing, annual landings of crustaceans and bivalves ranged from a high of 29,000 tonnes in 2004 to a low of 13,790 in 2009.

In 2021, there was a 5% decrease in landings by weight compared to 2020, which amounted to 207,400 tonnes, with a corresponding increase in value by 11% compared to 2019, totalling €294 million. Provisional data for 2022 suggests a year-on-year decline of 17% in landing weight and a 20% decrease in value, attributed to a 17% reduction in fishing days.(Figure 2-19) (Perry, Jackson, Burmanje, and Rihan, 2023).

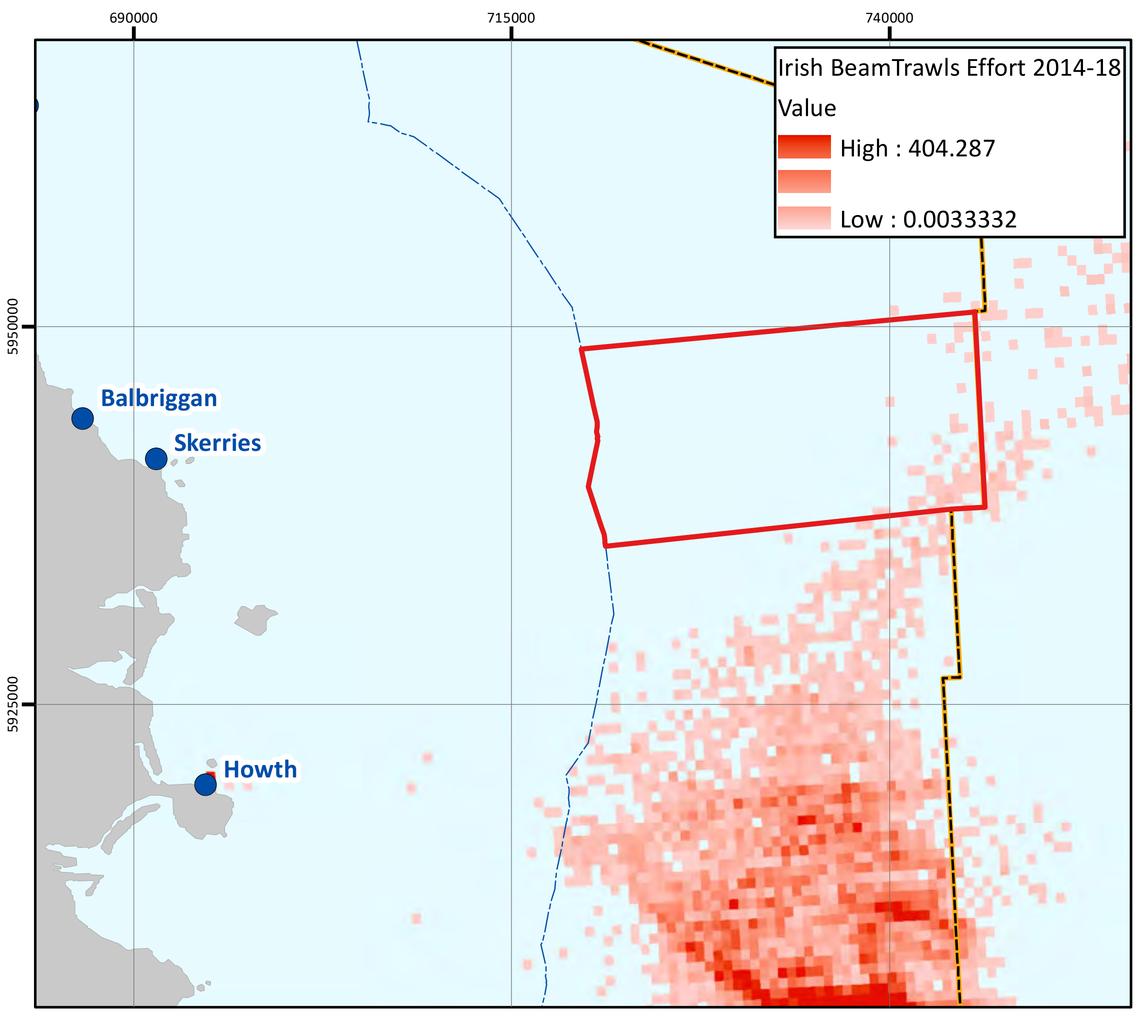
Figure 2-19 Trends in landings by weight and value: 2008-2022* (*2022 data is provisional).

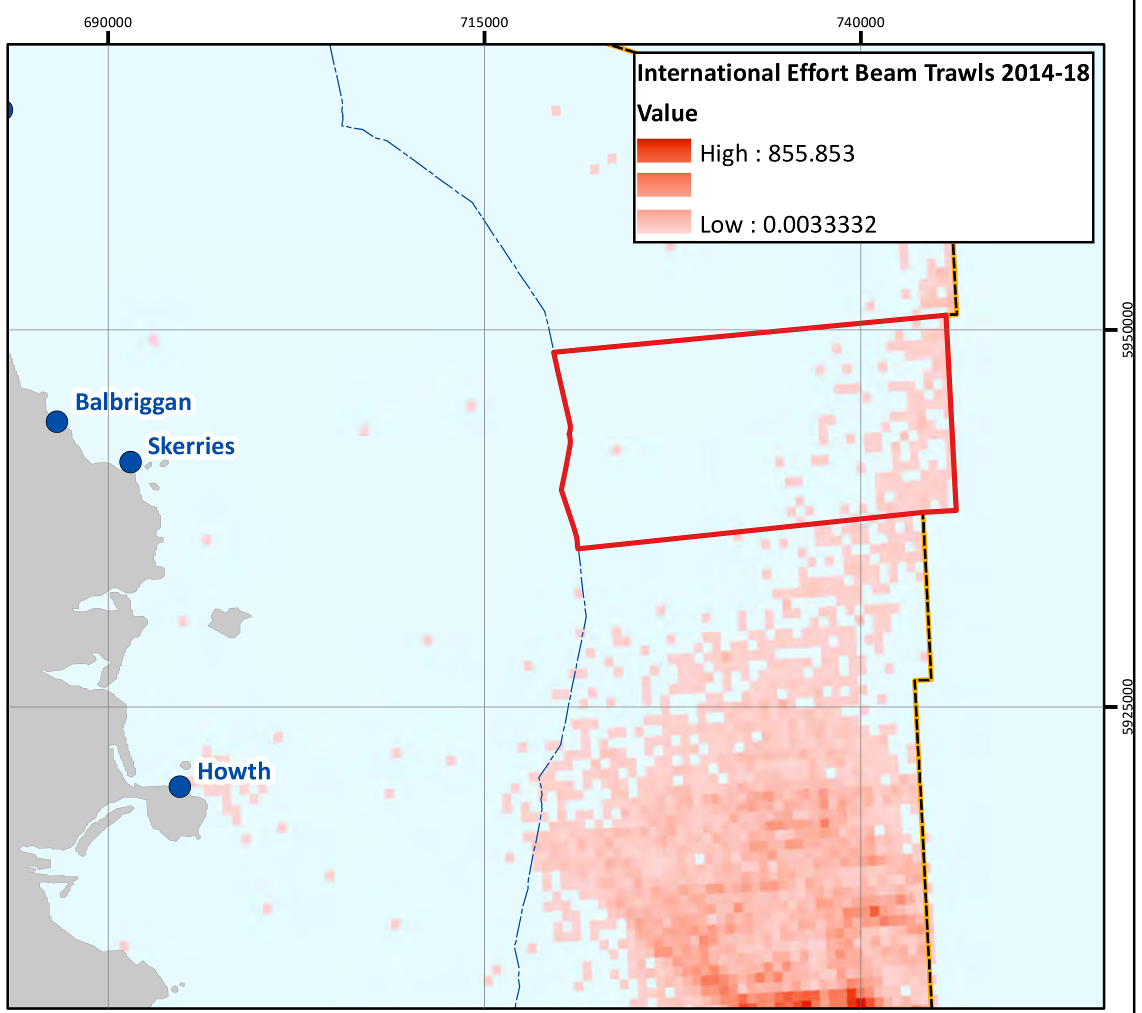


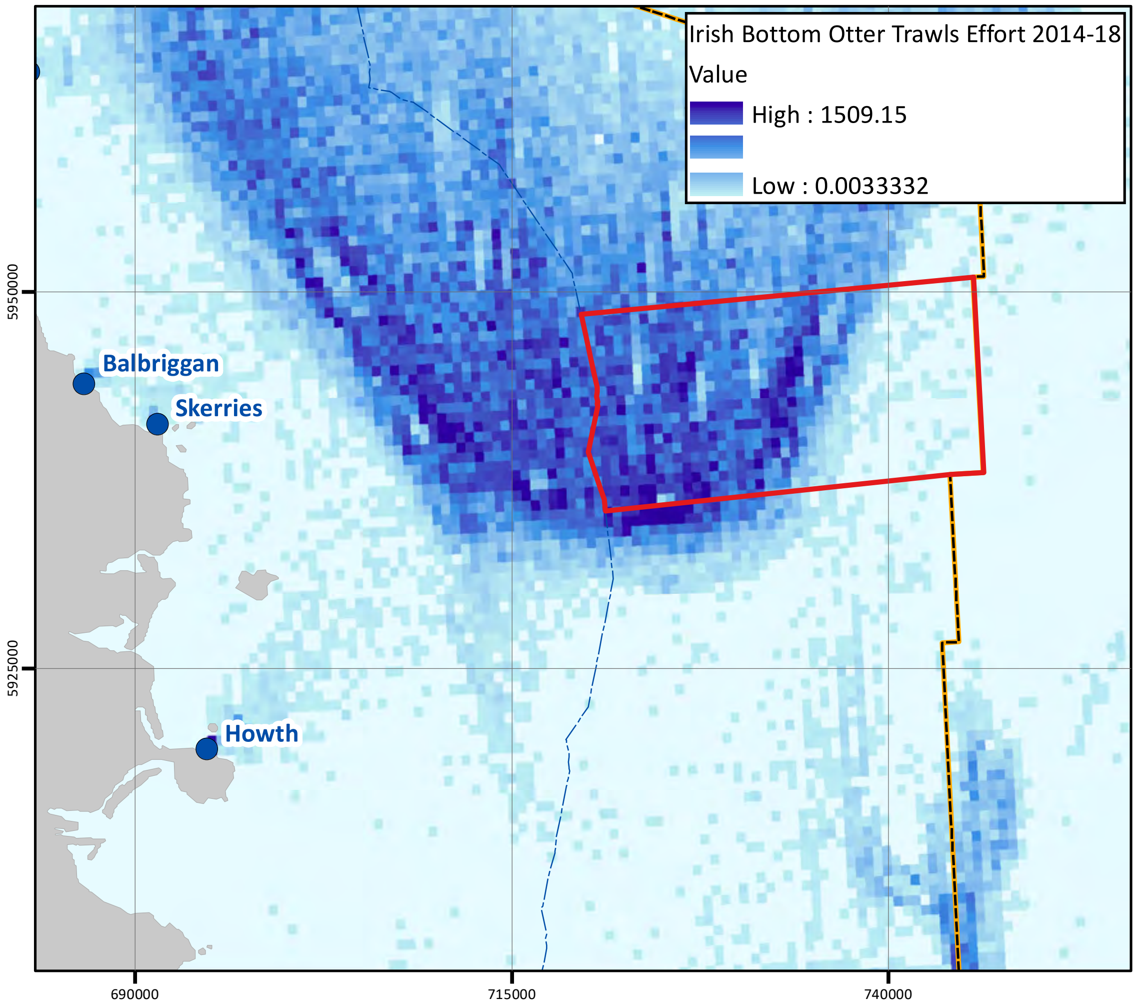
Data source: Landings by weight provided by Sea Fisheries Protection Authority (SFPA). Landings by value estimated by BIM.

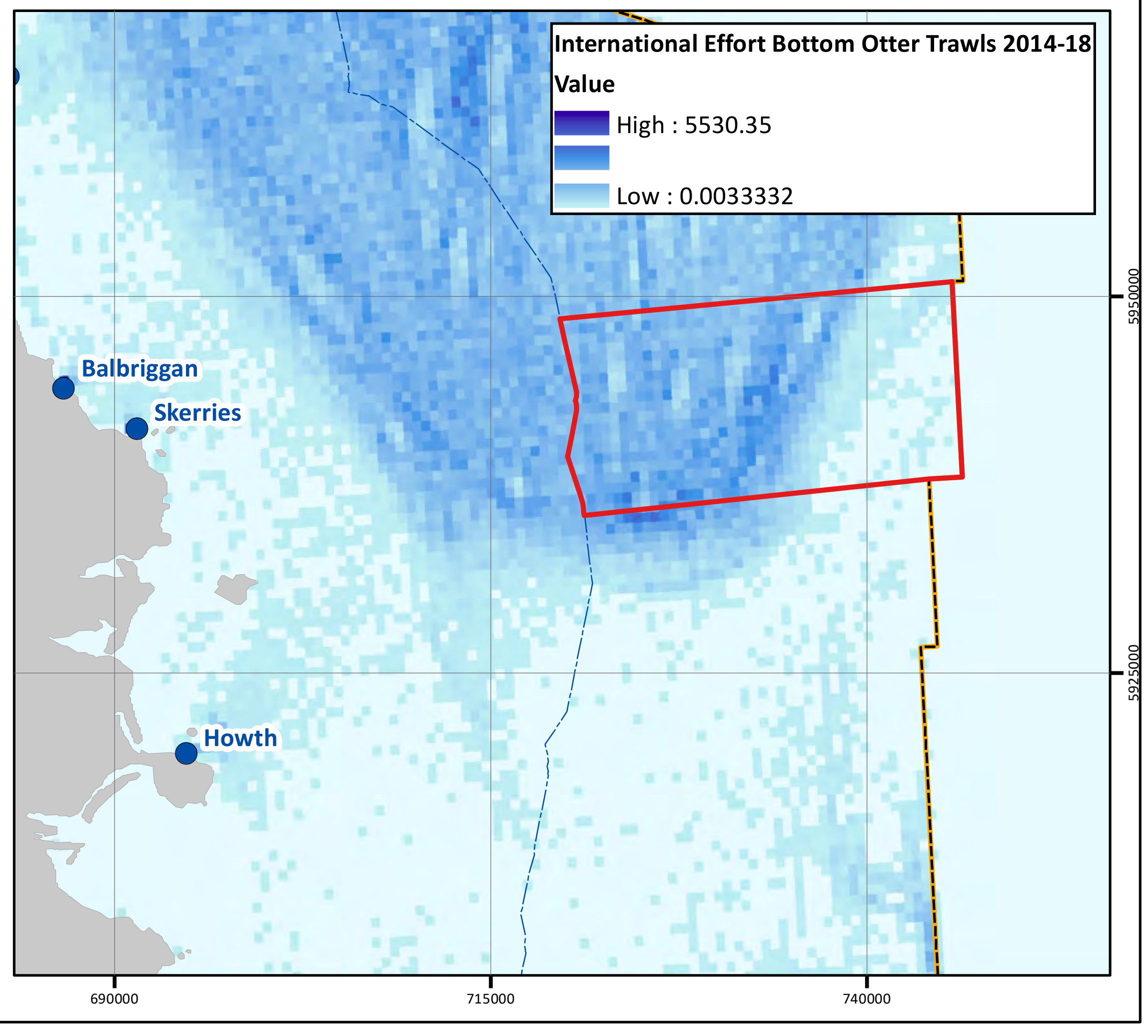
The "Atlas of Commercial Fisheries Around Ireland" uses Vessel Monitoring Systems (VMS), logbooks and the EU fleet register to map fishing effort in hours by gear and country, Figures 2-20 to 2-23 (Drawing Reference: P2578-FISH-003 to 006), it should be noted that these maps represent fishing vessels greater than 12m. The most recent edition (3rd edition) published in 2019, encompasses fishing activity from 2014 to 2018.

Since 1990, the Marine Institute has undertaken groundfish surveys in Ireland to evaluate the distribution and abundance of fish. The Irish Groundfish Survey (IGFS) is conducted every year between October and December, with the latest published data from 2019 (Marine Institute Ireland, 2019). The highest biomass of fish in 2019 was observed in the Celtic Sea Basin area, which is consistent with the high fishing effort observed in the Atlas of Commercial Fisheries Around Ireland (Marine Institute Ireland, 2019).









MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE
FISH & FISHING ACTIVITY
Fishing Effort by Gear Type
Sheet 1 of 4

Drawing No: P2578M-FISH-004 | **A**

Legend

Maritime Usage Area

Fisheries Port and Landing Type

Demersal Shellfish

Administrative Boundaries

12nm Territorial Sea Limit

EEZ Boundary

N W E S

Effort for offshore fisheries is based on three data sources:

1. Vessel Monitoring Systems (VMS):
VMS transmit the geographical position and speed of fishing vessels at intervals of two hours or less (Commission Regulation (EC) No. 2244/2003) VMS data for the most recent five years (2014-2018) were used. VMS data were supplied to the Marine Institute by the Irish Naval Service. The data are available for all EU vessels of 12m and larger, operating inside the Irish EEZ; outside this zone only Irish VMS data are routinely available.
VMS do not record whether a vessel is fishing, steaming or inactive. Vessels were assumed to be fishing if their speed fell within a certain range (depending on the fishing gear used).

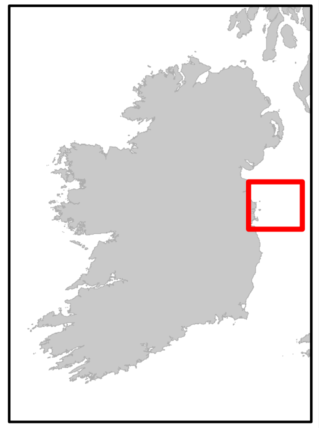
2. Logbooks:
Logbook data are collected by the Sea-Fisheries Protection Authority and supplied to the Marine Institute by the Department of Agriculture, Food & the Marine. Logbook data are generally not available for non-Irish vessels. VMS data of Irish vessels were linked to logbook data to obtain the fishing gear used and the landings for each day the vessel was fishing.

3. EU Fleet Register:
For non-Irish vessels, gear information was obtained from the EU fleet register (http://ec.europa.eu/fisheries/fleet/index.cfm). For vessels for which the gear was not known from the logbooks, the main gear type listed in the EU fleet register was used. Note that if vessels use more than one gear, it is possible that the gear type assigned to them was not the one that was actually used.

VMS data were analysed using the approach described by Gerritsen and Lordan (IJMS 68(1), 2011). This approach assigns effort and landings values to each of the VMS data points. The effort of a VMS data point is defined as the time interval since the previous data point. Next the data are filtered for fishing activity using speed criteria. Landings of each vessel were then assigned to VMS fishing positions on a daily basis. The last step is aggregating the landings or effort data to a spatial grid. The data were standardised by dividing by the surface area of the grid cell. This way the data can be expressed as fishing hours per km2 or as landings per km2.

VMS data were supplied to the Marine Institute by the Irish Naval Service. Logbook data are collected by the Sea-Fisheries Protection Authority and supplied to the Marine Institute by the Department of Agriculture, Food & the Marine. The EU fleet register is publicly available (http://ec.europa.eu/fisheries/fleet/index.cfm).

For futher details please visit https://data.gov.ie/dataset /commercial-fishing-intensity -by-fishing-gear-and-fishing-time



NOTE: Not to be used for Navigation

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Created By	[redacted]
Reviewed By	
Approved By	

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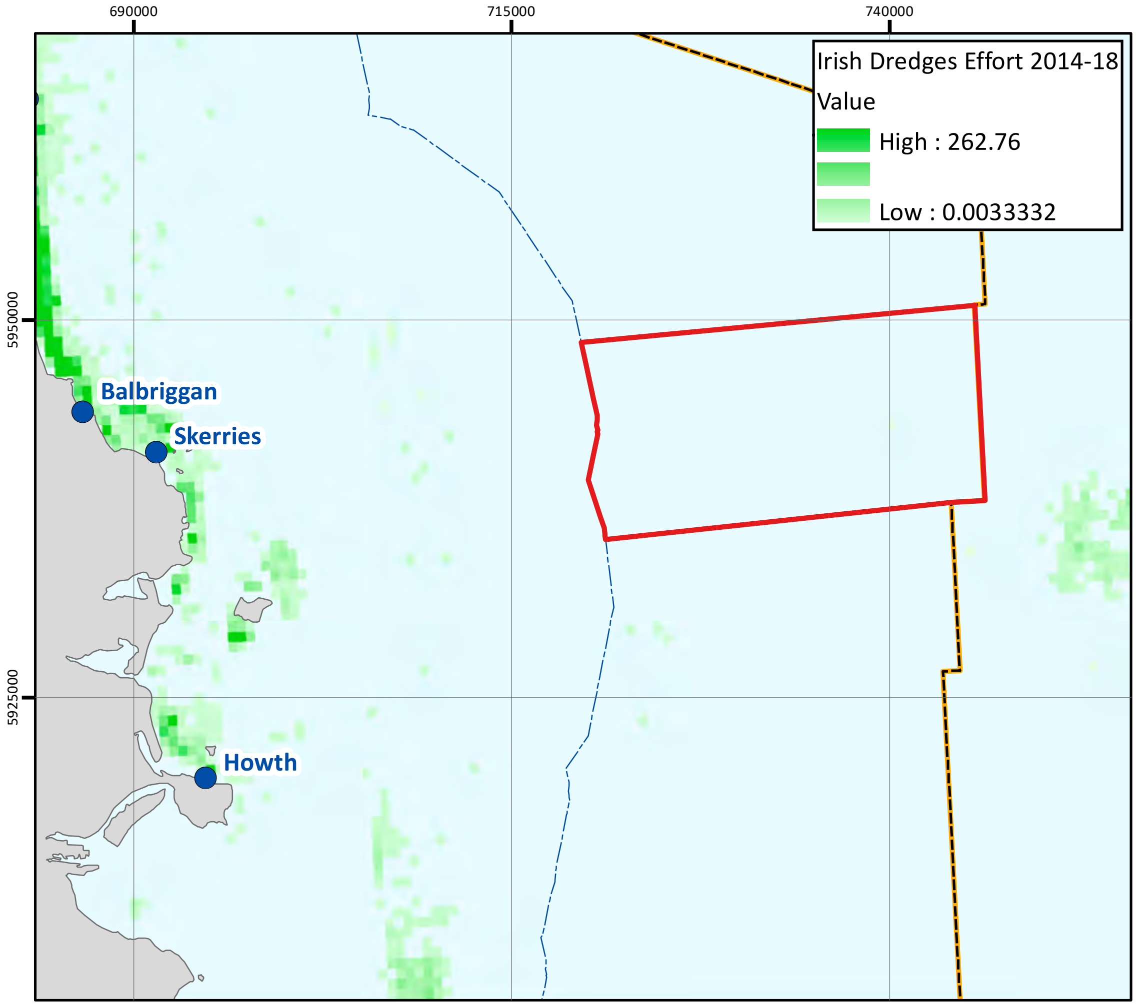
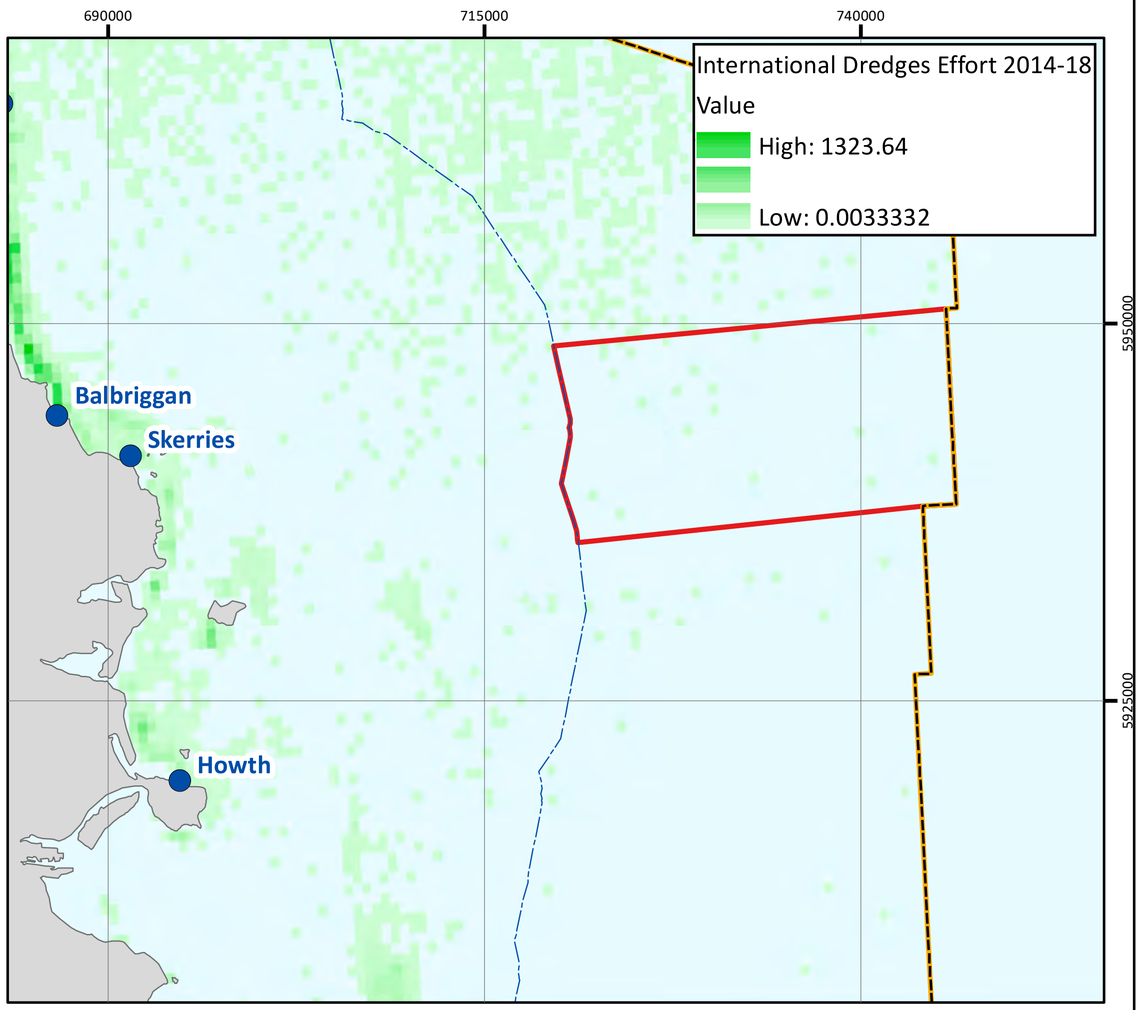
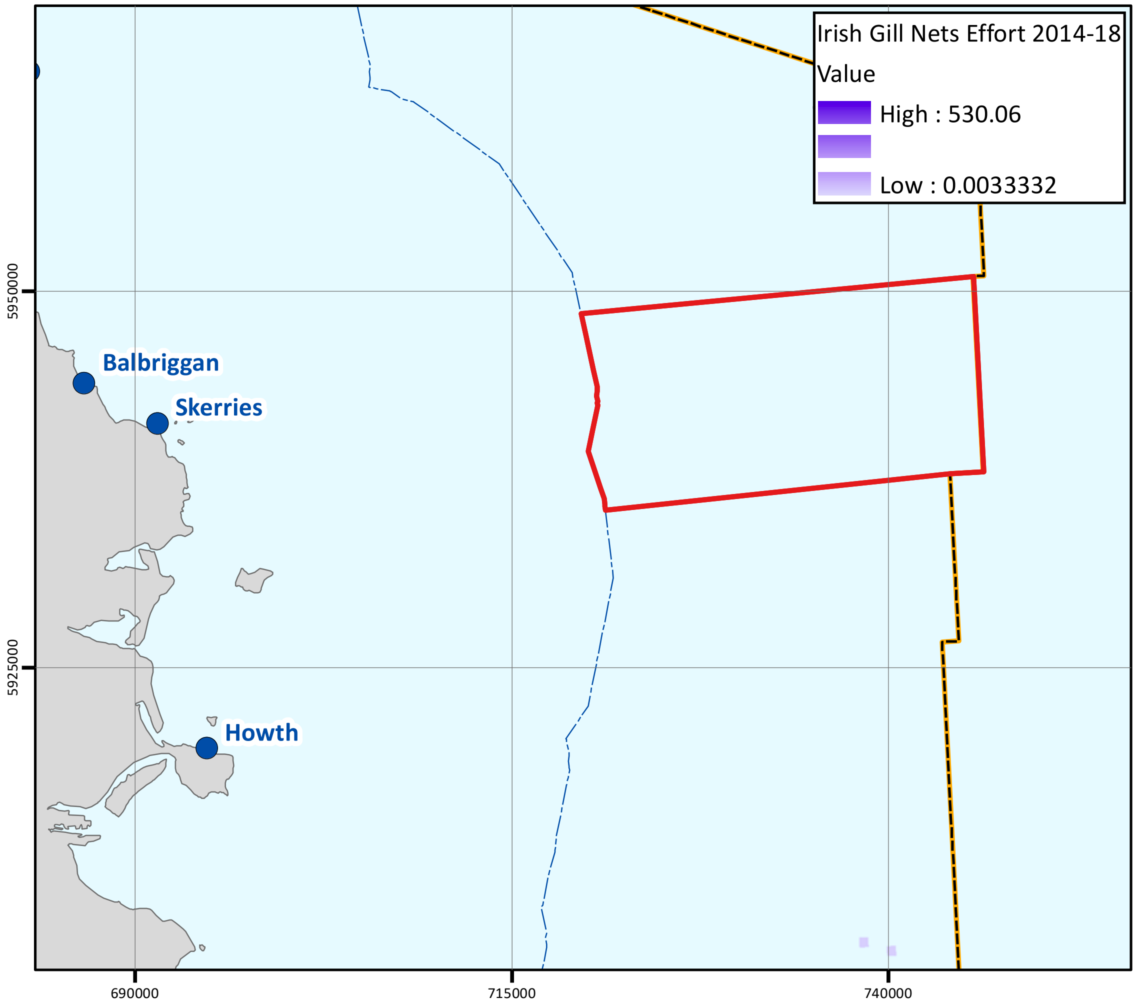
MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

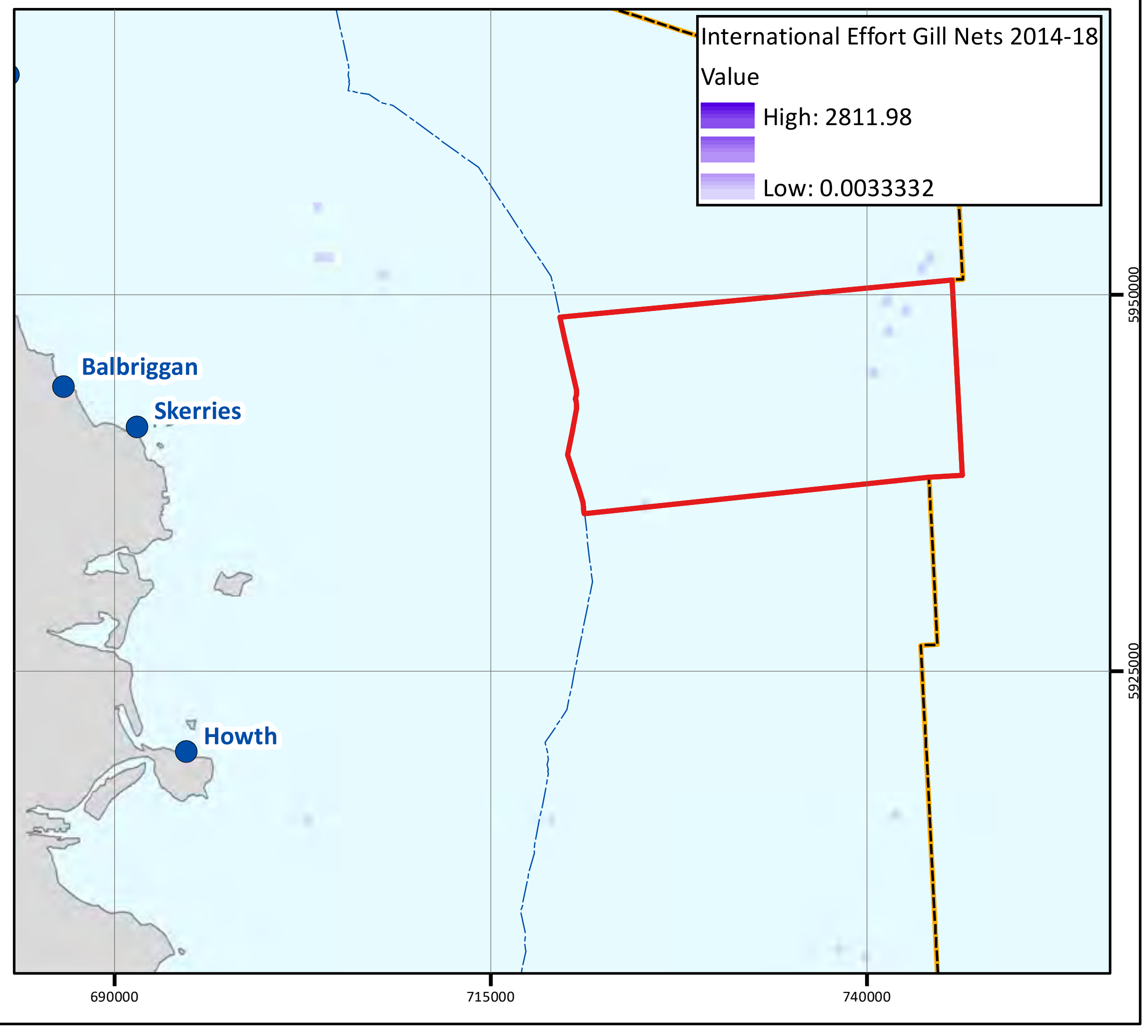
FISH & FISHING ACTIVITY
Fishing Effort by Gear Type
Sheet 2 of 4

Drawing No: P2578M-FISH-005 | **A**









Legend

Maritime Usage Area

Fisheries Port and Landing Type

Demersal Shellfish

Administrative Boundaries

12nm Territorial Sea Limit

EEZ Boundary

N W E S

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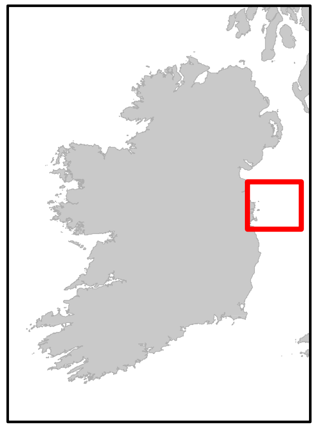

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Created By	[redacted]
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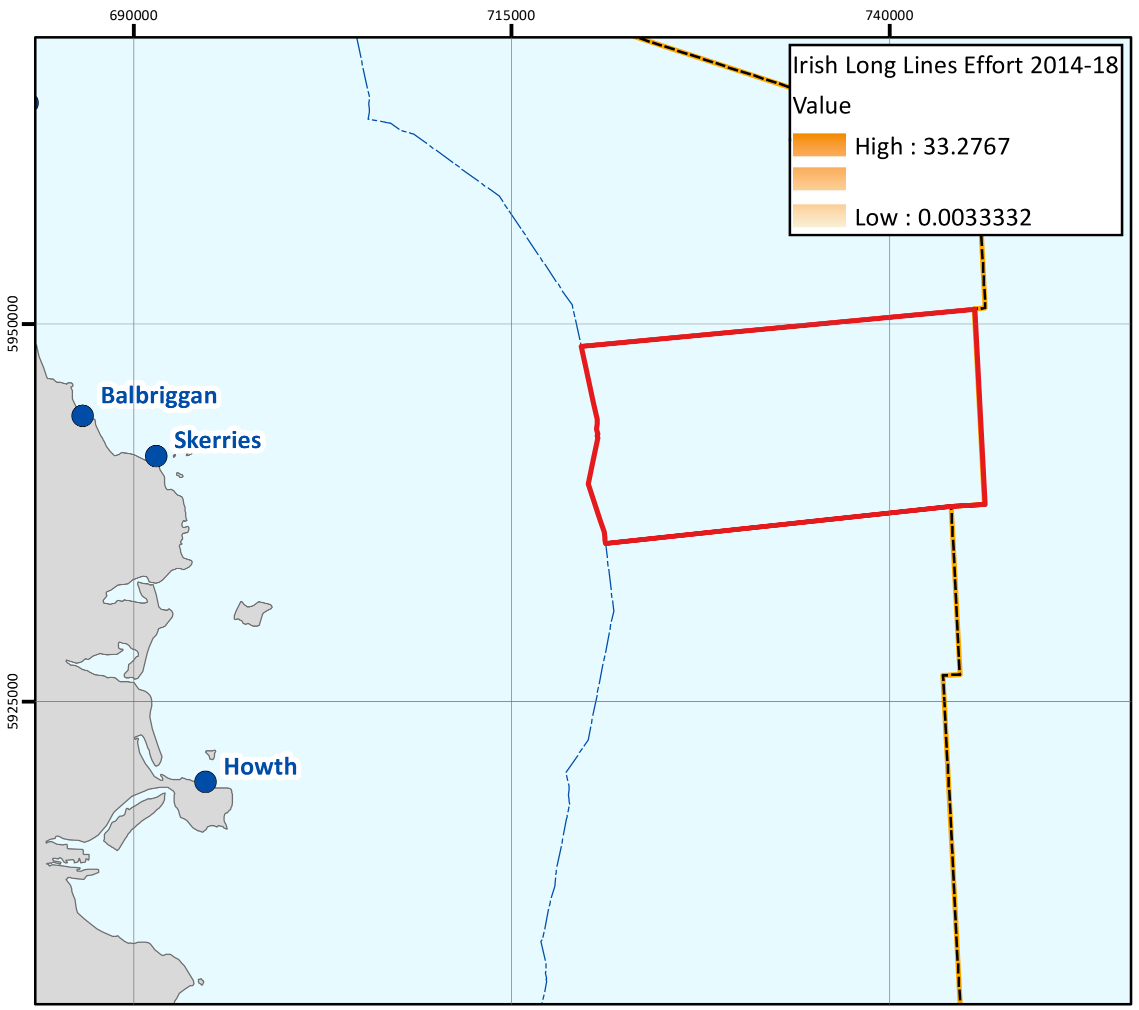

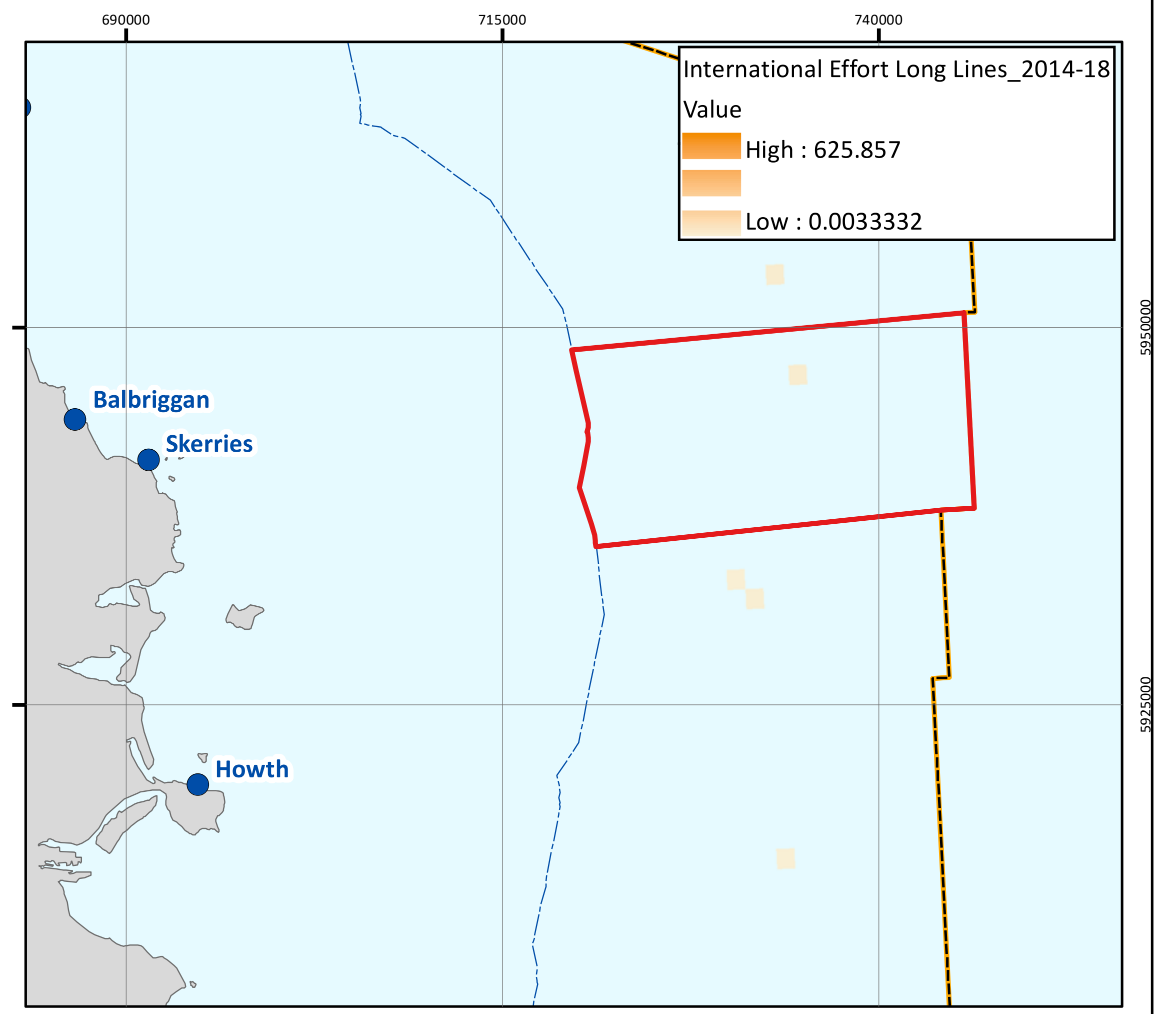

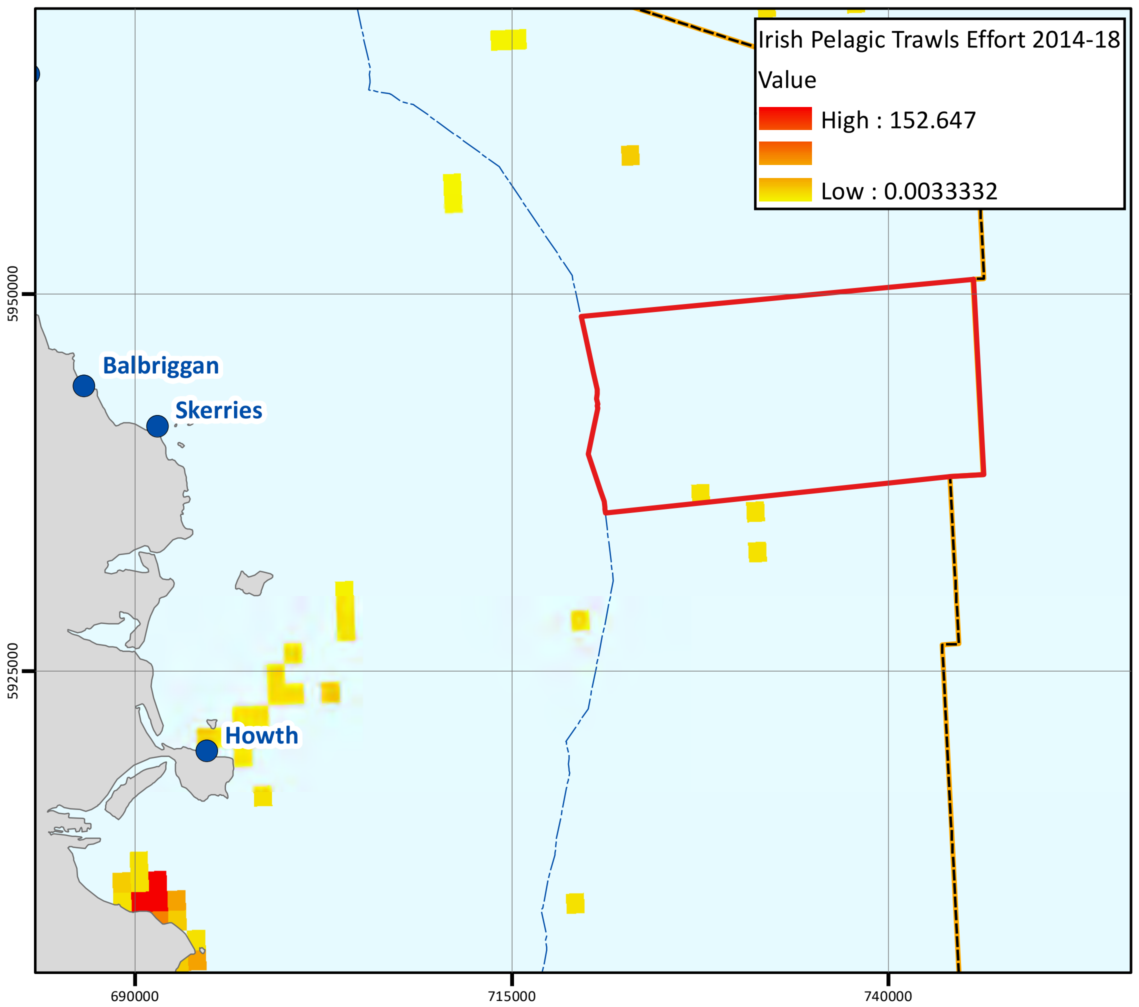

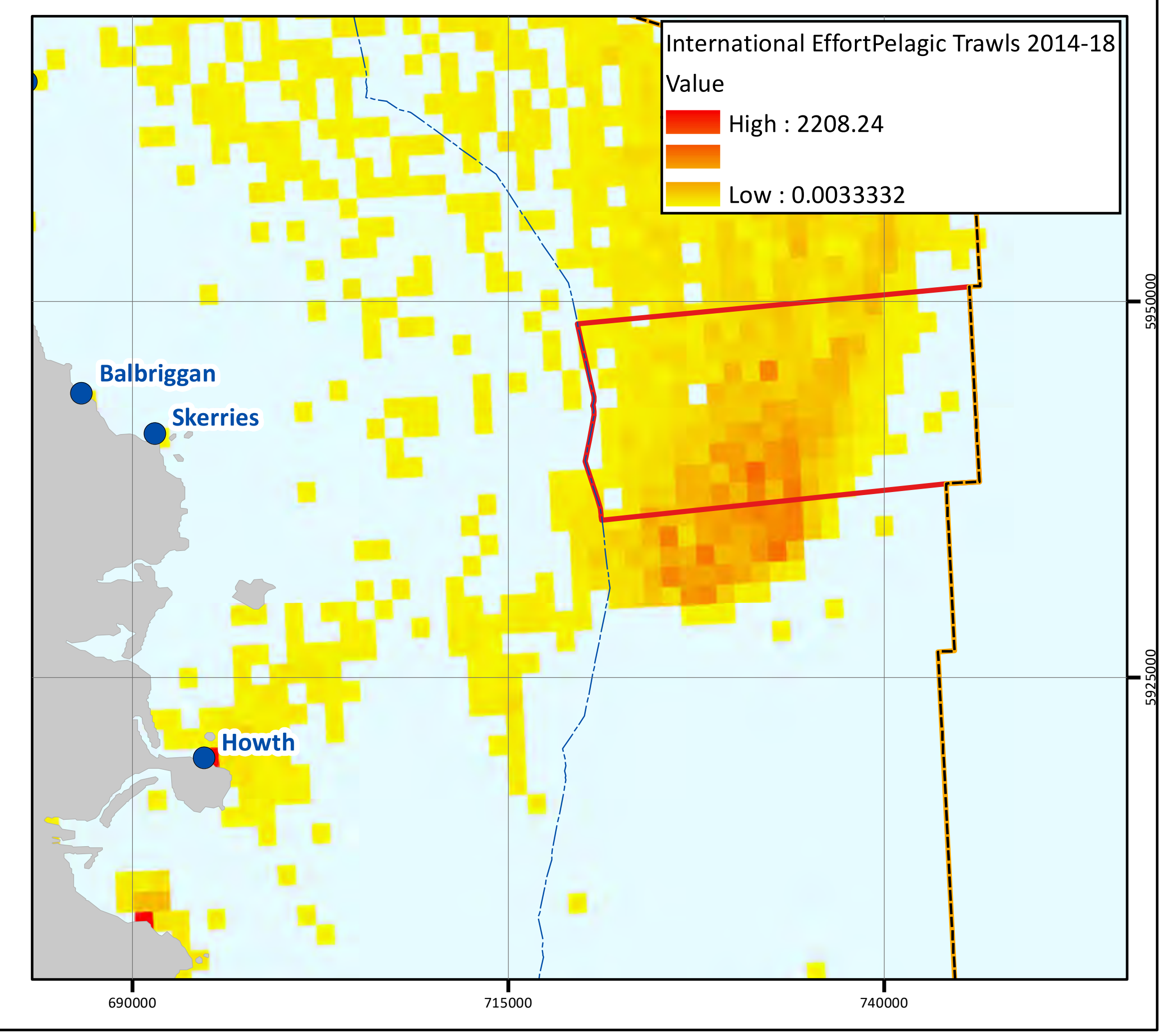

MARESCONNECT INTERCONNECTOR
MARITIME USAGE LICENCE

FISH & FISHING ACTIVITY
Fishing Effort by Gear Type
Sheet 3 of 4

Drawing No: P2578M-FISH-006 | **A**

Legend

N W E S

Maritime Usage Area

Fisheries Port and Landing Type

Demersal Shellfish

Administrative Boundaries

12nm Territorial Sea Limit

EEZ Boundary

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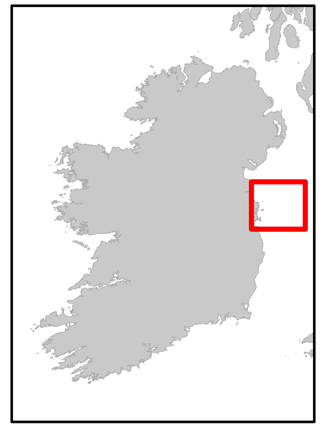

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Approved By	

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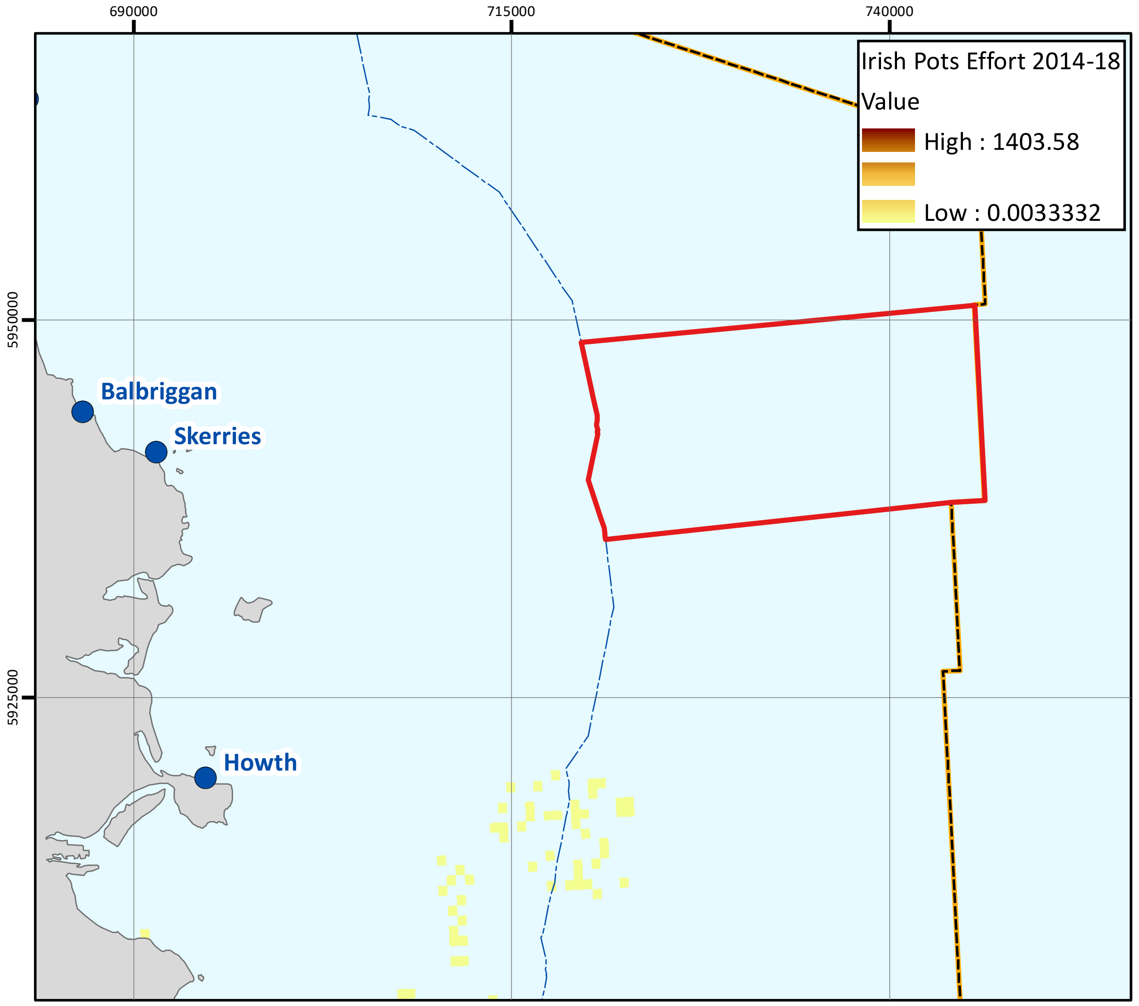

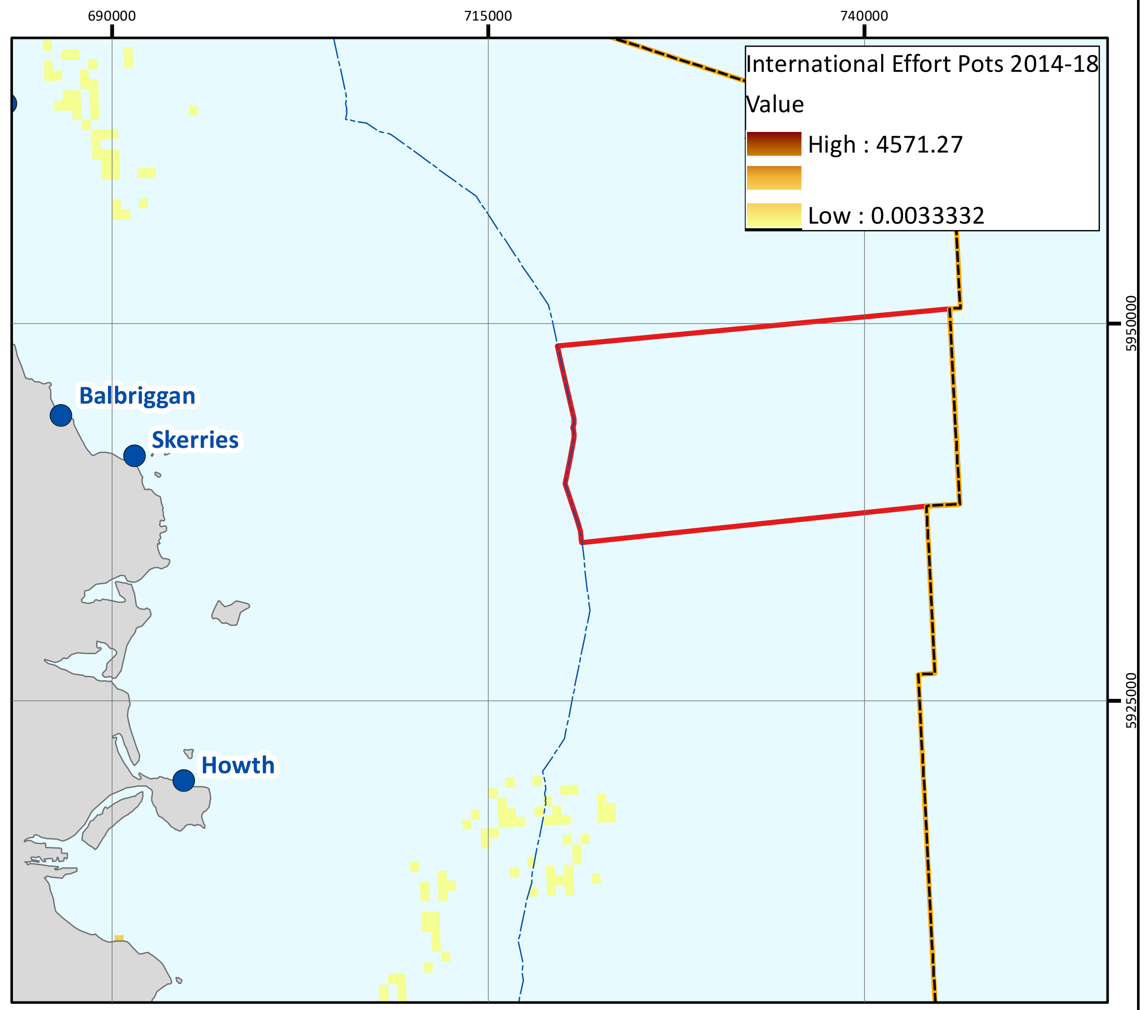

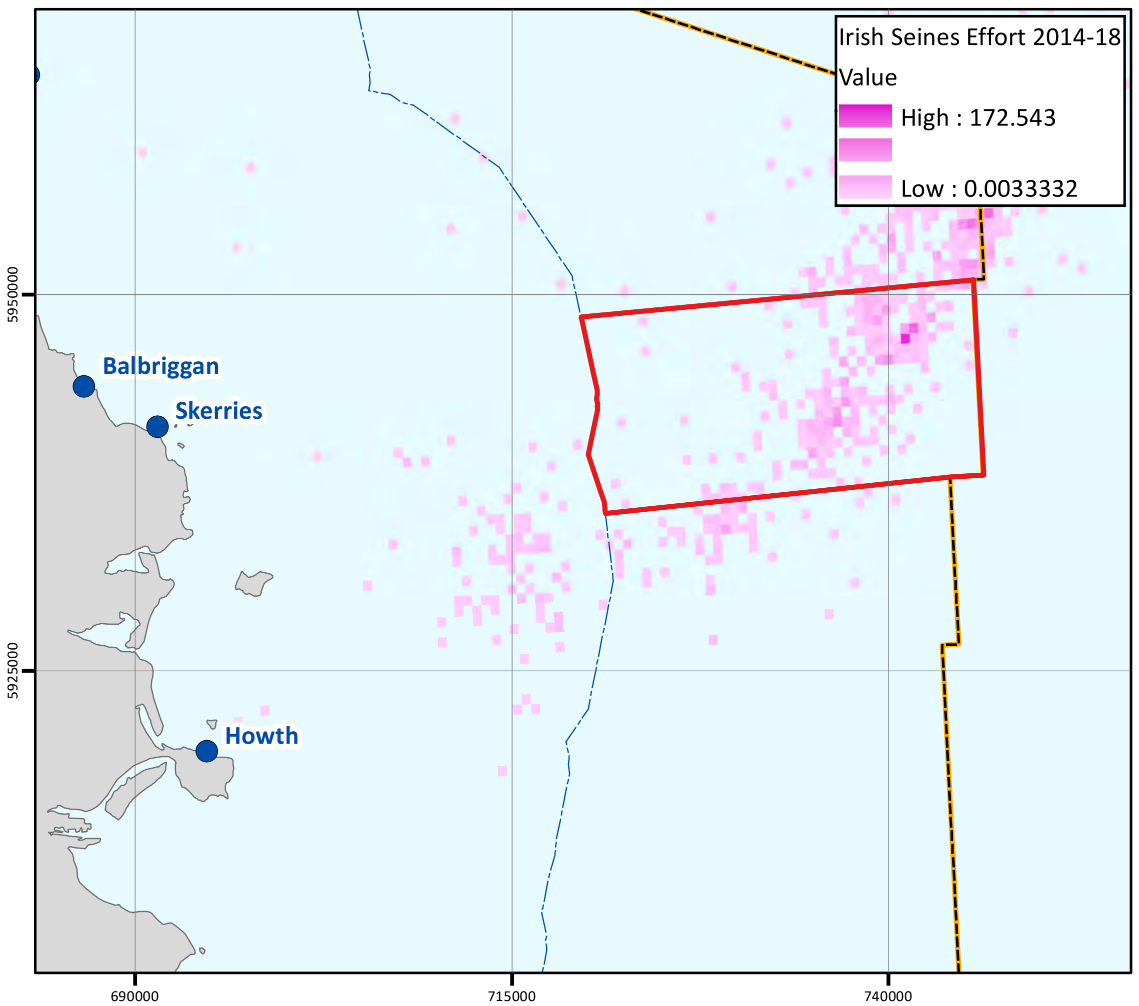

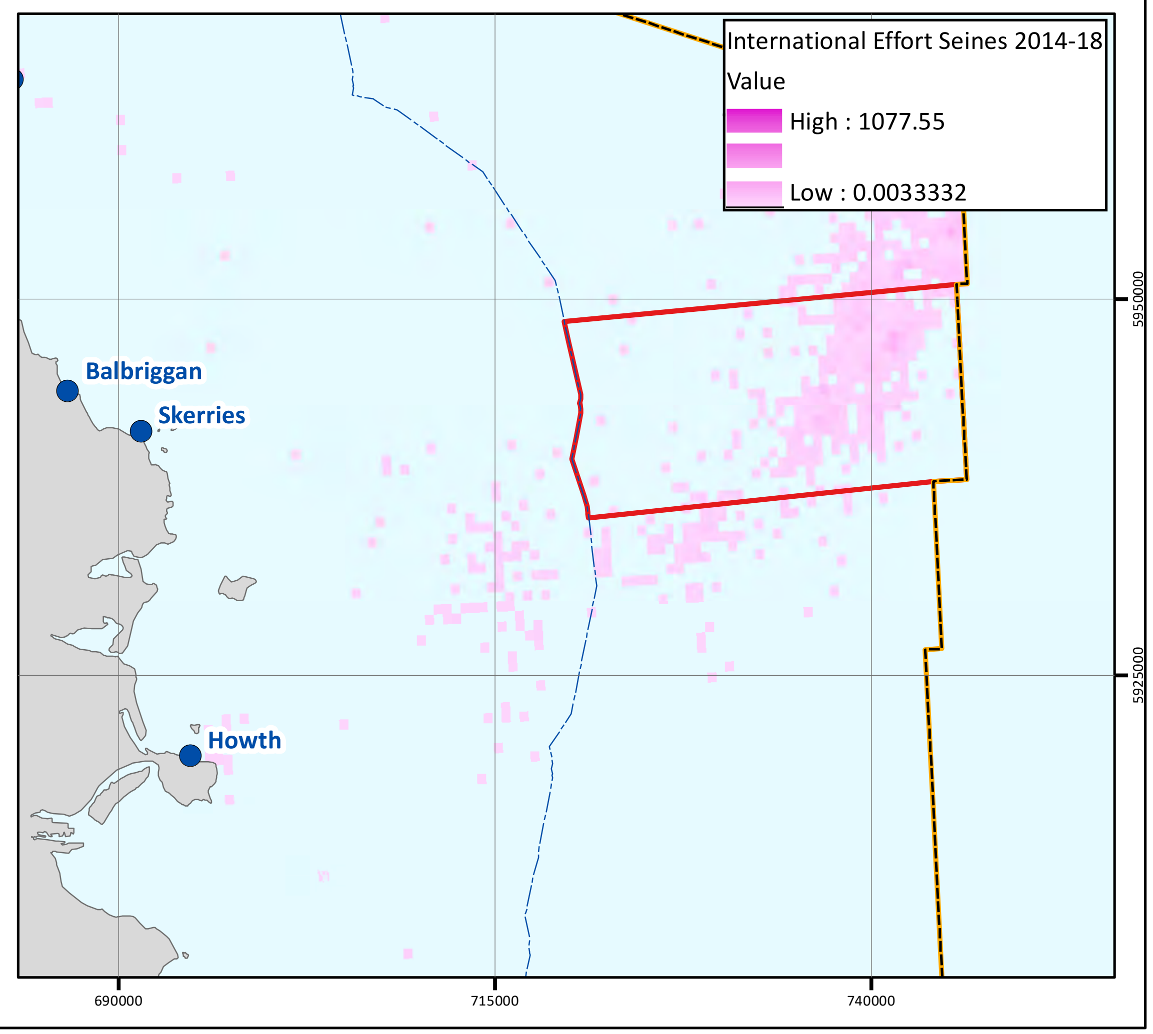

MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

FISH & FISHING ACTIVITY
Fishing Effort by Gear Type
Sheet 4 of 4

Drawing No: P2578M-FISH-001 | **A**

Legend

Maritime Usage Area

Fisheries Port and Landing Type

Demersal Shellfish

Administrative Boundaries

12nm Territorial Sea Limit

EEZ Boundary

N W E S

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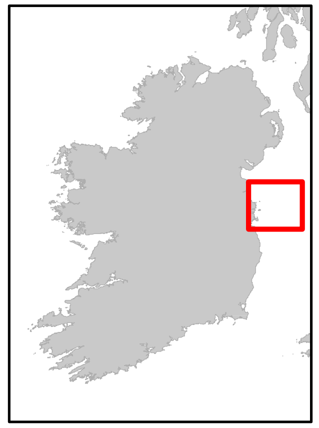

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2.12.2 Recreation

The key recreational activity that takes place within the MULA is sailing. The main concern for recreational activity in relation to this application is that site investigation surveys will restrict access to areas of the MULA for sailing vessels. Although sailing activity is very low within the MULA and there are no sailing clubs within the MULA, the closest sailing clubs to the MULA are:

- Howth Yacht Club
- Malahide Yacht Club
- Rush Sailing Club
- Skerries Sailing club

Disturbance to recreational users will be short-term and temporary.

All planned site investigation operations will adhere strictly to pertinent Health and Safety Legislation and Regulations, as well as comply with key international shipping agreements ratified by the International Maritime Organisation (and the International Labour Organization). These agreements pertain to maritime safety and pollution prevention, thus ensuring the absence of any adverse impact or significant negative effects on human health and safety throughout the survey activities. Additionally, proactive measures will be implemented ahead of the site investigation surveys to mitigate potential impacts, including the issuance of formal marine notices, coordination with relevant Harbour Masters, and engagement with pertinent stakeholders. These measures are designed to safeguard against any adverse effects on human health and safety during the survey activities.

2.13 Major Accidents & Disasters

The proposed site investigation activities are not expected to cause natural disasters such as earthquakes, subsidence, landslides, erosion, or flooding.

2.14 Climate

2.14.1.1 Ireland’s Greenhouse Gas (GHG) Emissions Overview

The EPA monitors and assesses Ireland's greenhouse gas (GHG) emissions and compliance with the EU's Effort Sharing Regulations (ESR) (under Article 19 of the Monitoring Mechanism Regulation (MMR No. 525/2013/EU), which set a target for 2030. Ireland’s target was to reduce ESR emissions by 30% by 2030 compared with 2005 levels, with a number of flexibilities available to assist in achieving this. The ESR was amended in April 2023 and Ireland must now limit its greenhouse gas emissions by at least 42% by 2030. The ESR includes the sectors outside the scope of the EU Emissions Trading System (ETS) (such as Transport, Residential, Public Services and Commercial Services and Waste).

Ireland’s ESR emissions annual limit for 2022 is 42.36 Mt CO2eq and Ireland’s provisional 2022 greenhouse gas ESR emissions are 46.08 Mt CO2eq, this is 3.72 Mt CO2eq more than the annual limit for 2022.

In 2022, Ireland's GHG emissions stood at an estimated 60.76 million tonnes of carbon dioxide equivalent (Mt CO2eq), marking a 1.9% decrease (equivalent to 1.19 Mt CO2 eq) compared to the 2021 emissions of 61.95 Mt CO2 eq. This decline follows a notable 5.1% increase in emissions reported for the previous year. Importantly, emissions in 2022 were 4.6% lower than pre-COVID levels recorded in 2019 (EPA, 2024).

Specifically, emissions within the stationary emissions Trading System (ETS) sector decreased by 4.3%, while those under the ESR saw a decrease of 1.1%. When accounting for Land Use, Land-Use Change and Forestry (LULUCF), the total national emissions witnessed a reduction of 1.8%.

The majority of sectors experienced a decline in emissions in 2022 compared to the previous year, with the exception of transport, waste, and commercial services. These sectors recorded increases in emissions, with transport showing a rise of 6.0%, waste at 4.9%, and commercial services at 0.2%. These increases are highlighted in red in table 2-4 below.

Table 2-5 Ireland sector emissions change from 2019-2020 (Source: EPA, 2023)

Mt CO_2 eq	2021	2022	% Change
Agriculture	23.626	23.337	-1.2%
Transport	10.98	11.634	6.0%
Energy Industries	10.262	10.076	-1.8%
Residential	6.992	6.105	-12.7%
Manufacturing Combustion	4.614	4.288	-7.1%
Industrial Processes	2.475	2.289	-7.5%
F-Gases	0.745	0.741	-0.5%
Commercial Services	0.765	0.767	0.2%
Public Services	0.672	0.659	-1.9%
Waste	0.826	0.867	4.9%
LULUCF	7.338	7.305	-0.4%
Total excluding LULCF	61.955	60.763	-1.9%
Total including LULCF	69.293	68.068	-1.8%

Source: EPA, 2023

2.14.1.2 Emissions from maritime activity

The International Maritime Organisation (IMO) set out a strategy in 2018 to reduce annual greenhouse gas emissions from international shipping by at least 50% by 2050 with additional reduction targets for CO_2 by at least 40% in 2030 and 70% by 2050. In 2023, IMO Member states, adopted the 2023 IMO Strategy on Reduction of GHG Emissions from Ships, this strategy enhanced targets on harmful emissions.

The updated IMO GHG Strategy outlines an intensified collective goal of achieving net-zero greenhouse gas (GHG) emissions from international shipping by or around the year 2050. Additionally, it commits to promoting the adoption of alternative zero and near-zero GHG fuels by the year 2030. This commitment is further reinforced by indicative milestones, with international shipping aiming to achieve a reduction of at least 20% (striving for 30%) in net-zero GHG emissions by 2030, followed by a reduction of at least 70% (striving for 80%) by 2040.

At EU level, maritime transport represents 3 to 4% of the EU's total CO_2 emissions, or over 124 million tonnes of CO_2 in 2021 (European Commission, 2022). In Irish waters, a report conducted in 2021 by the Department of Transport analysed emissions of the Irish (International Trading) fleet. Ireland is performing well in relation to other EU countries considered in the study, with an annual average CO_2 emissions per distance of 186.04 (calculated by dividing each kg of CO_2 by nautical mile). The annual average CO_2 emissions per transport work (mass) for Ireland was also relatively low at 20.51 [g CO_2 / per tonne miles] (in comparison Marshal Islands was the lowest at 15.19 per transport work and Finland the highest at 92.63 per transport work).

2.15 Waste

The site investigation works do not entail any demolition or removal of structures, thus eliminating the production of demolition waste. Waste generated during the Site investigation works will be managed on the survey vessels themselves, encompassing materials specifically originating from onboard activities. The quantity of waste will vary depending on the vessel used, with typical materials including bilge water, oily residues (sludge), sewage (black water), greywater, plastics, food wastes, domestic wastes, cooking oil, operational wastes, cargo residues, and other non-common waste streams (e.g., ballast water) (EMSA/OP/02/2016).

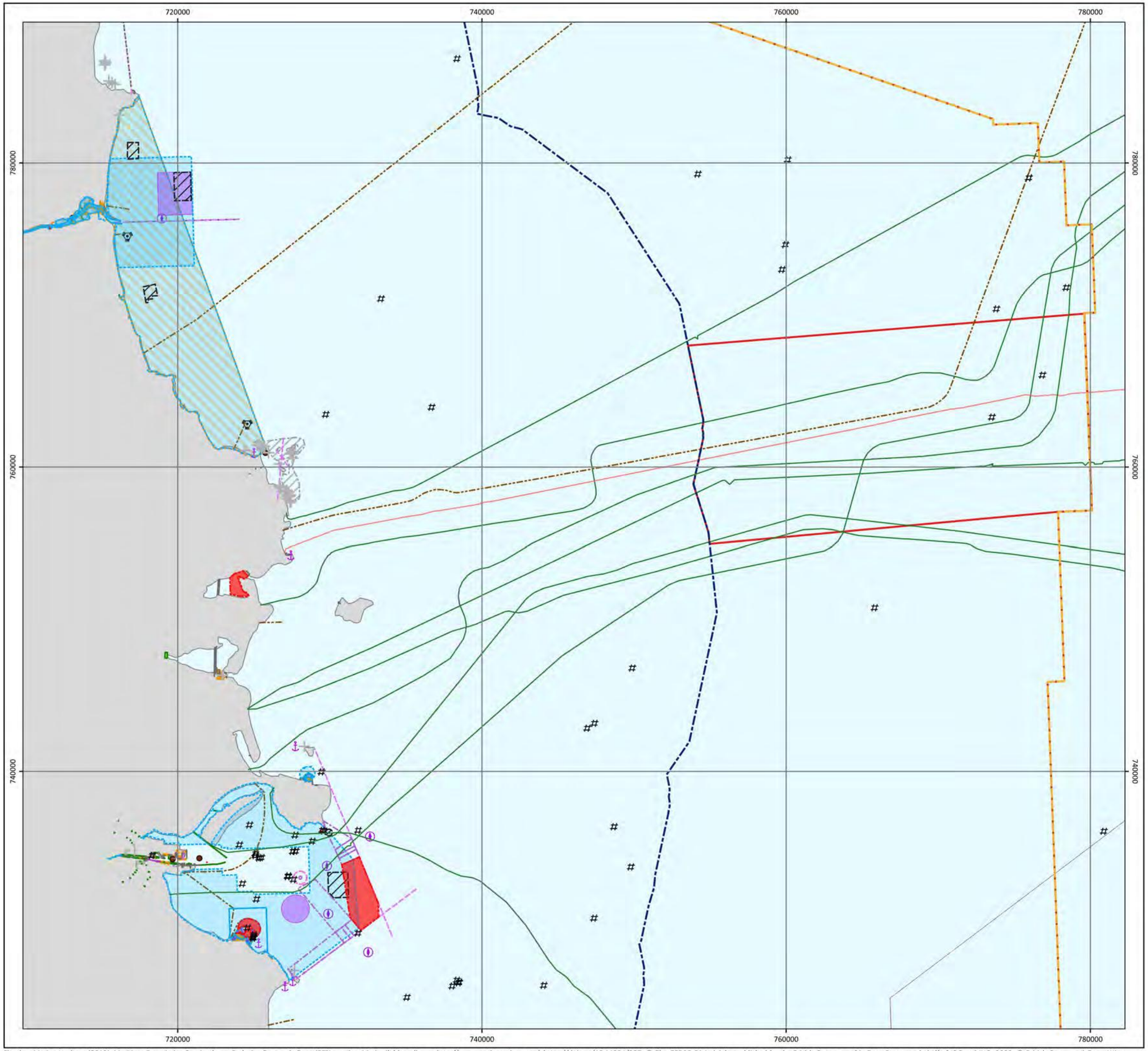
2.16 Material Assets

2.16.1 Offshore cables/Pipelines

There are nine installed subsea telecommunications cables that run though the MULA, these cables transit through the entire MULA.

- BT-TEL1 (route: Ireland to Wales) telecommunication cable is in operation and crosses the MULA site boundary in the centre.
- Celtixconnect (route: Dublin to Anglesey) telecommunication cable is active and located within the MULA.
- East West Interconnector (route: Ireland to Wales) power cable is active and runs within the MULA boundary.
- The Emerald Bridge (route: Ballygran to Whitesands) telecommunication cable is active and located approximately 2.8km from the site.
- ESAT 2 (route: Dublin to Southport) telecommunication cable, the cable is active and runs within the MULA.
- Havhingsten (route: Dublin to Blackpool) telecommunication cable, the cable is active and runs within the MULA.
- Hibernia Atlantic telecommunication cable
- Rockabill (Route: Portrane – Cleveleys) telecommunication cable is active.
- Sirius South – (Route: Dublin to Blackpool) telecommunication cable is active and runs within the MULA.

The Interconnector 1 gas pipeline runs through the centre of the MULA, this gas pipe runs from southwest Scotland into Gormanstown, Co. Dublin.



MARESCONNECT INTERCONNECTOR MARITIME USAGE LICENCE

INFRASTRUCTURE

Existing Infrastructure, Obstructions and Marine Use Areas

Drawing No: P2578M-INFR-002	A

Legend

N

Maritime Usage Area

Adminstrative Boundaries

- 12nm Territorial Sea Limit
- EEZ

Existing Infrastructure and Obstructions

- Obstruction
- Underwater rock

Marine Use Area

- Anchorage area
- Pilot boarding place
- Navigation line
- Route
- Anchorage area
- Dumping ground
- Harbour area
- Pilot boarding place
- Restricted area
- Traffic separation area
- Harbour facility
- Pipeline

Cables

- Power - Active
- Telecom - Active

NOT TO BE USED FOR NAVIGATION

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Approved By	

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2.16.2 Marine Aggregate and Extraction and Disposal Sites

2.16.2.1 Marine Aggregates

The Irish Sea Marine Aggregate Initiative (IMAGIN) (Sutton, 2008) mapped areas in the Irish Sea with potential for exploitation of marine aggregates. By combining data from all available sources, IMAGIN outlined 25 polygons which delineate areas that may contain exploitable aggregates.

There are no potential aggregate blocks overlapping with the MULA and no publicly available information to suggest that aggregate extraction is planned. However, according to the IMAGIN data set, sand marine aggregates is present over 10km southwest of the MULA (Figure 2-25) (Drawing Reference: P2578M–INFR-003).