Offshore Renewable Energy Development Plan II: Strategic Environmental Assessment - Scoping Report

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

SUSTAINABLE ENERGY AUTHORITY OF IRELAND

Date: 19th April 2022

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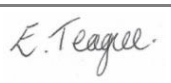
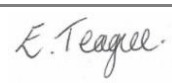
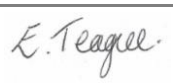
Signature			
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Glossary

Acronym	Definition
AA	Appropriate assessments
CAP	Climate Action Plan
CO_2	Carbon dioxide
DECC	Department of the Environment, Climate and Communications
DMAPs	Designated Maritime Area Plan
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic fields
EPA	Environmental Protection Agency
GDP	Gross Domestic Product
GES	Good environmental status
GHGs	Greenhouse gases
GSI	Geological Survey Ireland
IPCC	International Panel on Climate Change
MHWS	Mean high water spring
NM	Nautical miles
NMPF	National Marine Planning Framework
NMS	National Monuments Service
NO_2	Nitrogen oxides
NPWS	National Parks and Wildlife Service

ORE	Offshore Renewable Energy
OREDP II	Offshore Renewable Energy Development Plan II
$PM_{2.5}$ and PM_{10}	Particulate Matter of varying sizes, harmful to human health.
SACs	Special Areas of Conservation
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SO_2	Sulphur dioxide
SPAs	Special Protected Areas
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WFD	Water framework directive
WHO	World Health Organisation

1 Introduction

The Department of the Environment, Climate and Communications (DECC) has commenced preparation of the Offshore Renewable Energy Development Plan II (OREDP II) for Ireland. OREDP II will update the original OREDP published in 2014. OREDP II will support Ireland's increased Offshore Renewable Energy (ORE) ambition, a target of up to 30GW of offshore energy.

The purpose of the OREDP II is to develop an understanding of the overall resource potential within Ireland's waters and to provide an evidence base for the identification of areas most suitable for the sustainable development of wind, wave, and tidal technologies (candidate areas for offshore renewable energy development) in Ireland's Exclusive Economic Zone (EEZ).

The OREDP II will be subject to a Strategic Environmental Assessment (SEA) which promotes sustainable development, and this report forms the Scoping Report for the SEA.

1.1 What is Sustainable Development

International and national bodies have set out broad principles of sustainable development. Resolution 42/187 of the United Nations General Assembly (UN, 1987) defined sustainable development as '*meeting the needs of the present without compromising the ability of future generations to meet their own needs'*. The UN 2030 Agenda for Sustainability Development (UN, 2015) sets out a plan of action 'for people, planet and prosperity' which focuses on the 17 defined Sustainable Development Goals (SDGs) and their respective sub-targets.

Ireland's current national Sustainable Development Strategy *Our Sustainable Future* (Govt of Ireland, 2018) sets out Ireland's eight National themes and principles to sustainable development and Ireland's Sustainable Development Goals National Implementation Plan (Govt of Ireland, 2018) integrates these national themes and principles to sustainable development with the UN SDGs, to deliver the 2030 Agenda for Ireland.

Table 1-1: *Our Sustainable Future* These and Principles for Sustainable Development (Govt of Ireland, 2018)

Theme	Principle	SDGs
Economy	Promote an innovative, competitive and low-carbon economy with the aim of achieving smart, sustainable and inclusive business growth	
Satisfaction of human need by the efficient use of resources	Prices should reflect the real costs to society of production and consumption activities and polluters should pay for the damage they cause to human health and the environment.	
Equity between generations	The needs of current generations should be addressed without compromising the ability of future generations to meet their needs	
	Resources should be used within the capacity for regeneration	
Gender equality	Women have a vital role in environmental management and development and their full participation is therefore essential to advance sustainable development	

Theme	Principle	SDGs
Respect for ecological integrity and biodiversity	The abundance of wildlife and extent of habitats should be maintained, improved and restored where necessary, through sustainable management	
Social equity	Social inclusion should be promoted to ensure an improved quality of life for all.	
Respect for cultural heritage/diversity	The quality of landscapes, the heritage of the man-made environment and historic and cultural resources should be maintained and improved	
Equity between countries and regions	Promote human rights and fundamental freedoms, by combating all forms of discrimination and contributing to the reduction of poverty.	

1.2 Strategic Environmental Assessment

Strategic Environmental Assessment (SEA) is a method of ensuring environmental considerations are broadly evaluated and integrated into a public plan, programme or strategy. The SEA Regulations aim at a high level of protection of the environment, and to integrate the

consideration of the environment into the preparation and adoption of plans and with a view to promoting sustainable development.

The European SEA Directive (Directive 2001/42/EC: Assessment of the Effects of Certain Plans and Programmes on the Environment) is transposed into Irish law through the Environmental Assessment of Plans and Programmes Regulations 2004 Statutory Instrument No.1633 ('the SEA Regulations'). The SEA Directive aims to achieve environmental protection at a strategic level, and to integrate the consideration of the environment into the preparation and adoption of applicable plans and programmes.

1.3 Appropriate Assessment

In conjunction with the SEA, the OREDP II will also undergo Appropriate Assessment (AA). Preparation for the first stage, Stage 1 Screening for AA, is currently underway. The 'Screening Report' is the first formal output (supported by a separate Screening Principles report) and is due for consultation in late May.

An AA is required to fulfil the requirement of the Habitats Regulations[1], to assess potential effects of the OREDP II on the integrity of Natura 2000 sites. Natura 2000 is a network of areas designated to conserve certain habitats and species. Such sites are specified in the Habitats and Birds Directives as outlined below and referred to collectively as European sites. In Ireland these Natura 2000 sites include:

- Special Areas of Conservation (SACs) under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive);
- Special Protection Areas (SPAs) under the EC Directive on the Conservation of Wild Birds (the Birds Directive);
- Candidate SACs (cSACs) that are either in Government consultation or have been submitted to the European Commission, but not yet formally adopted;
- Potential Special Protection Areas (pSPAs) that that are either in Government consultation or have been submitted to the European Commission, but not yet formally adopted.

AA refers to the assessment of the implication of a proposed plan on one or more Natura 2000 designated site(s) in view of the sites' conservation objectives. The OREDP II AA process consists of Stage 1 Screening for AA and (depending on the conclusion of Stage 1) Stage 2 AA, whereby

[1] S.I. No. 477/2011 - European Communities (Birds and Natural Habitats) Regulations 2011 as amended, most recently 2021

the assessment of adverse effect on the integrity of the site(s) is made. Further details of the proposed methodology will be set out in the Stage 1 Screening Report.

1.4 This Document

ClearLead Consulting Ltd have been commissioned to undertake the Strategic Environmental Assessment (SEA) of the OREDP II. This document is the Scoping Report, the first output of the SEA and will set out the baseline data, key sustainability issues and data gaps, in addition to the proposed scope for the assessment of the OREDP II.

1.5 How to Respond

This report will be consulted on for a 6 week period between 19th April and 27th May 2022. Comments are welcome to inform the next stage of the SEA and details on how to respond are set out below.

Please respond to:

ocean.energy@seai.ie

By Friday 27th May, 2022

Questions to guide responses:

1. Have we included all relevant plans and programmes that are important to the OREDP II and to sustainability?
2. Can you suggest any other information, facts or figures that may be suitable for inclusion in the baseline information collated for the SEA of the OREDP II?
3. Do you think that the SEA Framework is appropriate?
4. Does the Scoping Report provide sufficient information to ensure that an appropriate SEA can be carried out?

1.6 Structure of this Report

The remainder of this report is structured as follows:

Section 2: Provides and overview to the SEA Process and the approach to assessment that will be followed;

Section 3: Provides a preliminary description of the main parameters expected to be addressed within the OREDP II draft plan;

Section 4: Provides a preliminary description of the relevant plan and policy structure within which the OREDP II Plan will be brought forward. This policy review will be reviewed and updated regularly throughout the preparation of the SEA to give due account to emerging policy framework;

Section 5: Sets out a preliminary description of the baseline marine environment within the OREDP II Plan area;

Section 6: Identifies a draft set of SEA Objectives, indicative impact pathways, indicators and targets that will be used to evaluate the plan;

Section 7: Identifies next steps to be completed in the SEA process.

2 Approach to the SEA

2.1 SEA Process and Requirements for Scoping

Assessment under the SEA Regulations is a systematic process for evaluating the environmental consequences of proposed plans or programmes to ensure environmental issues are fully integrated and addressed at the earliest appropriate stage of decision making, with the aim of achieving a high level of protection of the environment with a view to promoting sustainable development.

An overview of the SEA process is set out within **Figure 2-1**.

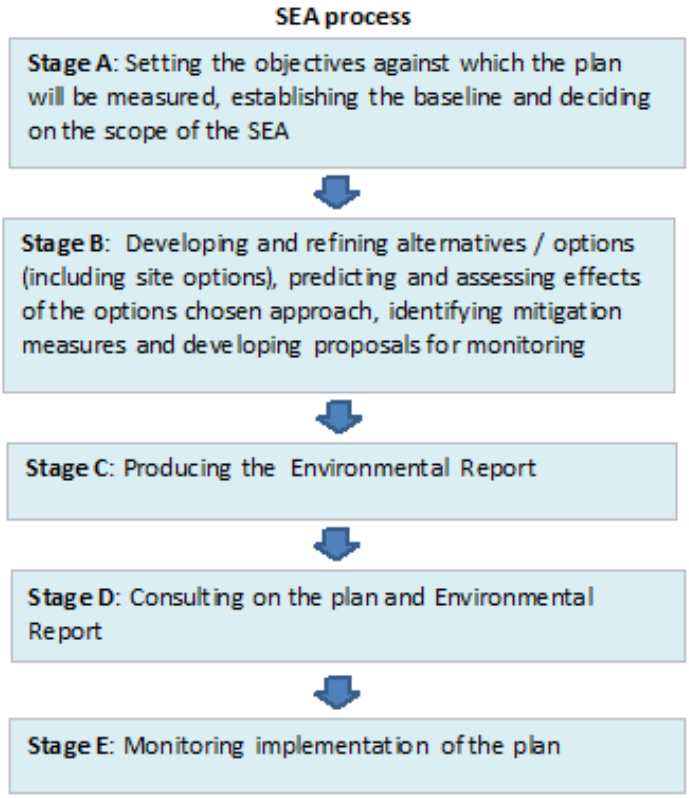


Figure 2-1: Summary of the SEA Process

This Scoping Report forms part of Stage A of the SEA process.

2.2 Scoping Methodology

The SEA Regulations require a description of the following to be presented in the SEA Scoping Report (Stage A) (Regulation12(3)):

- *"The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme."* (Schedule 2, Paragraph 2);
- *"The environmental characteristics of areas likely to be significantly affected."* (Schedule 2, Paragraph 3); and
- *The environmental protection objectives, established at international, Community or national level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation."* (Schedule 2, Paragraph 5)

2.2.1 Baseline characterisation

Stage A of the SEA focuses on collecting baseline information, identifying environmental issues and establishing the main scope and objectives of the SEA. Identification of other relevant plans and programmes is also undertaken to understand the plan's relationship with the policy and regulatory framework, including environmental considerations that need to be taken into account.

This report (and associated appendices) present existing baseline information on the environmental characteristics of the plan area in accordance with the topics required by the SEA Regulations (see Table 2.1). An indication of the potential evolution of current baseline conditions has also been included, where possible. A proposed framework for the assessment of the plan and its alternatives is set out in Section 6.

Table 2-1: Topics Required by the SEA Regulations and how they will be addressed

SEA Directive Topics	OREDP II SEA Topic	OREDP II SEA Sub-Topics
Biodiversity, Flora and Fauna	Biodiversity	Seabed habitats
		Pelagic habitats
		Designated sites, qualifying interests (QI) and species Sites designated for habitats Sites designated for species
		Fish
		Marine mammals
		Bats
		Reptiles
		Non-indigenous species
		Birds

SEA Directive Topics	OREDP II SEA Topic	OREDP II SEA Sub-Topics
		Plankton Phytoplankton Zooplankton
Air Climatic Factors	Climate and Air Quality	Emissions to Air
		Climate change
		Greenhouse gas emissions
		Ocean acidification
Archaeology and Cultural Heritage	Cultural Heritage	Protected sites
		Submerged landscapes
		Wrecks (ship, aircraft, other)
Landscape	Landscape / Seascape	Character areas
		Designations
	Marine Pollution	Underwater sound
		Marine litter (inc. marine plastics)
		Electromagnetic fields (EMF)
		Chemical inputs (including contaminants, nutrients, etc)
Material Assets	Material Assets	Mineral exploitation and mining
		Defence
		Aquaculture
		Commercial fishing
		Recreational fishing
		Marine infrastructure / exploration
		Ports, Shipping and Navigation
		Tourism
		Other marine industry
Soils Water	Physical Environment	Hydrographic Features
		Bathymetry
		Geology and Sediments including: - Morphology and Shallow Geology - Sediment characteristics - Sediment transport/pathways and morphology (offshore and coastal)
		Turbidity
Human Health Population	Population and Human Health	Employment
		Human Health
		Leisure and Tourism
Water	Water	Biological characteristics - Nutrient enrichment - Microbial pathogens
		Chemical characteristics - Water chemistry - Turbidity

2.2.2 Preliminary Legislative and Policy Review

A review of other relevant plans, policies and programmes has been undertaken. For practical reasons, the scoping task of identifying related plans and programmes cannot yield an exhaustive or definitive list of legislative/non-legislative documents. The review has been focused to ensure that only policies that are current and of direct relevance to the OREDP II are reviewed. Table 4-1 and Table 4-2 presents the key messages / environmental protection objectives from the documents reviewed.

3 The Scope and Content of OREDP II

3.1 Introduction

Ireland has one of the best offshore renewable energy resources in the world and with a maritime area of approximately 490,000 square kilometres or, in the region of seven times the size of the country's landmass the future opportunity for Ireland to develop this is immense. As a result of Ireland's location at the Atlantic edge of the European Union (EU), Ireland has more offshore energy potential than most other countries in Europe, with an estimated long-term potential of 70 GW of ocean energy opportunity (wind, wave and tidal) within 100 km of the coastline (DCENR, 2014).

In 2020, the Programme for Government (Govt of Ireland, 2021) set ambitious targets to progress offshore energy in Ireland including a target to achieve 5 GW capacity in offshore wind by 2030 off Ireland's Eastern and Southern coasts. The 2021 Climate Action Plan (CAP), also commits to increasing the proportion of renewable electricity to up to 80% by 2030, including the increased target of 5GW of offshore wind energy (Govt of Ireland, 2021). It is anticipated that this initial target will be met in part by specific, defined projects which largely comprise fixed wind turbine arrays that are already in development and supported under the initial OREDP I[2] (DCENR, 2014).

In addition, the Programme for Government committed to the development of a long-term plan to take advantage of a potential of at least 30GW of Offshore Renewable Energy (ORE) including floating wind potential in Ireland's deeper waters in the Atlantic post-2030. The OREDP II plan will support movement towards achieving this aim, by setting out the pathway for the development of ORE beyond 2030.

The identification of candidate areas for offshore renewable energy development will facilitate the future designation of areas for offshore renewable energy development, under the Designated Maritime Area Plan (DMAPs) process set out in the Maritime Area Planning Act 2021[3]. As set out in the National Marine Planning Framework (NMPF), DMAPs will underpin a plan-led approach

[2] In 2014, the Department of Communications, Energy and Natural Resources (DCENR) published the first Offshore Renewable Energy Development Plan (OREDP). The OREDP, as a policy document, sets out the key principles, actions and enablers needed to deliver upon Ireland's significant potential in this area. An interim review was carried out on the OREDP in 2017 and published in May 2018. It outlined progress in some areas and identified other areas that needed more focus. These activities were incorporated into the Climate Action Plan which was first published in 2019 superseded by the Climate Action Plan 2021. Action 116 of the Climate Action Plan 2021 sets out the requirement for an updated OREDP II.

[3] Available at: https://data.oireachtas.ie/ie/oireachtas/act/2021/50/eng/enacted/a5021.pdf

to consenting, which in turn will make a key contribution to meeting Ireland's climate and renewable energy ambitions.

Figure 3-1: Summary of Plan-led approach to consenting Ireland's ORE development

3.2 OREDP II Plan Study Area

OREDP II is a national plan covering a preliminary study area comprising Ireland's Exclusive Economic Zone (EEZ)[4] which extends up to 200 nautical miles (NM) (370 km) from Ireland's coastline. The EEZ defines the greatest potential extent of the study area and will be used to establish Ireland's overall resource potential. Within this, preliminary assessment zones currently anticipated to have potential to accommodate each of the technology types considered by the plan have also been identified. These are shown in **Figure 3-2** below.

[4] The EEZ is the area of water over which the country of Ireland has jurisdiction over living and non-living resources and therefore the theoretical greatest extent of the OREDP II plan area. The unique position of Ireland means that its waters encompass several waterbodies. These include:

- The Irish Sea and St. Georges Channel run from County Wexford to Belfast, (approximately 200km as the crow flies).
- The Celtic Sea area runs across the Southern Coast of Ireland, from County Cork to County Waterford.
- The North Atlantic Ocean spans across the West Coast of Ireland between County Kerry and Derrybeg (County Donegal).

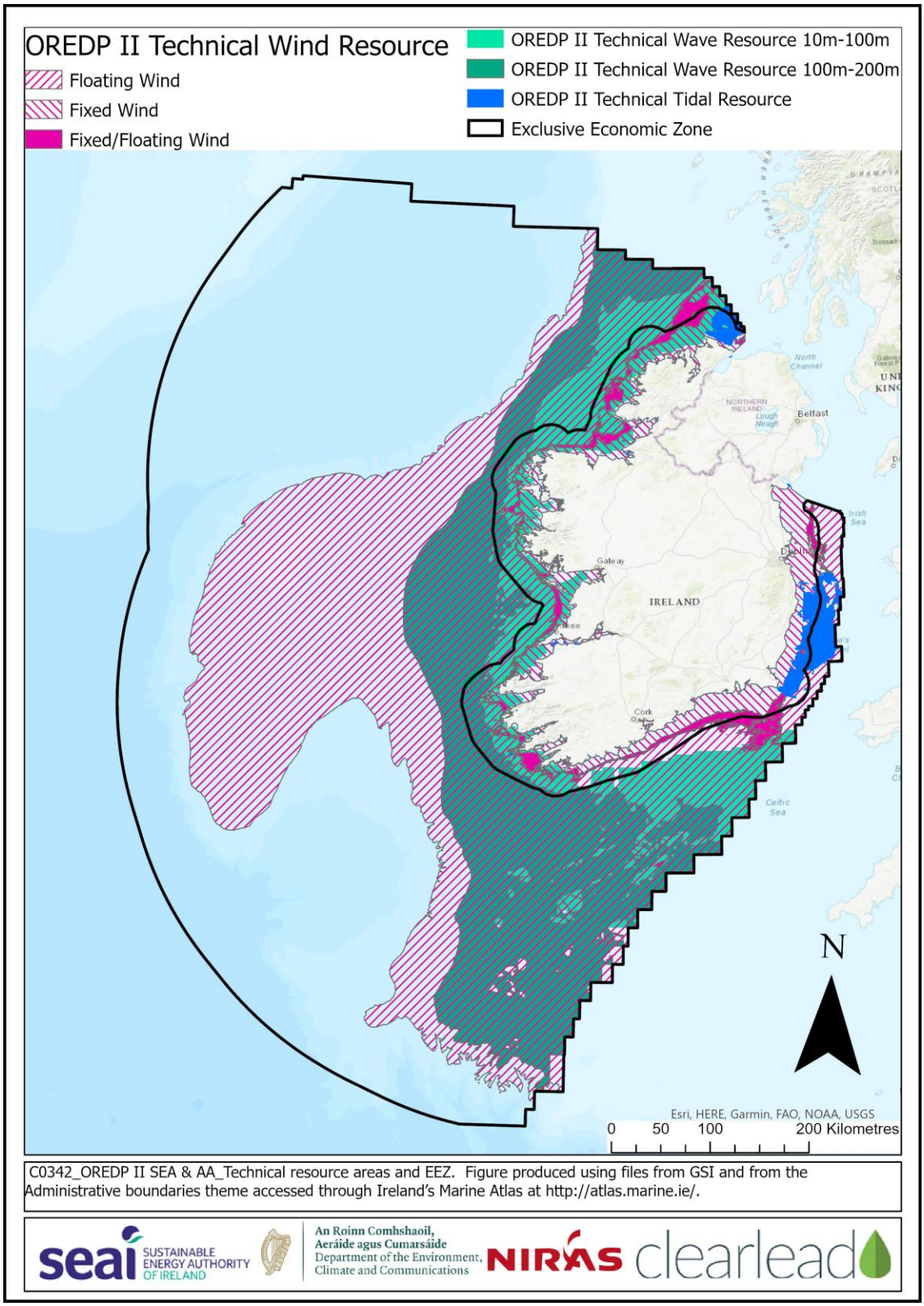


Figure 3-2: OREDP II Preliminary Study Area

Within the preliminary study area defined by the EEZ, further refined assessment areas will be developed, based on certain essential technology-defined parameters. For the purposes of this scoping report preliminary indicative assessment areas have been identified based primarily on water depth, as shown in **Figure 3-2** above. These will be further refined through the Plan development process to take account of additional technology parameters including, but not necessarily limited to: wind speeds; Peak Spring Current Flow; average device generating capacity; average scale of commercial development etc.

OREDP II will focus on the evaluation of offshore resource potential and identification of areas potentially suitable for the development off offshore generation infrastructure.

In addition, OREDP II will also consider the strategic requirements for essential supporting infrastructure including export cabling and grid connection, ensuring integration with additional specific plans as necessary.

3.3 Plan Time Period

OREDP II is intended to provide an evaluation of resource potential over the time period up to 2035 and is expected to include a plan review programme a minimum of 5 years after OREDP II is first published. The Plan reviews will allow for technological developments as well as evolution of baseline conditions, for example additional environmental protection designations which may come forward and availability of additional data to enhance understanding of Ireland's marine environment characteristics and sensitivities to be given due consideration as the Plan matures.

3.4 ORE Technology

OREDP II will seek to identify the overall resource potential for the entire assessment area, but it will also seek to identify the resource potential for specific assessment areas (candidate areas). Each candidate area will have its own resource potential and may be for one technology type or a combination of technology types depending on the technical resources.

OREDP II will consider the following technology types.

- ***Bottom-fixed Offshore Wind:*** Offshore wind power refers to the generation of electricity through wind farms in bodies of water, usually at sea. Bottom-fixed offshore wind concerns wind turbines that are located offshore and assembled on fixed foundations in shallow waters. There are many fixed foundation types: gravity-based foundation, suction bucket monopile, monopile, tripod, and jacket. The foundation design is site-specific and depends on many parameters such as water depth, seabed geological conditions, and environmental factors. Inter-array cabling, substation infrastructure for stabilising electrical power generation for transmission to shore through export cabling is also required.

- ***Floating Offshore Wind (FLOW):*** A floating wind turbine is an offshore wind turbine mounted on a floating structure that allows the turbine to generate electricity in water depths where fixed-foundation turbines may not be technically or economically feasible. There are many types of floating wind structures: spar-buoy, semi-submersible, tension Leg, and barge. The floating foundation is stabilised and kept in position by catenary or taut spread mooring

lines with drag anchors, suction caissons, or piles. Similar to the bottom-fixed offshore wind inter-array cabling, substation infrastructure for stabilising electrical power generation for transmission to shore through export cabling would also be required.

- ***Wave Energy Converter (WEC):*** Wave energy converters capture kinetic and potential energy from ocean waves and swells to generate electricity. Wave energy converters are usually small (~1 MW) and are intended to be modular and deployed in multi-unit arrays. As an emerging technology a range of infrastructure designs and prototypes are currently in development such as attenuator, overtopping, oscillating water column, and oscillating wave surge converter. Devices would also require inter-array cabling, export cabling to landfall and grid connection infrastructure.

- ***Tidal Current Device:*** Tidal current devices convert the kinetic energy of a moving water current into electricity. Tidal current devices are generally small (<1 MW), modular and intended for deployment in multi-unit arrays. There are several different device technology concepts were the main differences between the device types are related to the method of securing the turbine in place, the number of blades and how the pitch of the blades is controlled. Devices may be seabed mounted or floating with associated mooring infrastructure. Devices would also require inter-array cabling, export cabling to landfall and grid connection infrastructure.

- ***Tidal Range Generation***: Tidal energy can be captured based on the potential energy of the head difference between high and low tides, which creates a gravity flow that rotates a submersible turbine and generates electricity. Tidal barrages are effectively conventional hydro dams, deployed in estuarine settings. Tidal impoundments are essentially offshore self-contained dams. Substation infrastructure for stabilising electrical power generation for transmission to shore through export cabling would also be required.

4 Review of Policies, Plans and Programmes

To evaluate compliance, best practice and consistency with existing relevant plans, programmes and policies, key documents and core commitments potentially relevant to the OREDP II plan have been identified as part of this scoping report. This initial review has focused on overarching legislative and policy commitments and then sector relevant plans and policies particularly relating to energy, climate and renewables. Plans and policies from other key sectors and topics are also identified where considered relevant.

At this scoping stage a preliminary list of key legislation, policy, plans and programmes applicable to the OREDP II Plan development have been identified. This preliminary list will be updated, and specific relevance of objectives and commitments will be further reviewed during preparation of the SEA, and following additional refinement to the parameters of, and availability of the draft OREDP II plan, for assessment.

4.1 Summary of International and European Legislation and Commitments

A preliminary review of relevant International and European legislation and commitments has been carried out to inform this scoping report and is summarised in Error! Reference source not found..

Table 4-1: Summary of Relevant International and European Legislation, Commitments and Standards

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
United Nations Convention on the Law of the Sea	1994	Provides the international legal framework for marine and maritime activities. It is far reaching and extensive, consisting of 320 articles and 9 appendices. Key provisions of UNCLOS include: - Limits of Maritime Zones - Rights of passage and navigation - Peace and security of oceans and seas - Conservation and management of marine living resources - Protection and preservation of the marine environment - Marine scientific research - Dispute settlement procedures The convention established a number of institutional bodies for the governance of the seas.	All
Convention on Biological Diversity (CBD) (Rio Convention)	1993	Contracting Parties are required to create and enforce national strategies and action plans to conserve, protect and enhance biological diversity.	Biodiversity
Convention of the Conservation of Migratory Species of Wild Animals (Bonn Convention)	1979	To conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral Agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research. Halt reduction in biodiversity.	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)	1979	Convention to ensure the conservation and protection of wild plant and animal species and their natural habitats.	Biodiversity
UNECE Convention on Long-range Transboundary Air Pollution.	1979	Laying down the general principles of international cooperation for air pollution abatement and setting up an institutional framework which has since brought together research and policy. Over the years, the number of substances covered by the Convention and its protocols has been gradually extended, notably to ground-level ozone, persistent organic pollutants, heavy metals and particulate matter.	Air Quality
Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES)	1973	Regulates the international trade in specimens of wild animals and plants to ensure that it does not threaten their survival. Halt and reverse the decline in these species.	Biodiversity
OSPAR List of Threatened and/or declining Habitats or Species. Agreement 2008-06 as amended	2008	The OSPAR Strategy for the Protection and Conservation of Ecosystems and Biological Diversity foresees that the OSPAR Commission will identify species and habitats in need of protection. The OSPAR List of Threatened and/or Declining Species and Habitats has been developed to meet this commitment.	Biodiversity
OSPAR North-East Atlantic Environment Strategy 2030	2021	Sets out collective objectives to tackle the triple challenge facing the ocean: biodiversity loss, pollution, including marine litter, and climate change. Its implementation is part of OSPAR's contribution to the achievement of the United Nations 2030 Agenda for Sustainable Development and its Sustainable Development Goals.	Biodiversity, Air Quality and Climate, Marine Pollution

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
United Nations 2030 Agenda for Sustainable Development	2015	Identified 17 Sustainable Development goals and 169 targets, which build on the Millennium Development Goals and seek to complete what they did not achieve.	All
OSPAR Biological Diversity and Ecosystem Strategy. Agreement 2010-03. Part II	2010	The OSPAR Commission's strategic objective with regard to biodiversity and ecosystems is to halt and prevent by 2020 further loss of biodiversity in the OSPAR maritime area, to protect and conserve ecosystems and to restore, where practicable, marine areas which have been adversely affected.	Biodiversity
OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic	1992	Convention to protect the marine environment of the north-east Atlantic. Includes agreements on controlling pollution, protecting biodiversity and species, designating protected sites and managing human activities.	All
OSPAR Commission Comprehensive Atmospheric Monitoring Programme (CAMP)	-	Programme requires the reporting of deposition of both airborne and precipitation-based air pollutants around the North Sea and North Atlantic. Under the CAMP, OSPAR Contracting Parties are committed to monitoring on a mandatory basis the concentrations of metals, organic compounds and nutrient. The voluntary monitoring of additional persistent organic pollutants is also encouraged.	Air Quality
OSPAR Regional Action Plan for the Prevention and Management of Marine Litter in the NW Atlantic	2014-2021	To prevent inputs of and significantly reduce marine litter, including microplastics, in the marine environment to reach levels that do not cause adverse impacts to the marine and coastal environment with the ultimate aim of eliminating inputs of litter. A plan to cover 2022-2030 is currently under development.	Marine Pollution

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
Paris Climate Change Agreement	2015	This is a legally binding international treaty, its goal is to limit global warming to well below 2 degrees Celsius, preferably to 1.5 degrees, compared to preindustrial levels.	Climate
European Climate Law, Regulation 2021/1119	2021	Writes into law the goal set out in the European Green Deal for Europe's economy and society to become climate-neutral by 2050. The law also sets the intermediate target of reducing net greenhouse gas emissions by at least 55% by 2030, compared to 1990 levels.	Climate
European Green Deal COM(2019). 640 final	2019	A growth strategy to transform Europe to a climate-neutral, fair and prosperous society with a modern resource efficient and competitive economy	Climate
EU Regulation on the Prevention and Management of the Introduction and Spread of Invasive Alien Species (1124/2014)	2014	To protect native biodiversity and ecosystem services, as well as to minimise and mitigate the human health or economic impacts that invasive species can have.	Biodiversity
Common Fisheries Policy 1380/2013	2013	Sets fish species quotas for each member states to regulate the quantity and quality of fish caught in EU waters. Also provides framework for a range of other market management functions.	Material Assets
Directive 2009/147/EC on Conservation of Wild birds	2009	Creation of an ecological network of protected areas to conserve wild birds and their supporting habitat. Implements the Bern and Ramsar Conventions. Requires all sites and species to meet their conservation objectives.	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
European Commission Directive 2008/105/EC Directive on Environmental Quality Standards	2008	Also known as the Priority Substances Directive, this directive sets the quality standards for surface waters within EU member states as required by Article 16(8) of the WFD.	All
Marine Strategy Framework Directive 2008/56/EC (MSFD)	2008	Aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020. Includes the establishment of marine protected areas, targets and indicators of progress towards GES target.	All
EU Directive covering the management of bathing waters 2006/7/EC	2006	For managing environmental quality and reducing health risk for bathing in natural waters. Its aim is to protect human health and preserve, protect, and improve the quality of the environment.	Biodiversity Water Population and Human Heath
Environmental Liability Directive (2004/35/EC)	2004	Establishes a framework of environmental liability, based on the "polluter-pays" principle, to prevent and remedy environmental damage.	All
SEA Directive 2001/42/EC	2001	On the assessment of the effects of certain plans and programmes on the environment.	All
Water Framework Directive (2000/60/EC):	2000	Establishes a framework to protect EU waters and aims for all aquatic ecosystems to meet Good Ecological Status (WFD GES).	Biodiversity Water
Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna	1992	Creation of an ecological network of protected areas to conserve habitats and species. Implements the Bern Convention. Requires all sites and species to meet their conservation objectives.	Biodiversity

4.2 Summary of National and Sector Level Legislation and Commitments

A preliminary review of relevant National and Sector legislation and commitments has also been carried out to inform this scoping report and is summarised in **Table 4-2.**

A process of updating, streamlining and delivering an integrated coherent structure to Marine Spatial Planning is under development by the Irish Government and its stakeholders and partners. OREDP II Plan will build on the spatial planning framework for Ireland's maritime area under the NMPF and Maritime Area Planning Act 2021.

The transition to a plan-led regime for offshore renewable energy is ongoing and is anticipated in three phases:

- Phase 1 - relevant projects as defined under the Maritime Area Planning Act 2021 (and as originally identified and assessed in the OREDP I) include:
    - Oriel Wind Park Dublin Array, (2 projects Bray and Kish Bank);
    - Codling Wind Park (2 projects, Codling I and Codling II);
    - Arklow Bank (2 projects, Arklow Bank and Arklow Bank II);
    - Skerd Rocks;
    - North Irish Sea Array.
- Phase 2 – It is acknowledged that the above identified Phase One projects will be necessary but not sufficient to reach the 5GW target. Additional projects which can deliver by 2030 will be required to contribute to generation targets. Public consultation on Phase 2 which sought to gather views on the scale, make-up and sequencing of Phase 2 offshore wind deployment closed in March 2022[5]. At the time of writing, submissions to this consultation are currently being reviewed.
- Enduring plan-led regime - the enduring plan-led regime for offshore renewable energy that will deliver post-2030 offshore capacity beyond 5GW remains under development by the Department. The work being undertaken on the OREDP II will inform this approach.

[5] https://www.gov.ie/en/consultation/b19b1-offshore-wind-phase-two-consultation/

Table 4-2: Summary of Relevant National and Sector Legislation, Commitments and Standards

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
National Legislation			
Climate Act	2021	The Act provides a legally binding path to net-Zero emissions no later than 2050, and to a 51% reduction in emissions by 2030. The Act provides the framework for Ireland to meet its international and EU climate commitments and to become a leader in addressing climate change.	Climate
Planning and Development (Amendment) Act	2021	Part V of the Act transposes the MSP Directive and establishes the legal basis and broad framework for Ireland to implement MSP through development of maritime spatial plans on a 10-year cycle.	All
Maritime Area Planning Act (2021)	2021	Streamlines and defines the key consents requirement for the development of offshore renewable energy projects in Ireland. Comprising a Maritime Area Consent (MAC) providing the legal right to occupy a particular part of the sea bed. Only once a MAC is achieved can development permission be sought under the Planning and Development Act 2000. MAPA also provides for the establishment of the Maritime Area Regulatory Authority (MARA) which will be responsible for granting of MACs, licences and enforcement of the new maritime regulatory regime.	All
European Communities (Environmental Liability) (Amendment) Regulations	2015	These regulations amend the definition of 'water damage' as originally applied to offshore oil and gas operations, extend this definition to include damage that significantly adversely affects the receiving environment	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
European Communities (Birds and Natural Habitats) Regulations 2011 (as amended most recently 2021)	2010	Set out the grounds, as provided in the Habitats Directive, for the selection of sites of community importance (sites that in most cases will ultimately be designated as special areas of conservation SACs). - Regulation also provides for the identification of sites that need to be considered for classification as special protection areas for birds. - This is a new provision to the EC based on the judgement that Ireland failed to transpose correctly Article 4 of the Birds Directive.	Biodiversity
EU (Birds and Natural Habitats) (Control of Recreational Activities) Regulations 2010	2010	Sets out the control of recreational activities under the Habitats Directive	Population and Human Health
The European Communities (Quality of Shellfish Waters) Regulations 2006 (SI 268/2006)	2006	Implements the Shellfish Waters Directive in Ireland and set out pollution reduction programmes for the then 14 designated shellfish waters sites. Amendments to these regulations in 2009 (SI55/2009) set out provision for a further 49 sites to be designated within Irish waters under these Regulations	Water Biodiversity
The European Communities (Water Policy) Regulations 2003 (SI 722/2003) as amended in 2005 (SI 413/2005)	2005	Implements the EU Water Framework directive in establishing 'river basin districts' within Ireland and require all public authorities to take measures appropriate to their functions to promote or achieve implementation of the WFD.	Water

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
EU (Natural Habitats) Regulations SI 94/1997 (as amended by SI 233/1998 and SI 378/2005)	2005	Implements the EU Habitats Directive in Ireland	Biodiversity
European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations (S.I. No. 435 of 2004)	2004	Sets out the structure for the provision of Strategy Environmental Assessment for applicable policies, plans or programmes within Ireland.	All
Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. No. 436 of 2004),	2004	Sets out the structure for the provision of Strategy Environmental Assessment for applicable policies, plans or programmes specifically related to land-use planning	All
Sustainable Energy Act 2002	2002	Regulatory framework for the generation of energy from the renewable sources Ireland. Under this Act the Sustainable Energy Authority of Ireland (SEAI) is required to promote and assist the development of energy from renewable sources, promote the redirection in greenhouse gas emissions, and promote research into renewable technologies.	Air Quality and Climate
Wildlife Act 1976 as amended in 2000	2000	Principle legislation in Ireland for the protection of wildlife making provision to protect wildlife species and habitats in Ireland. - Establishes designated areas of national conservation value for ecological	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		and/or geomorphology heritage. - The amendments in 2000 further strengthened the regulatory powers of the 1976 Act and broadened the scope to include species excluded from the 1976 Act.	
Electricity Regulation Act 1999	1999	Gives the Commission for Electricity Regulation the power to grant licences to generate and supply electricity; - Gives the Commission the power to grant authorisations for the construction of generating stations; and - Provides for the access to the transmission or distribution system by licence holders, holders of authorisations and eligible customers.	All
National Policy, Plan, Programmes			
National Marine Planning Framework (NMPF)	2021	Establishes a national plan for Ireland's seas and for the future development of the marine planning system in Ireland towards 2040. The NMPF sits at the top of a hierarchy of plans and sectoral policies for the marine area and provides a coherent framework in which sectoral policies and objectives can be realised. Implements the Maritime Spatial Planning (MSP) Directive 2014/89/EU and Marine Strategy Framework Directive (MSFD) 2008/56/EC for Ireland. A summary of the overarching marine planning policies set out within the NMPF is included at Appendix 1	All
Marine Planning Policy Statement	2020	Defines the policy context within which NMPF and subsequent sector plans (e.g. OREDP II) can be brought forward. Priorities of the Plan are: - to support the delivery of an up to date robust legislative framework (see Maritime Area Planning Act 2021)	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		- development of an integrated marine plan parallel to the national planning framework (NPF) (see National Marine Planning Framework 2021) - to enhance awareness and understanding of the marine planning system - to ensure transparent and fair decision making - to support robust governance and enforcement systems A summary of MPPS Strategic Principles is set out within Appendix 2	
Sector Plan, Policy Programmes			
NMPF Offshore Renewable Energy Policies 1 to 10	2021	A summary of NMPF Policies specifically for Offshore Renewable Energy Development is included in Appendix 3.	All
National Waste Policy 2020-2025 - A Waste Action Plan for a Circular Economy	2020	Sets out Ireland's ambition to become a truly circular economy, in which waste and resource use are minimised and the value of products and materials is maintained for as long as possible.	Marine Pollution
Climate Action Plan: Securing our Future	2021	sets out a roadmap to deliver on Ireland's climate ambition as set out within the Climate Act 2021 (see above)	Climate
National Energy and Climate Plan (NECP) 2021 - 2030	2020	Integrates and incorporates all planned policies and measures in relation to Climate Change and Energy provision in Ireland into a single coherent Plan. Of particularly relevance to offshore renewables NECP includes objectives and policies for 'Decarbonisation - Renewable Energy'. including: - Achieving a 34% share of renewable energy in energy consumption by 2030.	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		- Increase electricity generated from renewable sources to 70%. - At least 3.5 GW of offshore renewable energy.	
NECP Decarbonisation - Renewable Energy Policies	2020	- At least 3.5 GW of offshore renewable energy of mainly offshore wind. - Streamline consenting and connection arrangements. - Provide funding supports for new technologies onshore and offshore. - Support the ocean energy research, development and demonstration pathway for emerging marine technologies and associated test infrastructure.	All
Policy Statement on the Framework for Ireland's Offshore Electricity Transmission System	2021	Relates to the future development, operation and ownership of Ireland's offshore electricity transmission system and includes commitments to: - A phased transmission to a centralised offshore transmission system; - First phase will see individual projects responsible for their offshore system requirement; - Second phase will require individual projects or EirGrid to provide their transmission system requirement; - Third phase will see EirGrid develop the transmission grid network, in association with developments brought forward under OREDP II.	
EirGrid – Shaping Our Electricity Future Roadmap	2021	Provides an outline of the key developments from a networks, engagement, operations and market perspective needed to support a secure transition to at least 70% renewables on the electricity grid by 2030 – an important step on the journey to 80% and to net zero by 2050.	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		Sets out EirGrid continued commitment to operate, develop and maintain a safe, secure, reliable, economical and efficient electricity transmission system.	
EirGrid - Grid Development Strategy (GDS) "*Your Grid, your tomorrow*" including EirGrid's Six step process for developing Ireland's Grid Network	2017	EirGrid GDS sets out the long-term strategy for the development of the transmission network, including three strategy statements: - Inclusive consultation with local communities and stakeholders - Consideration of all practical technology options - Optimising the existing grid to minimise the need for new infrastructure EirGrid's Six step process for developing Irelands Grid Network Step 1: How do we identify the future needs of the electricity grid? Step 2: What technologies can meet these needs? Step 3: What is the best option and what area may be affected? Step 4: Where exactly should we build? Step 5: The planning process Step 6: Construction, energising and profit sharing	All
National Landscape Strategy for Ireland (2015 – 2025)	2015	To ensure compliance with the European Landscape Convention and to establish principles for protecting and enhancing the landscape while positively managing its change. It provides a high level policy framework to achieve balance between the protection, management and planning of the landscape by way of supporting actions.	Landscape/ Seascape

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
OREDP	2014	Defines the part offshore renewable energy is anticipated to plan in the delivery of the overarching objective of the Government's energy policy to ensure secure and sustainable supplies of competitively priced energy for all consumers. OREDP aligns with the objectives of the EU energy policy, reflecting the common challenges in decarbonising EU's energy systems and creating a sustainable and competitive EU internal market for energy.	All
Policy Statement on the facilitation of Offshore Renewable Energy by Commercial Ports in Ireland	2021	Sets out the multi-port approach to be applied to addresses the requirements of the ORE industry and is consistent with the National Ports Policy 2013 (see below). Identifies requirement for a minimum of two facilities to support deployment activities, with a multiple of typically smaller ports required to support Operational and Maintenance requirements.	Material Assets
National Ports Policy	2013	The core objective of National Ports Policy is to facilitate a competitive and effective market for maritime transport services. National Ports Policy introduces clear categorisation of the ports sector into Ports of National Significance (Tier 1), Ports of National Significance (Tier 2) and Ports of Regional Significance.	Material Assets

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
EirGrid Delivering a Secure Sustainable Electricity System (DS3) Programme	2011	DS3 Programme was designed to meet the challenges of operating the electricity system in a secure manner while increasing the allowable proportion of non-synchronised generation (i.e. amount of electricity generated is dependent on energy available and various overtime irrespective of network demand) in order to achieve the 2020 and 2030 renewable electricity targets.	All

5 Baseline Environment

5.1 Introduction

Section 5 sets out current baseline information collated to inform this SEA Scoping Report and where available, trend data which indicates possible future evolution of the baseline. Baseline information is set out based around the SEA topic headings as identified in **Table** 2-1**2-1** and is supported by the baseline data listed in Appendix 4 and GIS mapping, which has been used to create figures throughout this report. For each topic, baseline information and data gaps have been identified. The baseline data collated within this section will be further developed as appropriate and used to inform the assessment of the draft OREDP II.

5.2 Physical Environment

5.2.1 Hydrographic Features

The majority of Ireland's territorial seas (within 12NM of the coast) lie within the 100m depth contour. Water depths within the Irish sea generally extend to approximately 150m depth extending to approximately -250m in a north south trending channel to the northwest of the Isle of Man (UK waters). Bathymetry contours for the waters surrounding Ireland demonstrate a gradual increase of depth, particularly on the southern coastline, where the Celtic Sea, adjacent to Cork measures -120m depth at approximately 370 km offshore. In contrast, the North Western Coastline reaches depths of -290m off the coastline of County Mayo. **Figure 5-1** shows this in more detail, with darker areas denoting steep increases in the depth of waters around the Rockall Trough and Porcupine Bank.

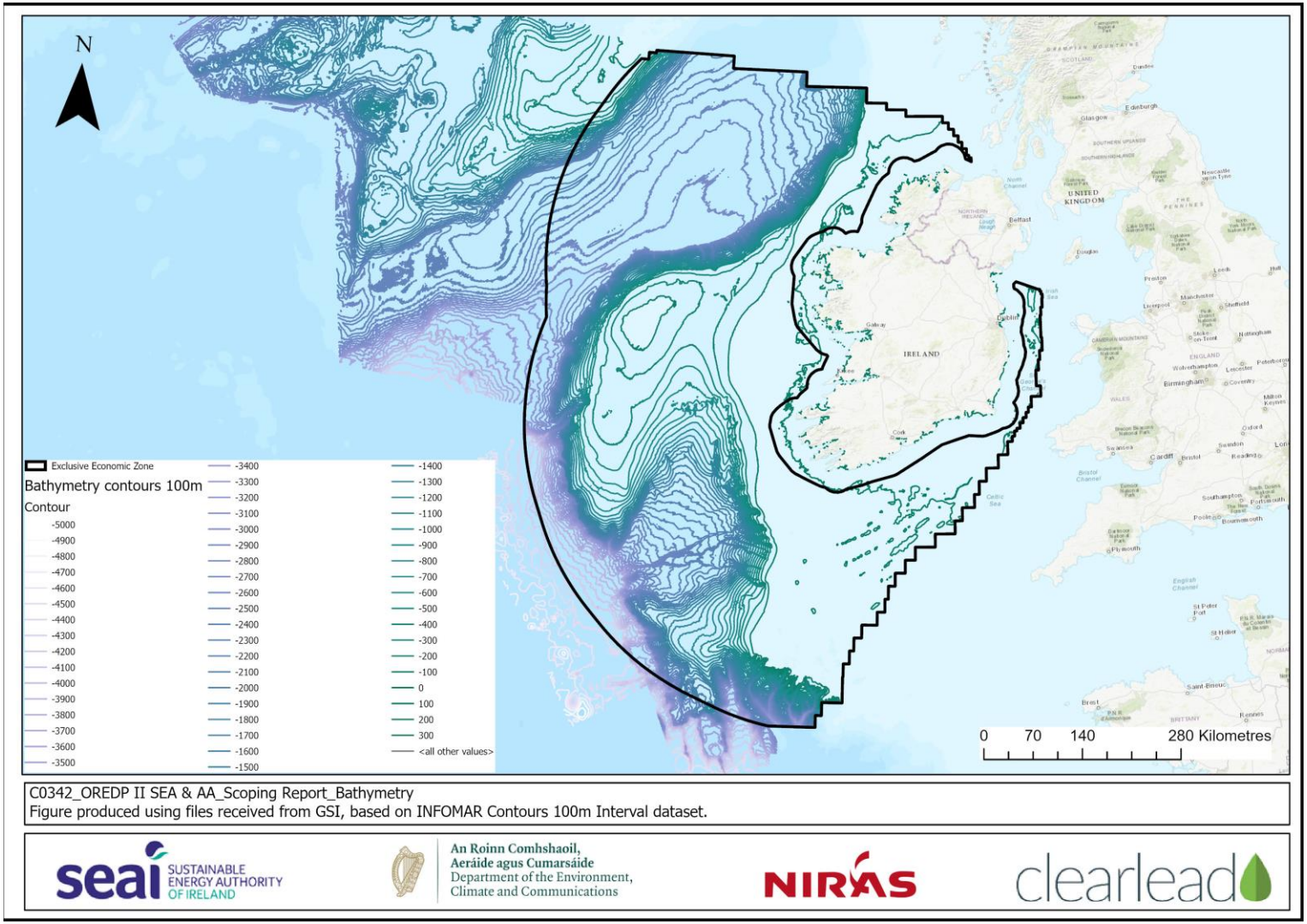


Figure 5-1: Bathymetry within Ireland's EEZ

5.2.2 Geology and Sediments

5.2.2.1 Morphology and Shallow geology

The characteristics of Ireland's underwater seabed landscape have been shaped by the underlying shallow geology and is heavily influence by past geomorphological processes particularly associated with periods of glaciation, when large volumes of material was eroded from what is now Ireland's land area and also the surrounding continental shelf, followed by extensive periods of deposition on the shelf, at the shelf edge and also over the continental slope. The morphology and distribution of superficial sediments across Ireland's EEZ developed as a result of this repeated glacial deposition/ scour processes combined with reworking and re-deposition as a result of riverine input and tidal processes (Hardisty, 1990). **Figure 5-2** shows the distribution of rock types throughout Irish waters. The Irish sea is dominated by sandstone, mudstone and limestone, which continues into the Celtic Sea, where sedimentary material typifies deeper waters towards the southwest. The Atlantic waters within the Irish EEZ contain sedimentary material, as well as basalt, metamorphic rock and small pockets of igneous rock, sand and Granitoid in shallower waters.

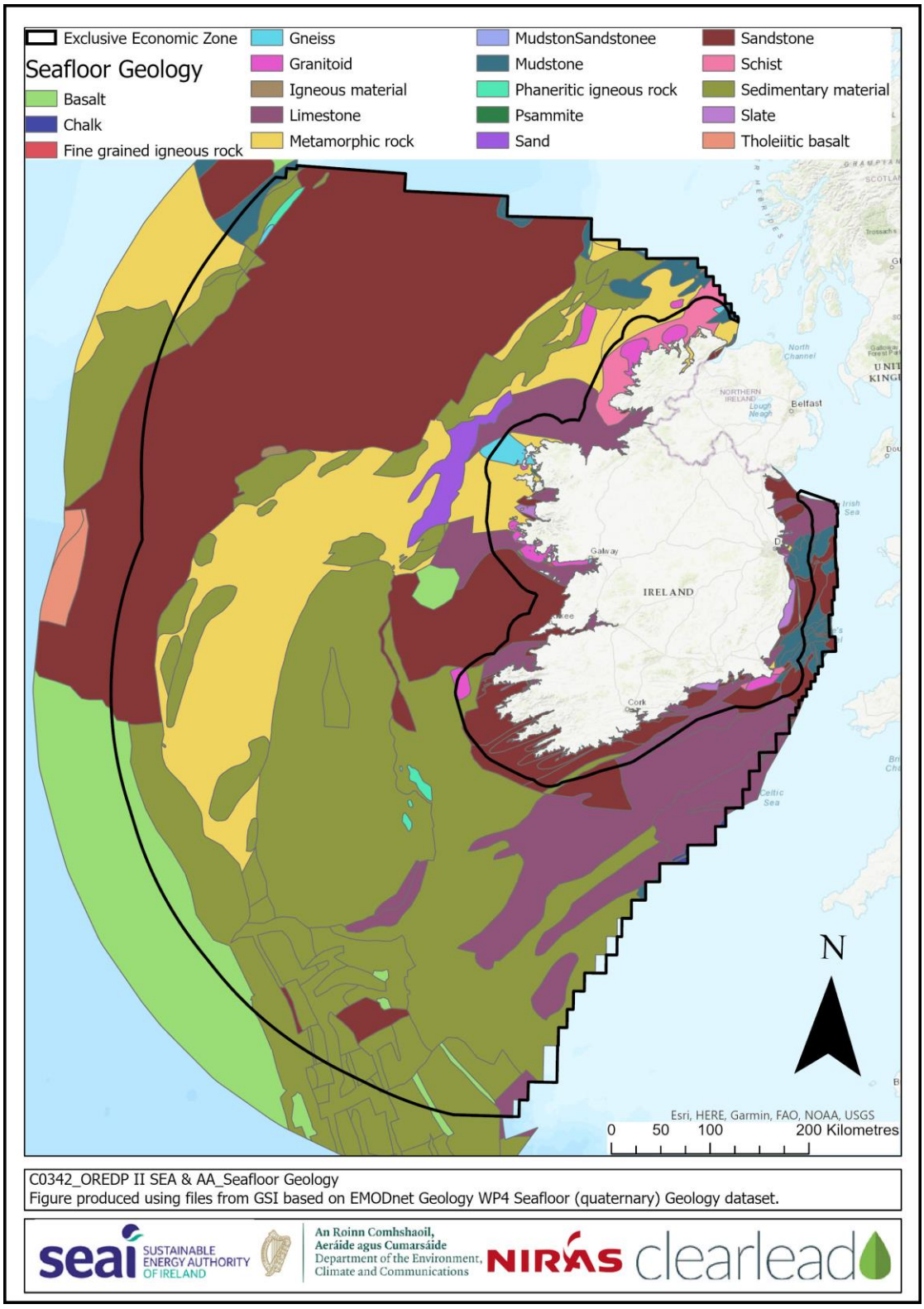


Figure 5-2: Seabed morphology and shallow geology within OREDP II Plan area

5.2.2.2 Sediment characteristics

Seabed substrate varies across Irish waters, with sediments in the Irish sea dominated in the north by mud to muddy sand, grading to sand and coarse substrate further south towards the Celtic Sea area. Off the southern coast of Ireland, a clear band of rock and boulders lies in the nearshore area, before grading to mud and muddy sand further offshore. Off the south-west coast seabed sediments are dominated by sand, interspersed with rock and boulders in the nearshore area. Sediments off the Atlantic west coast range between mud and muddy sand through to mixed sediment, with a defined band of rock and boulders identified in the nearshore area for example off the north coast of county Mayo (see **Figure 5-3**)

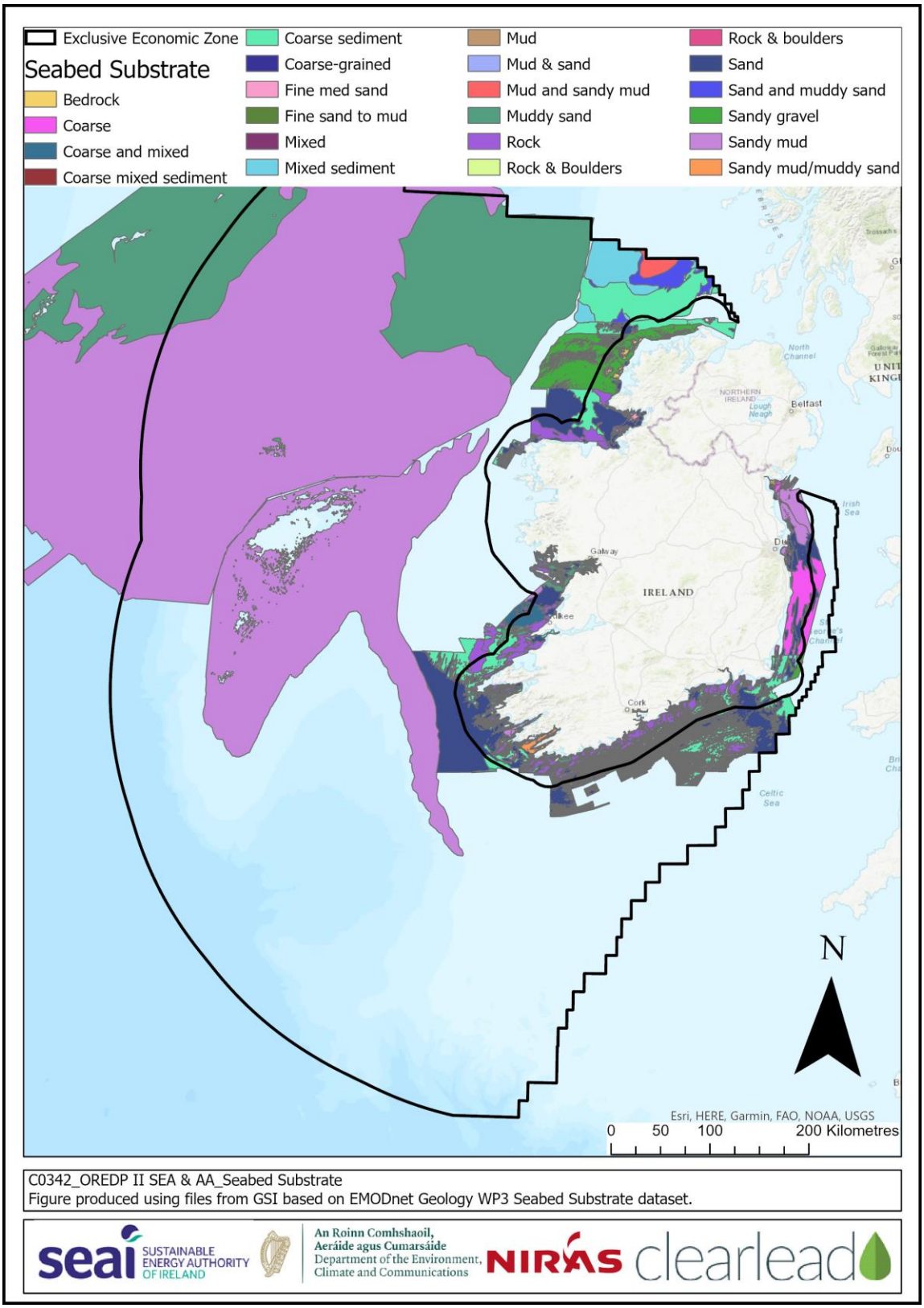


Figure 5-3: Seabed Sediments within the OREDP II Plan area

5.2.2.3 Sediment transport/pathways and morphology (offshore and coastal)

Generalised patterns of sediment transport/coastal movement evident from analysis of satellite data (EMODnet, 2019) indicate much of the south coast of Ireland with the Celtic Sea is reasonably stable with imperceptible change in imagery overtime. By comparison the same data set provides evidence of coastline erosion/retrogradation along much of Ireland's east coast with the Irish sea. Certain specific areas primarily at the inland head of bay features, particularly along the Atlantic west coast show evidence of sediment accretion. Conversely exposed headlands particularly along the Atlantic south-west are subject to predominantly erosional forces. Sediment transport processes also closely align with coastal type, with areas where coastal migration is evidenced as stable, correlating with areas of known erosion resistant rock.

The local and regional sediment transport regime vary considerably from area to area. However, exposed parts of some coasts, and coasts that have narrows with tidal streams such as between islands, are higher energy environments. Local sediment transport regimes are highly sensitive to the effects of wave and tidal action. Some areas are vulnerable to coastal erosion where sediments are also lost from one area by erosion then deposited elsewhere.

5.2.3 Data Gaps

None identified.

5.3 Water

The Marine Strategy Framework Directive (MSFD) (EC, 2008) is EU legislation aimed to improve the environmental status of the marine environment whilst maintaining sustainable development. This has been in place since 2008, with a target of all member states reaching Good Environmental Status (GES) in the marine environment by 2020. Member states are required to report against 11 descriptors, as outlined in Annex I of the MSFD and **Table 5-1** below. In Ireland, a Marine Strategy for the MSFD has been prepared to address these requirements.

Ireland's 7th State of the Environment report (EPA, 2020) provides a recent comprehensive assessment of the state of the Irish marine environment. This is supported in nearshore coastal waters by Water Framework Directive assessment parameters for evaluating ecological health.

Table 5-1: Environmental Status of Ireland's marine environment as described by the Annex I Qualitative Descriptors of Good Environmental Status (GES) (DHPLG, 2020)

	Description	Good Environmental Status (GES)
D1	Biodiversity	Some elements compatible with GES
D2	Non-indigenous species	Compatible with GES
D3	Commercial fish and shellfish	Some elements compatible with GES
D4	Food webs	Compatibility with GES not known
D5	Eutrophication	Compatible with GES
D6	Sea-floor integrity	Some elements compatible with GES
D7	Hydrographical conditions	Compatible with GES
D8	Contaminants	Compatible with GES
D9	Contaminants in seafood	Compatible with GES
D10	Marine Litter	Compatible with GES for the elements assessed
D11	Energy, including underwater noise	Compatible with GES for the elements assessed

5.3.1 Chemical characteristics

The chemical status of coastal and marine waters is based on allowable concentrations of certain chemicals and substances. This aims to protect the most sensitive species from direct toxicity, including predators and humans, through secondary poisoning. A smaller group of 'priority hazardous substances' are identified in the Priority Substances (2013/39/EU) as uPBT (ubiquitous, persistent, bio-accumulative and toxic). Under the WFD, Irish coastal areas are considered to have acceptable levels of priority substances (DHPLG, 2020). Under the MSFD (Descriptors 8 and 9), initial assessment concentrations of contaminants in shellfish and commercial fish are generally above OSPAR background levels; however, they are not high enough to expect adverse effects (DHPLG, 2020).

64 waters have been designated as shellfish waters in Ireland (DHPLG, 2018). Between 2009 and 2015, average dissolved concentrations of metals complied with the environmental standards. However, total concentrations of chromium were elevated in four locations once during the reporting period. Namely:

- Sneem/Ardgroom
- Valentia River
- Bruckless
- Gweedore Bay.

Bathing water quality within Irish waters is the responsibility of local authorities. Generally, bathing water quality improved around the coastline between 2014 and 2020, with 96% of waters now meeting 'sufficient' rating or above (EEA, 2021). Table 5-2 below sets out in detail the percentage of beaches at each classification.

Table 5-2: Bathing water classifications, 2019 Error! Bookmark not defined.

Classification	Number of locations	Percentage of location (%)
Excellent – *highest, cleanest class*	110	75
Good – *generally good water quality*	21	14.2
Sufficient – *water quality meets the minimum standard*	10	6.8
Poor – *water quality has not met the minimum standard*	2	1.4

The five beaches classified as poor were:

- Ballyloughane beach
- Portrane (the Brook) beach
- Clifden beach and lilliput
- Lough Ennell
- Merrion Strand – this is the fifth consecutive time this site has been recorded as poor, therefore this beach will no longer be classed as a bathing water area (EPA, 2019).

5.3.2 Biological characteristics

Eutrophication is defined within the OSPAR convention as:

"*The enrichment of water by nutrients causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned, and therefore refers to the undesirable effects resulting from anthropogenic enrichment by nutrients*."

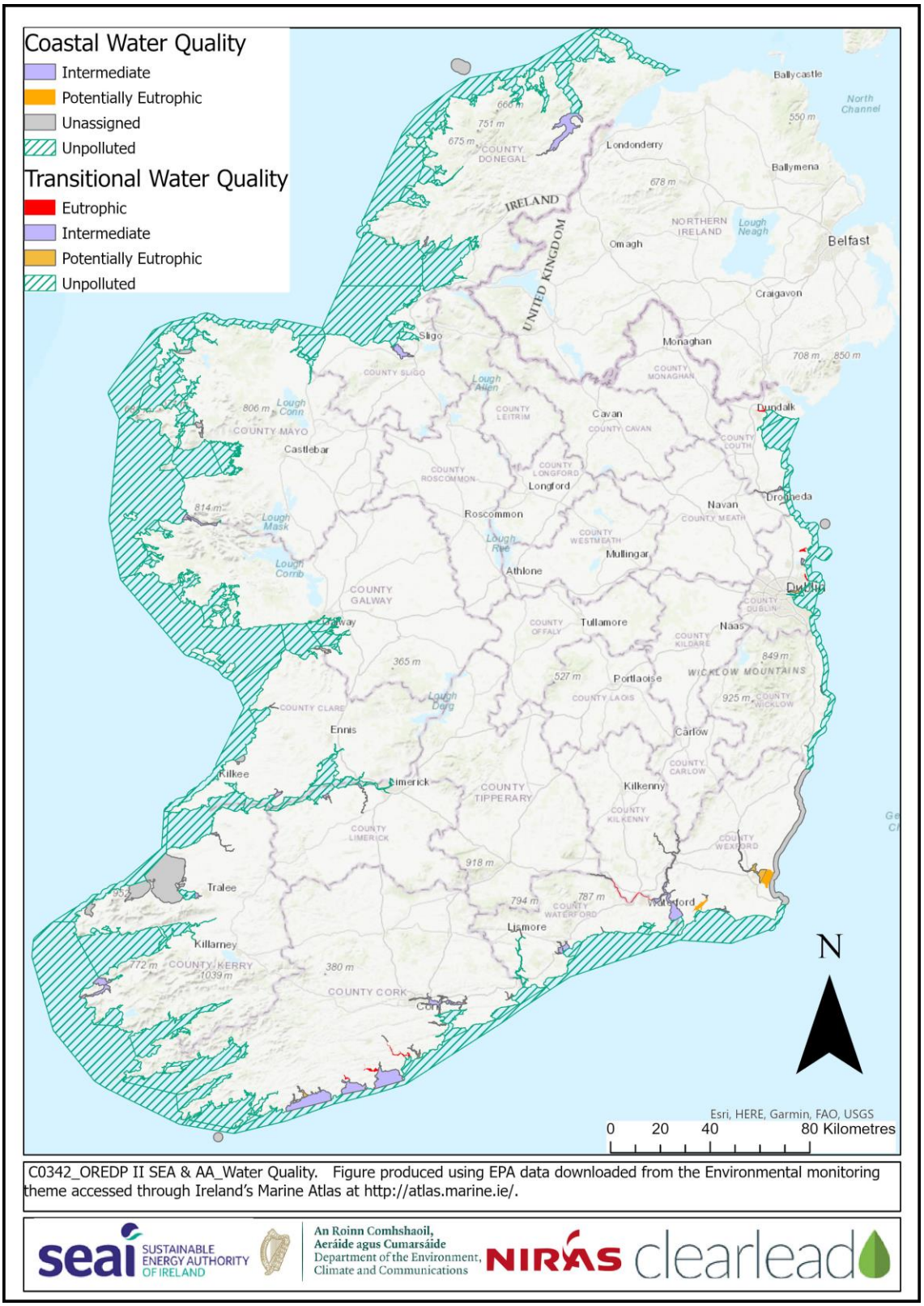
Ireland has achieved Good Environmental Status for eutrophication within its maritime area (DHPLG, 2020), for the three primary criteria assessed:

- nutrients
- chlorophyll a
- dissolved oxygen.

The main areas at risk from eutrophication are inshore estuaries, where waters are subject to more concentrated run-off from agriculture, urban and domestic wastewater discharges and urban runoff. The total area of water classified as having eutrophication issues is 0.05% of the total maritime area and most of these areas are located on the Irish Sea and Celtic Sea coasts (DHPLG, 2020). There is no indication that coast and offshore areas are at risk of eutrophication, nor is there any indication of change in nutrient levels.

Elevated concentrations of phosphorous and nitrogen continue to be the most widespread water quality issue in Irish waters, although it is noted that they are still within GES. Between 1990 and 2013, total nitrogen levels steadily decreased. However, between 2014 and 2018, nitrogen inputs increased by around 30% (DHPLG, 2020).

Figure 5-4 shows the status of transitional and coastal waters between 2013-2018. Eutrophic waters are focused in transitional waters, around Dublin, Dundalk, Waterford, Kinsale, Clonakilty and Timoleague. Two potentially eutrophic areas of coastal water also lie on the south eastern coast, at Wexford and Wellingtonbridge (DHPLG, 2020).



C0342_OREDP II SEA & AA_Water Quality. Figure produced using EPA data downloaded from the Environmental monitoring theme accessed through Ireland's Marine Atlas at http://atlas.marine.ie/.

Figure 5-4: Water Quality in Transitional and Coastal Waters

E.coli levels remained stable between 2009-2015, although there were some waterbodies which frequently failed to meet guidelines (DHPLG, 2018). These included:

- Adrigole Harbour
- Bannow Bay
- Bantry
- Cork North Channel
- Cromane
- Gweedore Bay
- Kinsale
- Loughros Beg
- Tralee Bay
- Wexford Harbour (inner and outer).

Investigations into the causes of these exceedances include the examination of urban wastewater discharges are ongoing but may lead to an increase in the stringency of wastewater treatment procedures.

5.3.3 Data Gaps

It is noted that the environmental status of marine food webs in Ireland's maritime area is currently unknown.

5.4 Climate and Air Quality

5.4.1 Air Quality Emissions

Poor air quality may result in effects on human health, the wider environment and infrastructure. Specific measures of air quality include:

- Sulphur dioxide (SO_2) – emitted during fossil fuel combustion, sulphur dioxides can cause acid deposition which affects soils and surface waters, as well as the corrosion of buildings (EPA, 2021).
- Nitrogen oxides (NO and NO_2) – gases released during high temperature combustion. NO_2 is seen as more important for air quality, due to its increased impact on health. Sources include diesel engines (largest source), petrol engines, industrial construction, off road machinery and electricity and heat production.
- Particulate matter ($PM_{2.5}$ and PM_{10}) - The burning of solid fuels (e.g. coal, peat, wood), produces fine particles which, when airborne, can affect respiratory and cardiovascular health (EPA, 2020).

Large cities such as Dublin, Limerick, Cork and Galway tend to be where air quality is worst, due to the high concentrations of homes and vehicles. In Ireland, many such cities are located on the coast, adjacent to the OREDP II plan area. In 2019, an exceedance of NO_2 above EU Qir Quality legal limits was detected at the St John's Road West monitoring station. This was attributed to high volumes of passing traffic. In response to this, the Dublin Region Air Quality Plan 2021 was produced to improve nitrogen dioxide levels across the Dublin region (Dublin City Council, et al., 2021).

Two key issues negatively affect air quality in Ireland – emissions from the burning of solid fuel in homes and transport emissions. Whilst Ireland was compliant with EU legal limits for emissions in 2020, this was largely as a result of reduced traffic caused by the Covid-19 pandemic and associated lockdowns. Despite no exceedances of EU legal limits, it is noted that during this time, monitored levels were above WHO air quality guidelines at 52 of the 102 monitoring stations, predominately due to the burning of solid fuels for home heating.

Dublin (a city located on the east coast) has become the first Irish city to sign up to the WHO Breathe Life campaign, which will require meeting WHO guideline air quality values by 2030 (WHO, 2022).

5.4.2 Climate Change

Climate change is a worldwide issue, affecting people and the environment:

"*Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability*". (IPCC, 2022)

Ireland is experiencing specific climate change impacts, including:

- Rise in annual surface air temperature by 0.8% since 1990
- Increased rainfall
- Sea level rise
- Increased severity and frequency of extreme weather, such as Storm Ophelia in 2017 and the Beast from the East in 2018 (EPA, 2022), (Govt of Ireland, 2021).

In order to tackle climate change in Ireland, the Department of the Environment, Climate and Communications (DECC) have set out a Climate Action Plan (2021) to reach two key goals for Ireland:

- 50% reduction in GHG emissions by 2030
- Net zero no later than 2050 (Dublin City Council, et al., 2021).

To reach these goals, engagement, investment and enterprise will be key alongside the transition to renewable energy generation and electrification of transport and heat generation. More detail on this is available in Section 3 of this report.

Climate risk is evaluated based on the key principles of Vulnerability, Adaptation, and Resilience.

Development and adaptations across society offer tangible opportunities to reduce vulnerability. System transition across the global energy industry including land, ocean, coastal and freshwater ecosystems is at the core of IPCC 2022 report and is a global pillar in achieving climate resilient development allowing implementing mitigation and adaptation together in support of sustainable development.

Potential for carbon sequestration in the marine environment is closely linked to geology, i.e. rock is surmised to have negligible sequestration potential whilst circalittoral mud thought to have the highest potential for sequestration. Additional habitats such as seagrass hold further potential to sequester carbon at increased rates, as these habitats are thought to capture carbon up to 35 times faster than tropical rainforests (WWF, 2022).

Figure 5-5 below shows the potential for sequestration around the seas of Ireland, as deduced by the NPWS. The highest rates of carbon sequestration potential within the plan area lie around the western coast of Ireland, with further small pockets to the north of Dublin, Rosslare Harbour and southern coastline.

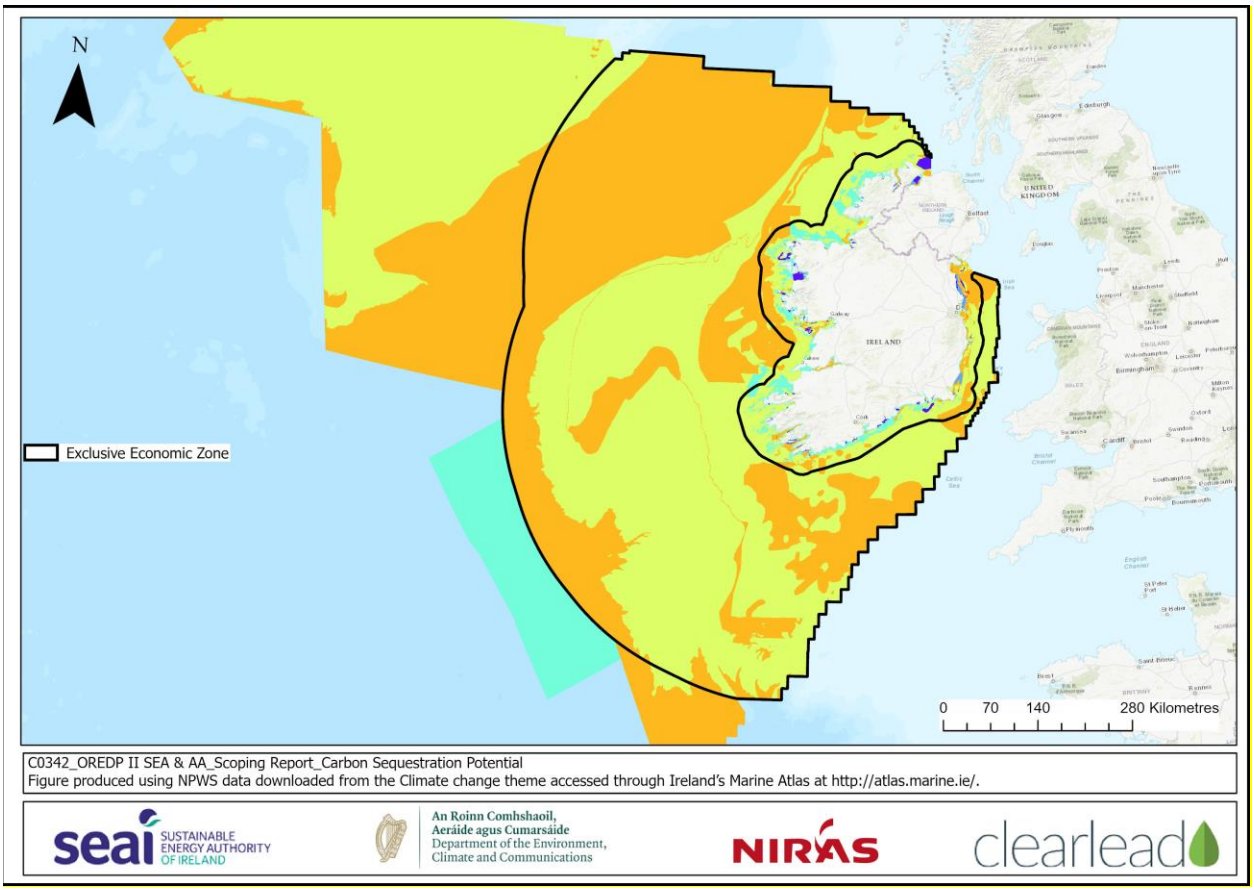


Figure 5-5: Marine sediments with potential for carbon storage

5.4.3 Greenhouse Gas (GHG) emissions

Anthropogenic sources of greenhouses gases (GHGs) are implicated in amplifying the natural greenhouse effect resulting in global warming and potential climate change

Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and the "F-gases" (hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6)) are termed "direct" greenhouse gases as they have a direct effect on radiative forcing (RF) within the atmosphere. Other gases including carbon monoxide (CO), volatile organic compounds (VOC), oxides of nitrogen (NO and NO_2) and sulphur dioxide (SO_2) although not significant direct greenhouse gases, are reactive and impact upon the abundance of the direct greenhouse gases through atmospheric chemistry. (IPCC, 2013).

Cumulatively, it is the concentration of such gases in the atmosphere globally, augmented by anthropogenic emissions, which are leading to global warming.

Reducing emissions of GHGs, and therefore the concentration of such gases in the atmosphere, is the principal means by which the worst effects of global temperature rises and related effects can be avoided. It is widely regarded that maintaining any rise below 2°C above pre-industrial will assist in avoiding these effects, and it is likely that if concentrations of 450ppm or lower are achieved by 2100, that warming below this can be maintained (IPCC, 2014).

5.4.4 Ocean acidification

The ocean absorbs around 30% of carbon dioxide (CO_2) released to the atmosphere as a result of human activities. As CO_2 dissolves in seawater, it forms carbonic acid, decreasing the ocean's pH resulting in ocean acidification.

The acidity of the ocean has increased by 26% since the beginning of the industrial era (UNESCO, 2022).

Ocean acidification is a global problem which requires an internationally coordinated response. Ireland is strategically positioned at the edge of the European continental shelf, adjacent to an ocean area where some of the most important water masses driving the global ocean conveyor interact or are generated. This presents Ireland with a unique opportunity for marine research in these critically important waters.

Ocean acidification is essentially irreversible on practical human timescales. Mitigation can only be achieved through early commitment to a reduction of CO_2 emissions. Protection of the Irish marine environment, underpinned by science-based assessment, is a legal requirement under international obligations such as the OSPAR Convention and Marine Strategy Framework Directive (Dir. 2008/56/EC). (Longphuirt, et al., 2010)

5.4.5 Data Gaps

- Spatially mapped GIS layers of seagrass distribution, potential and current condition

5.5 Marine Pollution

5.5.1 Underwater Sound

Introduction of energy, including underwater sound to the marine environment as a result of anthropogenic activity is identified specifically as Descriptor 11 within the EU MSFD. Man-made sounds can be both continuous and/or impulsive depending on the source, both of which can result in a broad range of potential effects in a variety of marine species. Good Environmental Status under the MFSD is considered to be achieved when '*Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment*' (OSPAR, 2021).

Ireland's marine area currently achieves Good Environmental Status for anthropogenic impulsive sound with the level of impulsive underwater noise causing activities currently considered to be low overall[6]) (Govt of Ireland, 2020). No threshold values are currently proposed for underwater noise.

No characterisation of continuous underwater sound profile in Ireland's marine area has yet been carried out, as methodologies for evaluation of this element of the MSFD Descriptor 11 are still under development.

5.5.2 Marine Litter

Marine litter is defined as "*any solid material which has been deliberately discarded, or unintentionally lost on beaches and on shores or at sea, including materials transported into the marine environment from land by rivers, draining or sewage systems or winds. It includes any persistent, manufactured or processed solid material*." (OSPAR, 2022)

Plastics make up an estimated 70% of all marine litter in the oceans. (An Taisce, 2021). Most common plastic waste found around Ireland's coastline includes: food wrap, cigarette ends, plastic bottles; and plastic bags. (Ocean Conservancy, 2020)

Ireland assessed the status of the marine environment against its Initial Assessment 2013 target of Good Environmental Status: Reduction in the number of visible items within specific categories/types on coastlines. This has been recorded as further improved in the latest published update (Govt of Ireland, 2020).

[6] For the assessment period 2016-2018

5.5.3 Electromagnetic Fields (EMF)

Electromagnetic Fields (EMF) existing naturally in the marine environment as a result of a range of natural functions including from the earth's magnetic field and also from different biochemical physiological and neurological functions within marine organisms.

In addition, a range of anthropogenic sources of EMF are also evidenced within the marine environment. Particularly as a result of subsea electrical submission. EMF is considered to be a source of energy as covered by the MFSD Indicator GES when '*Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment*' (EC, 2008, 2017).

5.5.4 Chemical Pollutants

The presence of and potential release of chemical contaminants to Ireland's marine waters is considered in section 5.3.

5.5.5 Data Gaps

None yet identified.

5.6 Biodiversity

Ireland's marine waters (coastline, inshore and offshore) support a rich and diverse range of species and habitats including plankton, cold water corals, fish, seabirds, dolphins and whales, and wide range of physical habitats and associated species from shallow inshore reefs and sandbanks to canyons, seamounts, troughs and cold water coral reefs in deeper waters. Most recent evaluation as part of Marine Strategy Framework Directive (MSFD) compliance (EPA, 2020) identifies 8-% of Irelands' coastal water bodies and 38 % of transitional water bodies have high or good ecological status. The same report records all Ireland's offshore waters as having achieved Good Environmental Status (GES) for eutrophication[7].

5.6.1 Seabed Habitats

Ireland's marine area supports a range of seabed habitats associated with shallow inshore, continental shelf, slope and deeper water areas. Seabed habitats in the Irish sea off Irelands' east coast comprise a mosaic of circalittoral coarse sediment, sand and mud habitats with some localised areas of circalittoral rock and hard substrata. These habitats are characterised by a diverse range of polychaetes, amphipods, bivalves and echinoderms with the species mix in each habitat type influenced by the physical characteristics and particle size of the sediment present.

Off Ireland's south coast habitats within the territorial seas of the Celtic sea are dominated by a circalittoral rock and hard substrata. These are fauna dominated habitats with localised assemblages significantly influence by metocean characteristics (energy (high, medium, low), wave action, tidal stream, salinity, turbidity etc). Localised habitats in this area are likely to vary significantly. As the 12NM territorial sea limit is reached, seabed habitats begin to transition to deep circalittoral muds and coarse sediments with areas of deep circalittoral sands.

A similar mix of seabed habitat types exist within the territorial seas off Ireland's Atlantic west coast. Outside the territorial seas habitat types transition with increasing water depth to the Atlantic upper bathyal biotope in water depths between 200m and 600m, through the Atlantic lower bathyal of the continental slope and into the Atlantic upper abyssal at water depths of over approximately 2000m. Off Ireland's south west coast an area of lower bathyal sediment or Lower bathyal rock and biogenic reef is define at water depths of between approximately 1300m and 2100m extending into the outer parts of the Celtic sea.

[7] Based on an assessment of status applying OSPAR Comprehensive Procedure indications to evaluate the eutrophic status of marine waters.

5.6.2 Designated sites, Qualifying Interests and species

The waters surrounding Ireland contain a network of protected marine sites, designated under the European Nature Directives (i.e. the Habitats and Birds Directives) (NPWS, 2022). The directives require that habitats and species listed in them are maintained, or if necessary restored, to favourable conservation status. Lough Hyne, Co. Cork is the one Marine Nature Reserve designated under the Wildlife Acts.

Ireland has 89 Special Protection Areas (SPAs) with a marine element designated under the Birds Directive (NPWS, 2022). The marine area involved is 1,593km^2. Many of these encompass cliffs and islands, as well as adjacent waters that support breeding seabirds. Others comprise bays and estuaries that host important populations of wintering waterbirds. **Figure 5-6** below shows the distribution of these designations around the coastline.

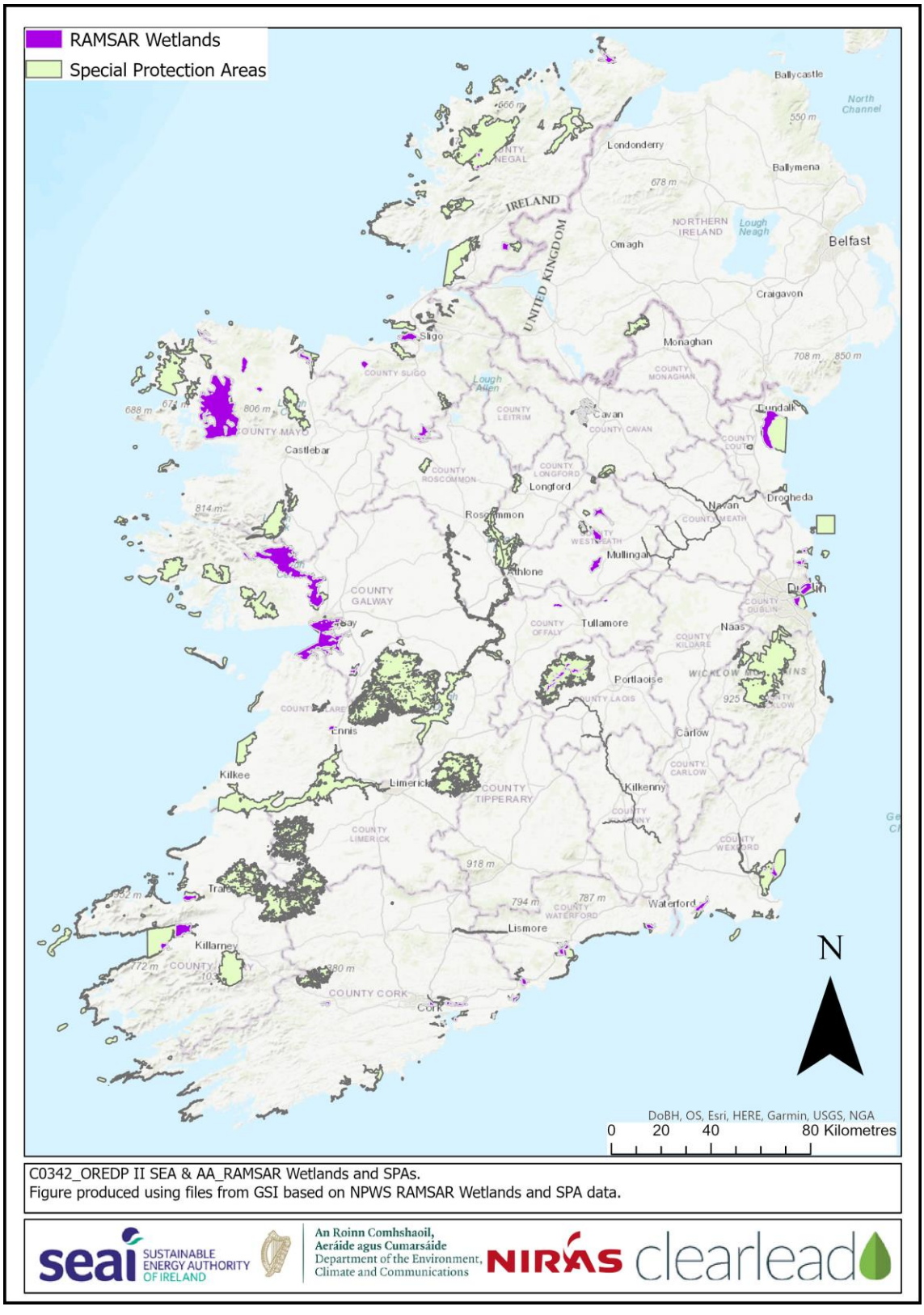


Figure 5-6: Sites designated for nature conservation

5.6.2.1 Sites designated for habitats

Irish waters and the coastline possess 10,420km^2 of habitat designated as SACs, all of which are required to be maintained in a favourable condition (**Figure 5-7**). The following habitat types are included within these designations:

- Coastal Lagoons
- Estuaries
- Marine community types
- Reefs
- Salt marshes
- Sand dines
- Sandbanks
- Sea caves
- Shallow inlets and Bays
- Tidal mudflats
- Vegetated sea cliffs

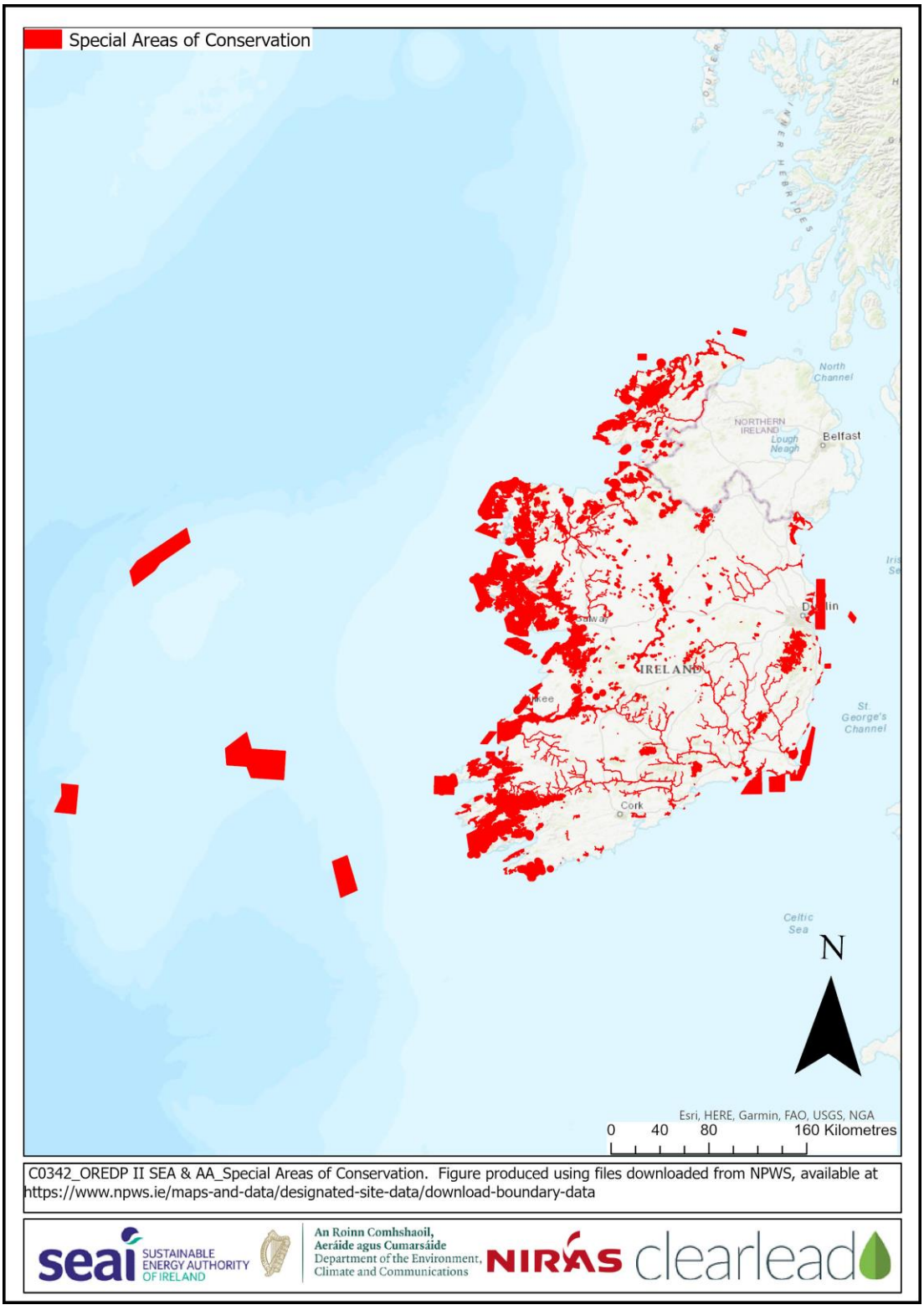


Figure 5-7: Special Areas of Conservation across Ireland and its marine waters

Whilst not all of these habitats lie within the OREDP II plan area, many are adjacent to areas which could be influenced by the plan. Four Offshore SACs lie within Irish waters and all are located off the west coast in the Atlantic Ocean. Specifically, the NW Porcupine Bank, SW Porcupine Bank, Hovland Mound Province and Belgica Mound Province. All are in excess of 100km from the nearest landfall.

45 sites designated as RAMSAR Wetlands are found throughout the coastline of Ireland. These are of international importance, and include wetland habitats which are representative, rare or unique in conserving biological diversity (IRWC, 2022). It is noted that most of the 45 sites within Ireland are small, and often include inland habitats. The largest marine designation stretches from Galway to Black Head lighthouse. RAMSAR Wetlands can be seen within **Figure 5-6**.

5.6.2.2 Sites designated for species

Four entirely marine species require SAC designation: harbour porpoise, bottle-nosed dolphin, grey seal and harbour (common) seal (NPWS, 2022). Other partly marine species such as otter may also be listed for marine sites. **Figure 5-7** above shows the spread of these designated SACs around Ireland and Irish waters.

In addition to the marine mammals listed on Annex II of the Habitats Directive, there are further 22 cetacean species and the leatherback turtle listed on Annex IV. These species require strict protection and, like species on Annex II, require monitoring.

The MSFD report provides insight into the populations of all commercially exploited fish and shellfish species, the status of 177 stocks within Ireland's marine area was assessed. Included within this was crustacean species, e.g., prawn, shrimp and edible crab. This did not include cephalopod species due to a lack of necessary biological information and data collection schemes to support these assessments are not currently in place (DHPLG, 2020).

5.6.3 Fish

Ireland's marine waters support over 400 fish and cephalopod (octopuses, squid, and cuttlefish) species and contain some very important spawning and nursery areas for commercial fish species. The latter are important components of marine ecosystems in their own right as well as being a very valuable fishing resource. As a consequence, many populations, such as cod, have seen population numbers decline as a result of overfishing. Controls on fishing quotas and maintenance of good nursery grounds are some of the steps which have been taken to support the recovery of such populations (Marine Institute, 2022).

Fish species known to use Irish waters as a nursery ground include:

- Atlantic cod (*Gadus morhua*)

- Blue whiting (*Micromesistius poutassou*)
- Hake (*Merluccius merluccius*)
- Herring (*Clupea harengus*)
- Horse Mackerel (*Trachurus trachurus*)
- Megrim (*Lepidorhombus whiffiagonis)*
- Black Bellied Angler Monkfish (*Lophius budegassa).*

An estimated 28 species of shark and 18 species of skates or rays known to be found in Irish waters (IEG, 2022). Species range from the small and well known dogfish *Scyliorhinus canicular* to the basking shark *Cetorhinus maximus.* Deepwater species off the contentiental shelf are also known to be present in Irish waters, including the birdbeaked dogfish *Deania calceus* and the leafscale gulpershark *Centrophorus squamosus.* Skates in European waters usually referring to long-nosed larger species such as the Common skate *Dipturus batis* and which are oviparous (egg laying) where as rays are often smaller species which are viviparous (giving birth to live young) such as the Thornback ray *Raja clavata.*

Seven elasmobranch species are noted of particularly interest in Irish waters (IEG, 2022) include:

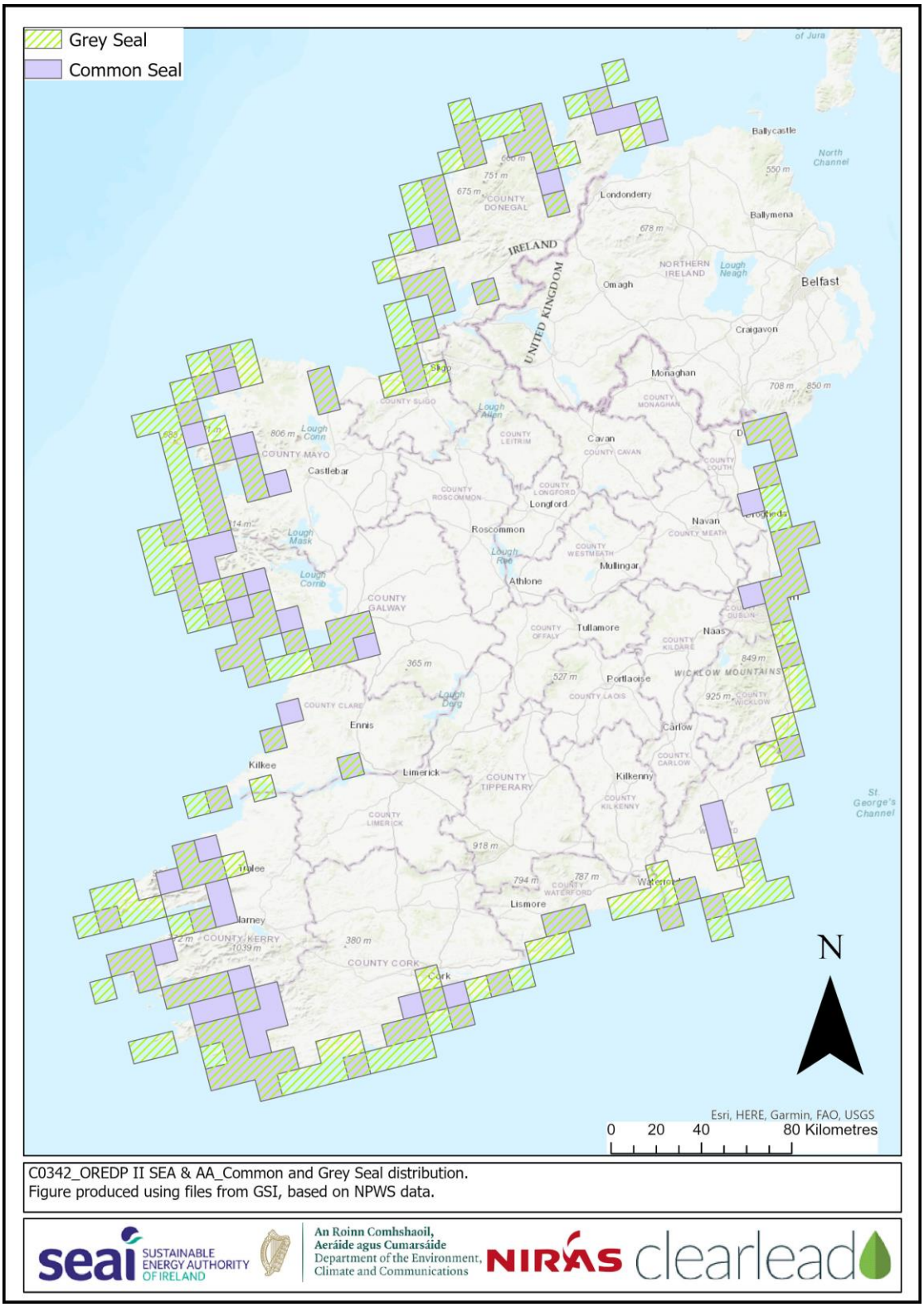
- Angel Shark *Squatina* (critically endangered)
- Blue shark *Prionace glauca* (near threatened)
- Porbeagle shark *Lamna nasus* (critically endangered)
- Basking shark *Cetorhinus maximus* (endangered)
- Undulated ray *Raja undulata* (Endangered)
- Long-nosed skate *Dipturus oxyrinchus* (vulnerable)
- White skate *Rostroraja alba (critically endangered).*

Population estimates particularly for basking sharks are currently not available due to a lack of measurable data sets over a prolonged time. There is also a lack of data on the distribution of the species within Irish waters, although high numbers have been recorded anecdotally. Current work by the Irish Basking Shark Group (IBSG) may help to reveal detailed movements, but it is thought that agglomerations for this species occur around Malin Head (IBSG, 2022).

5.6.4 Marine Mammals

Ireland's marine territory also supports 25 species of resident or regularly-visiting whales (e.g. fin, humpback and minke whales) and dolphins (e.g. common, bottlenose, striped and white-sided) (IWDG, 2022). Whilst there are reports of sightings for these species within the marine environment available in a spatial format, there is currently no data detailing specific habitat use by these species.

There are also known colonies of seal species around the coastline and their use of the coastline as habitat is widespread, as seen in **Figure 5-8** below. Specifically, grey, and common seals which can be found around the coastline.



C0342_OREDP II SEA & AA_Common and Grey Seal distribution.
Figure produced using files from GSI, based on NPWS data.

Figure 5-8: Marine Mammals

5.6.5 Bats

Nine species of bat are known to reside in Ireland (Bat Conservation Ireland, 2022):

- Common pipistrelle (*Pipistrellus pipistrellus*)
- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Nathusius' pipistrelle (*Pipistrellus nathusii*)
- Leisler's bat (*Nyctalus leisleri*)
- Brown long-eared bat (*Plecotus auritus*)
- Daubenton's bat (*Myotis daubentonii*)
- Whiskered bat (*Myotis mystacinus*)
- Natterer's bat (*Myotis nattereri*)
- Lesser horseshoe bat (*Rhinolophus hipposideros*).

These species and their roosts are protect under several laws and regulations, including the EU Habitats Directive (92/43/EEC) (Specifically, Annex IV for all species and Annex II for the lesser horseshoe bat) the Wildlife Act 1976 and subsequent amendments.

5.6.6 Reptiles

Small numbers of leatherback turtles (*Dermochelys coriacea*) have been recorded within Irish waters. A clear trend for numbers or distribution of the species has not been found, however, it is thought that the northernmost limits follow the 15^{o}C isotherm (DEHLG, 2007).

5.6.7 Non-indigenous Species

Non-indigenous species, are those which are not native to Irish waters. Non-indigenous species can reach Irish waters either accidentally or less frequently through deliberate introduction. The most common route for accidental introduction of non-indigenous species is likely via the movement of shipping into Irish waters from elsewhere, where introduction often goes initially undetected, with presence only become apparent as a non-indigenous species becomes established in its receiving environment.

Only limited information existing relating to the current presence and or impact of non-indigenous species in Irish marine waters. In total, 135 marine NIS have been recorded within Ireland's waters since 1811 (DHPLG, 2020). Particular examples have been recorded in the past such as the parasite *Bonamia ostreae* which has been linked to observed declines in yields of commercially harvested native oysters (DHPLG, 2019). Between 2013 and 2018, three new species were recorded within Ireland's maritime area as a direct result of anthropogenic activity, as part of monitoring in line with the MSFD:

- *Undaria pinnatifida*, Wakame or Asian kelp: encountered in Carlingford Lough, Co Louth in September 2014 and Dun Laoghaire Marina, Dun Laoghaire, Co. Dublin May 2017.

- *Schizoporella japonica*, a bryozoan: encountered in Greystones Marina, Co Wicklow in October 2015.
- *Perphora japonica*, a colonial sea squirt, encountered in Carlingford Lough, Co Louth in June 2013 and Annagh Island, Co. Mayo in August 2015**Error! Bookmark not defined.**.

This number is considered to be low, although it is noted that the target should always be zero for NIS.

Ireland's waters are currently considered to have achieved good environmental status under the MSFD GES Description 2 for Non-indigenous species (Govt of Ireland, 2022).

5.6.8 Birds

The seas around Ireland are used by roughly 60 species of resident and visiting birds of which 24 are considered "seabirds" (e.g. terns, puffins, guillemots, sea gulls and gannets) while the remainder include waders and sea ducks. Over 500,000 pairs of seabirds breed annually around the island of Ireland.

Many of the species found around the coast are of high conservation concern and thus designated as Red-list species (Gilbert, et al., 2021) including:

Breeding

- Black-necked grebe (*Podiceps nigricollis)*
- Leach's storm petrel (*Hydrobates leucrhous)*
- Kittiwake (*Rissa tridactyla)*
- Puffin (*Fratercula arctica*)
- Razorbill (*Alca torda*)
- White Tailed eagle *(Haliaeetus Albicilla)*

Passage

- Balearic shearwater *(Puffins mauretanicus)*
- Curlew sandpiper (*Calidris ferruginea*)

Wintering

- Bewick's swan *(Cygnus columbianus bewickii)*
- Long-tailed duck (*Clangula hyemalis*)
- Velvet scoter *(Meanitta fusca)*
- Golden eye *(Bucephala clangula)*
- Scaup (*Aythya marila)*
- Slavonian grebe *(Podiceps auratus)*
- Breeding and Wintering
- Eider *(Somateria mollissima)*
- Common Scoter (*Melanitta nigra*)

- Pochard *(Aythya farina)*
- Shoveler (*Anas clypeata*)
- Oystercatcher (*Haematopus ostralegus)*

5.6.9 Plankton

Ireland's marine strategy under the MSFD has assessed the progress towards the achievement of Good Environmental Status (GES) for elements of the marine food webs within the "Celtic Seas ecoregion". Prior to this, OSPAR Common Indicator Methodologies were followed concentrating on three trophic guilds – Phyto-plankton; zoo-plankton; and fish species (DHPLG, 2020). There is a data gap around higher trophic guilds, such as marine birds, mammals due to limited data and integration models.

5.6.10 Data Gaps

- Specific habitat use data for marine mammals and reptiles is required. This was noted as a data gap within the MSFD Marine Strategy Report, 2020 (DHPLG, 2020).
- It is noted that there is a great disparity in the information available for those fish species which are and are not commercially fished (DHPLG, 2020).
- Population estimates for and precise distribution data is currently not available for basking sharks.
- Further information will be sought in relation to marine invertebrates including shellfish species.
- Further data relating to migratory flight routes for bird species and for bats will be sought.

5.7 Cultural Heritage

Marine cultural heritage in Ireland is rich and includes:

- submerged landscapes
- Harbours
- Jetties
- Landing places
- Fish traps
- Kelp grids
- Bridge sites
- Crannogs
- Tidal mills.

The Underwater Archaeology Unit (UAU) of the National Monuments Service (NMS) works to protect and preserve such features through research to identify and quantify those present throughout Irish waters.

5.7.1 Protected Sites

Ireland has one marine-based UNESCO World heritage Site – Skellig Michael. This lies off the south western coast, within the Atlantic and the island forms parts of the Skellig Islands. The site was designated for its religious significance, importance for Catholics whose rights and beliefs were suppressed. Records of the site date back to 600AD and a monastery is known to have been in place on the island until the 13th century (skelligislands, 2022).

All wrecks in excess of 100 years old within Irish waters are protected under Section 3 of the National Monuments (Amendment) Act 1987. Wrecks less than 100 years old, as well as potential locations for wrecks can also be protected under this Act if considered to be significant importance. One such example was RMS Lusitania, a ship torpedoed by a German submarine in 1915 off the coast of Cork. This was granted protected under the Act in 1995, despite being under 100 years old at the time. Further information on the wrecks of Ireland is available in section 5.7.4 below (NMS, 2022).

5.7.2 Submerged landscapes

There are 14 known submerged sites are located across Ireland, however, the majority of these sites are intertidal. Few subtidal sites are fully subtidal but it is noted that such sites are ubiquitous across Ireland (Westly & Woodman, 2020), (ECST, 2022).

5.7.3 Wrecks

Significant numbers of shipwrecks have been recorded from around our coast and while ongoing work by the National Monument Service has created an archive of over 18,000 wrecking events, it is estimated that the true figure could be as high as 30,000 wrecks. These losses off the Irish coast and within inland waterways represent a wide variety of vessel types. These include longboats, currachs, medieval ships of all classes, fishing and trading vessels, steamships, submarines, warships, ocean-going liners and approximately 1,800 wrecks relating to World Wars I and II (NMS, 2022). **Figure 5-9** below shows the presence of known wrecks around the coastline, which are densely clustered from the South West of Ireland to Dublin, as close to the coastline of County Cork as 800 meters. Shipwrecks are also present off the southern coast, within the Celtic Sea. Clusters are dense along the south eastern coast up to Dublin within Irish Sea territory. There are no shipwrecks present in the North Channel. There is a dense cluster present on the Northern Irish Coastline, as close to Rutland Island as 50 metres.

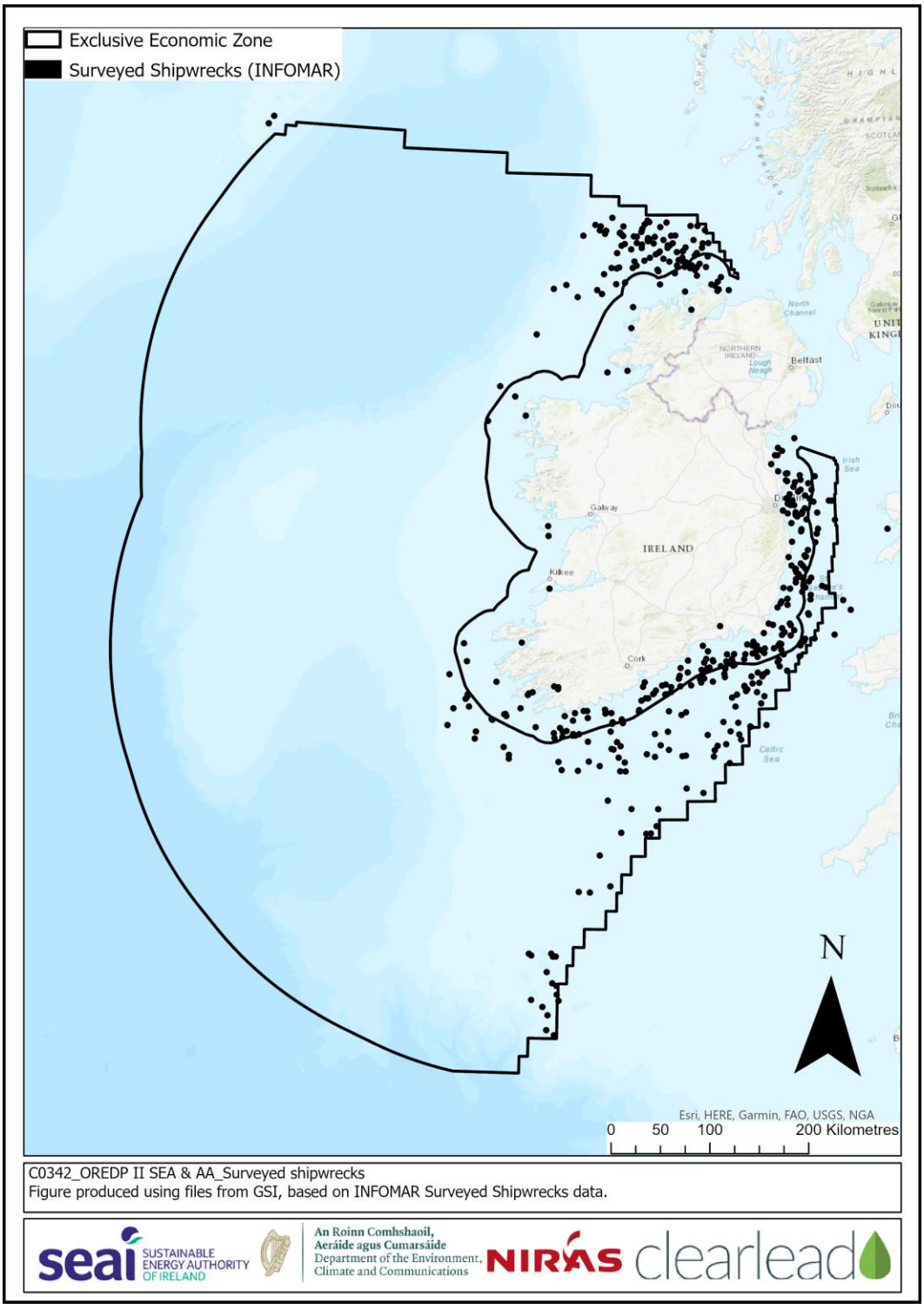


Figure 5-9: Known Wrecks in the OREDP II Plan area

5.7.4 Data Gaps

Whilst no specific data gaps have been identified, it is noted that the vast nature of Irish waters make it challenging to find and identify marine heritage assets. Most assets known are located within coastal waters and whilst this could be due to prevalence of wrecks, harbours and other anthropogenic remains, this is also where search effort is easiest.

5.8 Landscape and Seascape

The seascape is an important part of Ireland's identify and culture due to its integral role in the economy and population wellbeing. **Figure 5-10** shows the country of Ireland and surrounding Exclusive Economic Zone (EEZ).

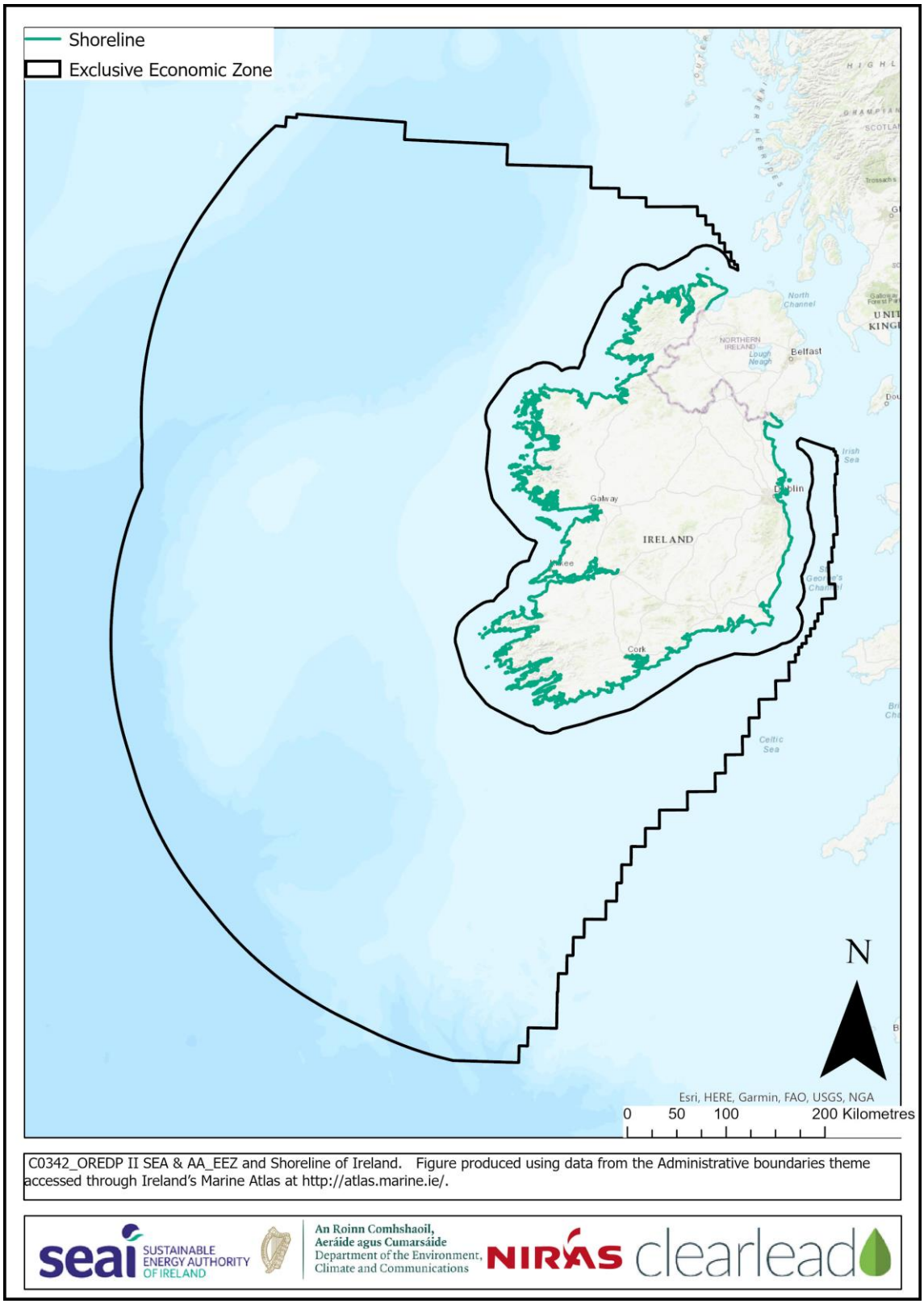


Figure 5-10: Exclusive Economic Zone and Shoreline of Ireland

In 2020, a marine seascape character assessment was undertaken around the coastline of Ireland. 13 Regional Seascape Character Areas (RSCAs) were identified around the Irish coast which designate 'a unique geographical area of land, intertidal and marine area with a recognisable sense of place and identify' (Marine Institute, et al., 2020). **Figure 5-11** below shows the distribution of RSCAs throughout the Irish coast.

5 RSCAs were identified along Irish sea coast:

- Border-Carlingford Lough: comprising sea lough/fjord with raised hinterland.
- North-eastern Irish Sea Islands and beaches: comprising large limestone bays with low lying/undulating hinterland & coastal wetlands; and broad estuarine bays and complex low plateau and cliff coastline.
- Dublin Bay: comprising modified historic urban bay.
- Irish Sea Sandbanks & Broad Bays: comprising a large limestone bay with low lying/undulating hinterland & coastal wetlands; and broad estuarine bays and complex low plateau and cliff coastline.
- South East Irish Sea: also comprising a large limestone bay with low lying/undulating hinterland & coastal wetlands; and broad estuarine bays and complex low plateau and cliff coastline**Error! Bookmark not defined.**.

3 RSCAs were identified along Celtic Sea Coast:

- Celtic Sea Bays and Beaches: comprising mostly broad estuarine bays and complex low plateau and cliff coastline; but also an area of large estuary (Waterford) and large Islands SCT (Great and Little Saltee).
- Cork Harbour & Estuary: large estuary (Cork).
- Atlantic Celtic bays and estuaries: comprising mostly complex indented small peninsulas, low cliffs & small sandy beaches.

9 RSCA are identified along Atlantic coast:

- Atlantic Southwest Rias, Bays and Islands: comprising sandstone peninsulas with drowned valleys (Rias); and also large islands.
- Shannon Estuary & Tralee Bay: comprising large limestone bay with low-lying/undulating hinterland & coastal wetlands; and high granite/sandstone cliffs & plateau; and large estuary (Shannon).
- Atlantic Clare Cliffs: comprising high granite/sandstone cliffs & plateau.
- Atlantic Galway Bay & Islands: comprising a large limestone bay with low-lying/undulating hinterland & coastal wetlands and large islands (Inishmore, Inishmaan and Inisheer).
- Atlantic North Mayo & Galway: comprising a large limestone bay with low-lying/undulating hinterland & coastal wetlands; complex metamorphic and igneous indented coastline,

small bays and small islands; sea lough/fjord with raised hinterland (Killary) and large islands (Achill and Clare Islands).

- Atlantic Sligo Bay: comprising a large limestone bay with low-lying/undulating hinterland & coastal wetlands and high granite/sandstone cliffs & plateau.
- North Atlantic Islands, Headlands & Beaches: comprising high granite/sandstone cliffs & plateau; complex metamorphic and igneous indented coastline, small bays and small islands; and large islands (inc. Arran Island).
- North Donegal Atlantic Headlands, Bays and Beaches: comprising high granite/sandstone cliffs & plateau; complex metamorphic and igneous indented coastline, small bays and small islands; and sea loughs/fjords with raised hinterland (River Swilly).
- Border-Lough Foyle: comprising sea loughs/fjords with raised hinterland (Lough Folyle)**Error! Bookmark not defined.**.

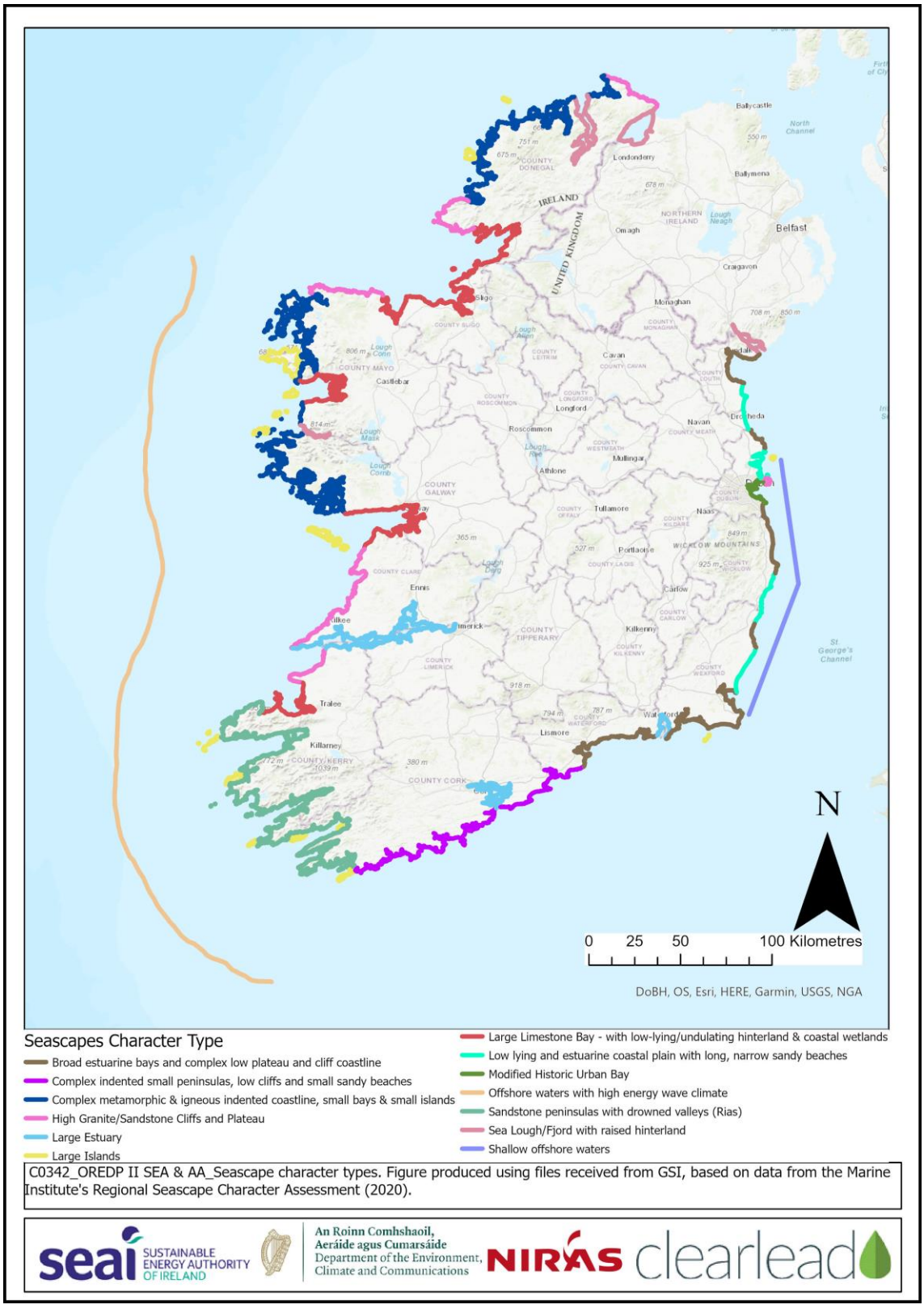
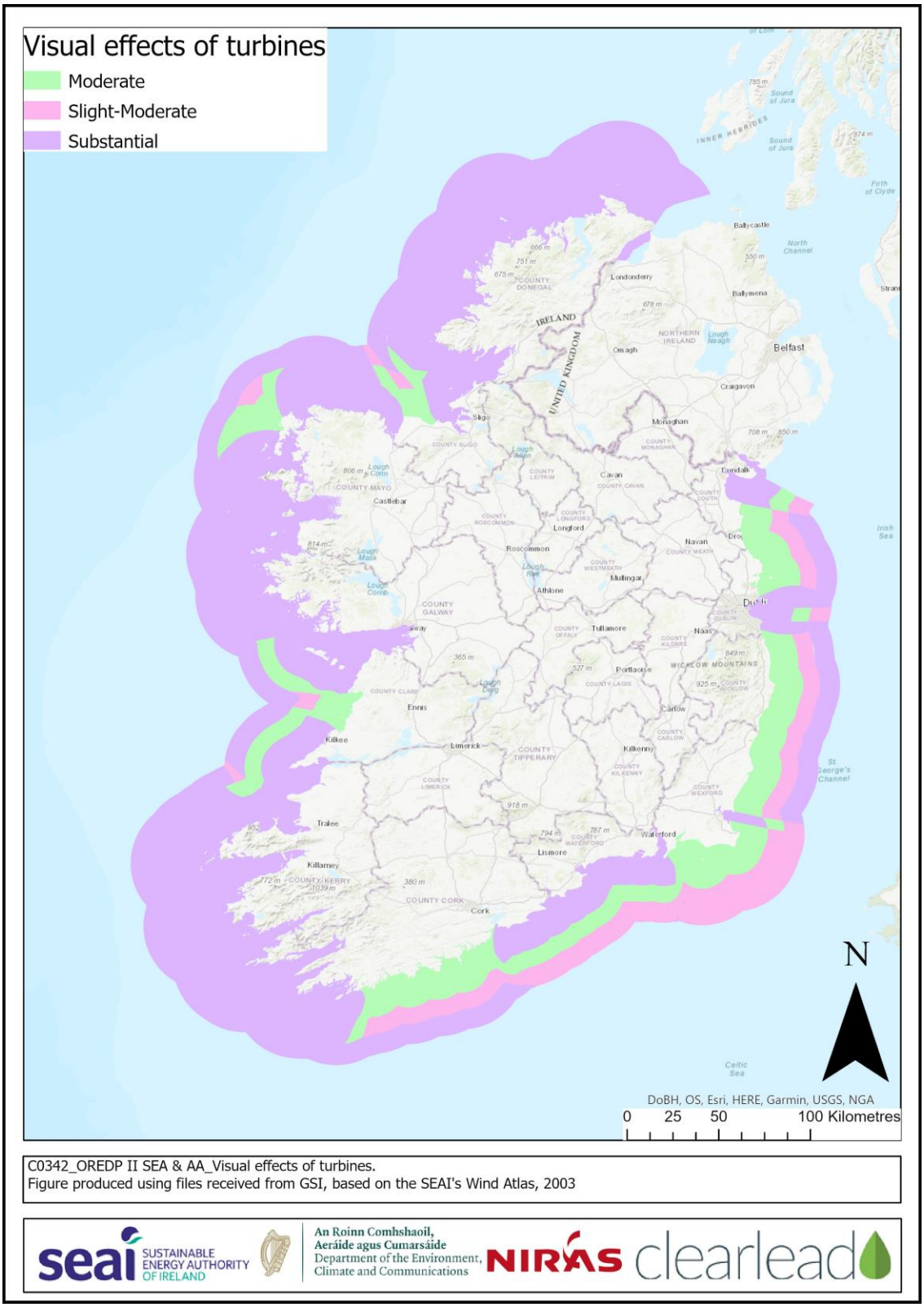


Figure 5-11: Seascape Character Areas of Ireland Error! Bookmark not defined.

As part of the regional seascapes character assessment, an evaluation of the sea surface visible from land was undertaken. Outside 12NM sea surface visibility from land is low, in most cases with less than 10% visibility. By contrast, the extensive inlets and bays along the Atlantic west coast are highly visible from land (100% visible on the nearshore reducing to an estimated average 50% visibility towards 6NM from the coast).

Similarly, an assessment of the potential visual effects of wind turbines on the seascape has been undertaken throughout the coastline, detailing the severity of impacts from 0 to 24km out to sea. **Figure 5-12** indicates that the greatest visual impacts are likely to occur on the western coastline, with more limited impacts on the eastern side of the country. It is also noted that there is no area where turbines are expected to lead to no visual impact.



C0342_OREDP II SEA & AA_Visual effects of turbines.
Figure produced using files received from GSI, based on the SEAI's Wind Atlas, 2003

Figure 5-12: Visual effects of turbines

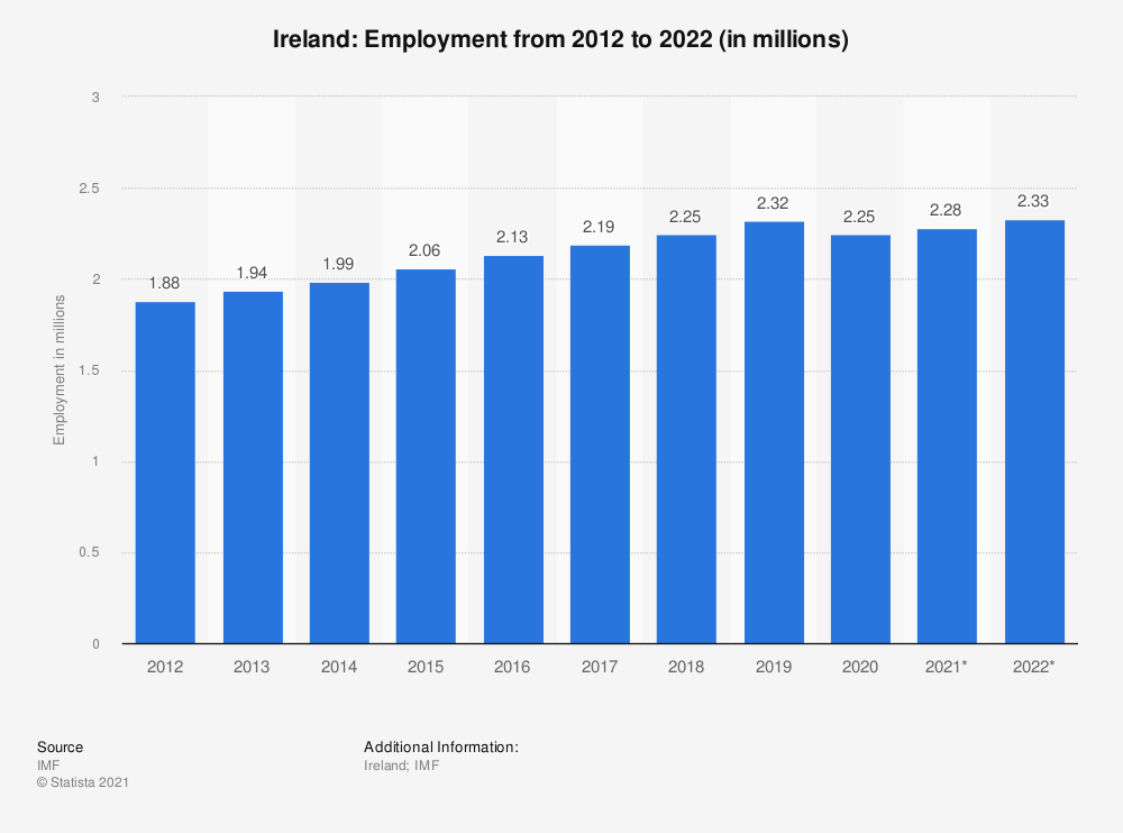
5.8.1 Data Gaps

Whilst the visual impacts of turbines have been documented through previous study, the same information is not readily available for other technology types. It is anticipated that wave and tidal effects would be more localised to deployment locations due to a lower external profile, however further information is required.

5.9 Population and Human Health

5.9.1 Employment

In 2019, Ireland's most active area's of employment were the agricultural sector (4.43%), industry (18.77%) and the service sector (76.8%) (Stastita, 2022). Data produced by the international Monetary Fund (IMF) in the World Economic Outlook Database demonstrates a steady rate of employment between 2012 to 2022 across all sectors. As expected, the economic impact of the coronavirus pandemic had consequences for employment capabilities in Ireland, explaining the reduction in employment in 2020 and 2021. Rates of employment have recovered to pre-pandemic level (Statista, 2021).



IDA Ireland (Industrial Development Agency) has reported a record high performance for Ireland FDI (Foreign Direct Investment) in a single year, for 2021, despite the challenging and volatile international economic environment. This relates specifically to those individuals employed in the multinational sector in Ireland, reaching around 275,000 - the highest FDI employment ever recorded in Ireland. As a result, 29,000 new jobs were created across all sectors in 2021. The employment opportunities recorded are not just limited to the most developed cities, over half

(53%) of the investments won went to regional locations, driving employment growth in every region of the country. Despite this, competitiveness and capacity challenges are present (IDA Ireland, 2021).

SEMRU, the Socio-economic marine research unit had targeted to double the value of Ireland's ocean wealth to 2.4% of GDP by 2030 (SEMRU, 2019). The direct impact of marine employment, reported for 2018, was 34,130 employees, at 1.16% GDP. There is a lack of data regarding the current employment statistics within the Marine Sector in Ireland.

5.9.2 Human Health

Life expectancy in Ireland has increased by more than six years since 2000, this is 1.5 years above the EU average. Last reported in 2019, the gap life expectancy between men and women was nearly 4 years, below the EU average of 5.5 years. In 2018, circulatory diseases and cancers accounted for more than 30% of all deaths in Ireland. Ischaemic heart disease specifically was the leading cause of death in 2018. The coronavirus pandemic accounted for 5059 deaths between 2020 and August 2021. Irelands mortality rate in August 2021 was approximately one third lower in Ireland than the average across EU countries. With encouraging statistics, most Irish adults report being in good health, but nearly three in ten have a chronic condition.

According to estimates by the Joint Research Centre based on incidence trends from previous years, 27,000 new cancers were expected in 2020, the age standardised instance rate for cancer was expected to be the highest in the EU for men and women due to an increasingly aging population and wider behavioural factors. The main risk factors are in relation to alcohol and tobacco misuse and lifestyle factors, including lack of physical exercise and diet (OECD, 2021).

In Ireland, 1.9 million people live within 5km of the coast (Marine Institute, 2020). Over the last decade, changing environmental parameters because of climate change, has led to an increase in extreme weather and coastal hazards. The ongoing research project titled 'Sea's Ocean's and Public Health in Europe' (SOPHIE) proves the intrinsic link between ocean health and human health, and overall wellbeing. In the research conducted so far, risks of ocean pollution and marine biodiversity are the largest threats to marine health, as voted by respondents (SOPHIE Consortium, 2020). Although there is a gap in the data in relation to coastal communities and health in Ireland as a whole, the threat of pollution is evident on Dublin's coast. Research from University College Dublin suggests that disease-causing bacteria or viruses or protozoa may be present in the sea, sources ranging from sewage or agricultural waste, or animal waste which is deposited on the beach. This may result in human illness when humans swim in the water or consume foods such as shellfish, which have been grown in aquaculture (One Health UCD, 2021).

5.9.3 Leisure

Ireland's waters host a huge range of marine sport, leisure and adventure activities including sailing; canoeing; dinghy sailing; jet skiing; paddle-surfing / StandUp Paddleboarding (SUP'ing); kite surfing; powerboating; sea kayaking, surfing, snorkelling, diving, wakeboarding, water skiing, windsurfing, rowing; coasteering and sea swimming. Sailing is the most popular with over 19,000 club members in 60 clubs and Ireland is a world class sailing destination.

Ireland is also a world leading destination for other marine activities such as surfing, particularly along the west coast at locations such as Lahinch, Strandhill, and Mullaghmore where big wave surfers from around the globe gather to take on the famous "prowlers" wave. Ireland's position on the continental shelf offers significant opportunity for scuba diving and snorkelling all year around with over 80 clubs nationally.

As referenced previously within the section on human health, the EU funded project, SOPHIE provides evidence to support the positive impact of ocean on human wellbeing, as a highly valuable resource for human leisure activities. Spending time at the beach offers an increase in exposure to Vitamin D, boosting quality of sleep and reducing symptoms of anxiety and depression. Sea swimming has multiple health benefits, releasing endorphins and the salt water can sooth some skin conditions, as it is naturally rich in magnesium **Invalid source specified.**.

Particularly during the pandemic, where daily routines have been impacted by restrictions and infection, adolescents reporting elevated symptoms of depression increased from 39% to 46%. For those previously active, there was an increase in physical activity, for those previously inactive, rates of poor mental health increased. Accessibility and availability of healthy coastlines for the population of Ireland is therefore essential for those using this as a means of both leisure, and routine physical activity to regulate both physical and mental health (Murphy, et al., 2021).

5.9.4 Data Gaps

Figures relating to employment offer an overview of the current economic and employment situation in Ireland. The related information for the marine sector in Ireland was reported and published in 2018, these levels represent pre-pandemic data. More recently published data is required to offer an accurate picture of the current situation. There is a gap in measurable data regarding the correlation between the health of the population living in Ireland, and the impact of living in Coastal Communities.

5.10 Material Assets

5.10.1 Tourism

Tourism is a crucial source of income for the Irish Economy. Fáilte Ireland (the National Tourism Development Authority) figures for 2017 evidence this (Failte Ireland, 2022).

- 9 million overseas tourists came to Ireland, representing a growth of 3.2%;
- Overseas tourism expenditure grew by an estimated 4.2% to €5.3bn;
- Volume of holiday trips taken by domestic residents was estimated at 4.9 million;
- Spending by Irish people on holiday trips in Ireland amounted to €1.1bn;
- Almost 150,000 people were employed in the accommodation and food service sectors alone.

Ireland's coastal areas, marine resources and activities are significant components in the overall tourism offering. The qualities that make a region attractive as a place to visit also enhance its attractiveness as a place to live, work and invest in. For example, 'The Wild Atlantic Way' tourism experience brand is designed to highlight and leverage Ireland's unique geographical positioning along the Atlantic Ocean.

Out of a total of 4.9 million domestic holiday trips in 2017, about 1 in 5 (21%) domestic holidaymakers engaged in water sports (excluding swimming), and 3% engaged in angling. By allowing tourists to engage with and feel the benefits of coastal activities during their holiday coastal communities in Ireland hope to entice more visitors, encouraging them to increase duration and as a result, spending.

Fáilte Ireland own research on Irish tourism businesses and tourist travel patterns within Ireland shows that 70% of visitors are concentrated in areas representing 30% of the country and most of these areas are along the coastline.

The Irish Tourism Confederation (ITIC) has previously revealed that the tourism and travel sector of the country lost about €400 million in December 2021, it is estimated that about €17 million are being lost per day in the country due to the ongoing pandemic and the restrictions in travel that come with this (schengenvisainfo, 2022). Fáilte Ireland reports that Ireland's tourism sector may not make a full recovery until 2026.

5.10.2 Mineral Exploration and Mining

The activity of marine exploration and mining can involve extraction of sedimentary sand or gravel materials located on the seabed this may involve dredging of the deposit to remove it from the seabed. According to the National Marine Planning Framework, for commercial purposes extraction up to 2018 was from terrestrial sources (Gov't of Ireland, 2019).

Mineral exploration and mining have been permitted only for beneficial purposes such as beach nourishment, coastal protection, reclamation and backfill. However, anticipated growth in construction activity and associated demand may lead to a greater level of marine exploration and mining, leading to further extraction in the future. There is a gap in data regarding updated statistics on Mineral Exploration and Mining, the figures used reflect the landscape in 2018.

5.10.3 Defence

The Naval Service is Ireland's primary maritime defence agency and comprises eight ships, primarily deployed in fisheries protection tasks, from Haulbowline Naval base in Cork. Investment in a new ships programme since 2010 runs to over €250 million which has delivered four new Naval Service vessels (Irish Defence Force, 2020).

- LÉ Samuel Beckett was commissioned in May 2014,
- LÉ James Joyce was commissioned in September 2015,
- LÉ William Butler Yeats was commissioned into service in October 2016.
- LÉ George Bernard Shaw was accepted into state service in October 2018.

The Irish Government has most recently purchased two new navy patrol vessels, to replace two existing ships, LÉ Orla, and LÉ Ciara for a combined cost of €26m (£21.8m) as part of the continued regeneration of the Irish Navy forces (BBC News, 2022).

The Air Corp operate Maritime Patrol Aircraft from Casement Aerodrome Baldonnel, County Dublin. Together, the Naval service and the Air Corp have responsibility for patrolling the Irish EEZ, particularly to protect Irelands fisheries and to ensure compliance with national and EU fisheries legislation. General surveillance, security, pollution monitoring and marine search and rescue services are also provided.

5.10.4 Aquaculture

In 2018, Ireland produced 0.3 million tonnes of fish (including molluscs and crustaceans), with a value of USD 498.1 million. 41% of this value came from aquaculture and 59% from fisheries (that is, the capture of wild resources) (OECD, 2021).

Aquaculture is an integral part of Ireland's coastal economy, this is divided primarily between finfish, shellfish and seaweed species, and an aquaculture licence is required for this activity. Some aquaculture takes place on land, but most of the aquaculture activity takes place in the marine environment on the foreshore, with the main activity concentrated on the south, west and northwest coast (Government of Ireland, 2018).

The Bord Iascaigh Mhara (BIM) Aquaculture Survey (BIM, 2018) indicates that Irish Aquaculture output in 2017 increased to 47,147 tonnes of farm-gate produce, worth €208.4 million. Production

continued to expand in both overall volume (plus 7%), value (plus 24%) and unit value from 2016. While some areas such as rope mussel production are relatively static since 2008, oyster production increased in volume from 2007 to 2016 by over 25%, with a value increase in the order of 128% over the ten-year period. The salmon farming sector also experienced an increase in production in the order of 60% from 2007 to 2016, reaching 16,300 tonnes. However, the increase in value for salmon is quite striking with an increase of over 100%, reaching nearly €105 million in 2016. The industry employed 1,913 people directly on 280 primary production units in 2017. More recent figures show that Ireland is a net exporter of fish and fish products, between 2008 and 2018 exports increased by a total of 38%, while imports increased by 38%, global share of aquaculture volume was recorded by the OECD as 0.447% in 2018.

Predicted to grow over the next 5 years is seaweed harvesting in Ireland. Some 25,000 - 40,000 tonnes of wild seaweed are harvested and sold every year at present. Estimates vary of the number of harvesters who are engaged in seaweed harvesting and it is estimated to be somewhere in the region of 150 – 300. The value of aquaculture across Ireland is illustrated in **Figure 5-13** (2018 reflection).

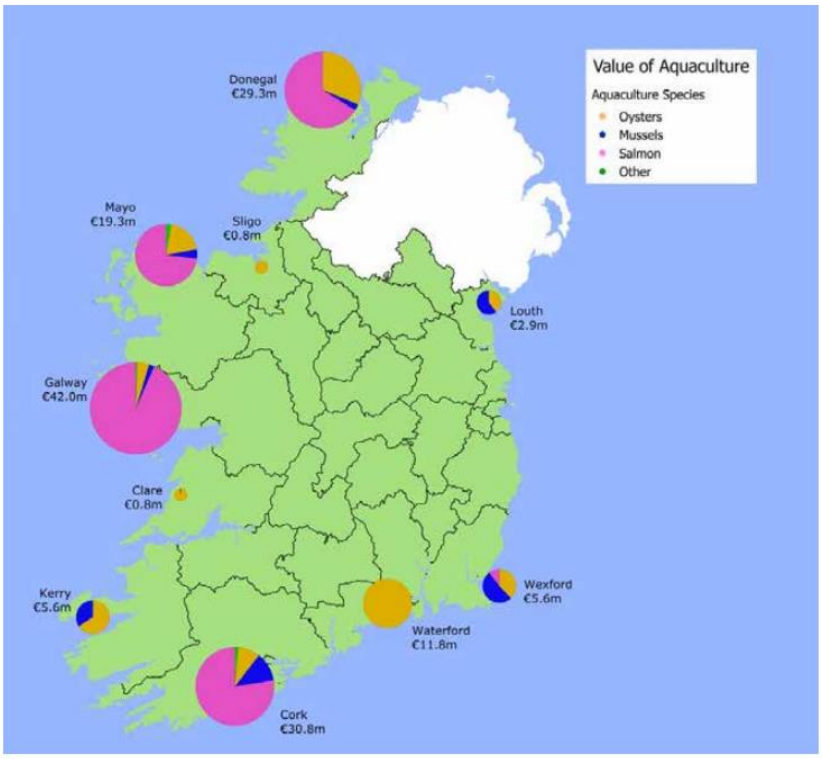


Figure 5-13: Value of Aquaculture across Ireland (Government of Ireland, 2018)

5.10.5 Commercial Fishing

Ireland's coastline, inshore and offshore waters contain some of the largest and most valuable sea fisheries resources in Europe. In 2018 Employment in the seafood sector, including

processing, accounted for 9204 jobs. This represented 1% less jobs than in 2008. Over the same period, the average value of production per employee increased by 18% in marine fisheries and increased by 55% in aquaculture (OECD, 2021). This valuable resource offers economic and social value, particularly in remote coastal regions. The fishing industry has also made a significant contribution to Ireland's social and cultural history.

Data reported in the NMPF in 2018 demonstrate the overall 2017 fishing opportunities (i.e. Total Allowable Catches (TACs) species) for stocks to which the Irish fleet has access to, were 1.3 million tonnes of fish, with an estimated landed value of €1.44 billion. Ireland's total share of these TAC's in 2017 amounted to 234,493 tonnes with a value of €226m. The most important stocks for Ireland by value include mackerel and Nephrops (prawns). With seafood landings to Ireland's main fishing ports amounting to €401m in 2017.

Ireland's waters are currently considered to have achieved partial good environmental status under the MSFD GES Description 3 for Commercial Fish and Shellfish with 18% of fish stocks (24 species) achieving GES. 22% of fish stocks (44 species) are not currently recorded at GES, with the remainder unknown (Govt of Ireland, 2022)

While there is no consistent international definition of 'inshore fisheries' or 'small scale coastal fisheries' the EU rule-of-thumb applies to as vessels less than 12m in length using non-towed gear. In an Irish context, this measure excludes small trawlers and shellfish dredgers which are an important component of the inshore fleet. Inshore boats primarily operate within 6 nautical miles of the coast. In Ireland, protection enforcement of commercial sea-fishing legislation comes under the remit of the Sea-Fisheries Protection Authority.

5.10.6 Marine Infrastructure / Exploration

Ireland's Government has set policy for commercial ports to develop infrastructure to support offshore renewable energy, with ambitious targets for 70% of electricity to be generated from renewable sources by 2030 and for 5GW of offshore wind by 2030. The Climate Action Plan published on 4th November 2021 (CAP 21) has since increased the target to up to 80% renewable electricity by 2030 (Gov't of Ireland, 2021).

At present, a broad range of possible offshore renewable opportunities around Ireland are under consideration (42 current or potential offshore renewables projects are identified by industry tracker 4Coffshore (4Coffshore, 2022)). Of these, two sites are currently operational in their defined capacities.

- Arklow Bank Wind Farm Phase 1 was constructed in 2003/04 consisting of seven wind turbines with a capacity of 25.2 MW. Phase 1 is owned and operated by GE Energy under a sublease to the foreshore lease and remains the first and only operational offshore wind farm in Ireland (SSE Renewables, 2022).

- Galway Bay Marine and Renewable Energy test site has also been operational as a test site since 2006.

Other potential projects are in early stages, or expected to come forward for consent application and/or public consultation in the future (4Coffshore, 2022). With proposed investment from SSE renewables of between €1 billion and €2 billion, phase 2 of Arklow Park will have a capacity of 520MW, and will be located off the coast of Arklow, Co. Wicklow.

The degree to which a country is dependent on imports for energy can be measured to understand levels of energy security, with indigenous energy sources generally considered more secure than imported energy. Movements over the last decade in Ireland have seen a reduction in reliance on imported energy, at 67% in 2018 down from an average of 89% between 2001 and 2015 (SEAI, 2020). Ireland is considered to be one of the most import dependent countries in the EU, despite efforts to transition to indigenous sources (SEAI, 2020).

Data shows oil accounted for 49% of Ireland's primary energy requirement in 2018; to meet the demands of the transport sector (71%), but also including for home heating and in the industrial sector (SEAI, 2020). With the exception of a small amount of indigenous biofuel production, Ireland imports all its oil, and likelihood of a new indigenous supply of crude oil is low given small levels of recent offshore drilling activity. Ireland's current policy indicates that licences for the exploration of oil and gas are no longer being issued, effective from September 2019 (DECC, 2019). Ireland has one oil refinery located at Whitegate, Co. Cork. This processes crude oil from diverse sources and meets the demand of approximately 30-40% of Ireland's demand, the remainder of demand is met by refined products, 64% of which came from the UK in 2018 (SEAI, 2020).

Natural (fossil) gas accounted for 31% of Ireland's primary energy requirement in 2018. 61% came from indigenous production (mostly from the Corrib Field). The remaining requirement was imported via an interconnector system with the UK, which itself imports almost half of its gas from EU neighbours. While gas is anticipated to continue to be a requirement in Ireland's electricity and heat sectors up to 2030, plans beyond 2030 are less certain – there may be enduring roles for fossil gas with carbon capture, and for green gases the need to emerge is evident in the context of a net zero 2050 ambition (SEAI, 2020).

5.10.7 Ports, Shipping and Navigation

The Coronavirus pandemic has had a significant impact on Ports and Shipping in Ireland, in terms of both volume and configuration of Roll/on – Roll/off (RoRo) traffic, route choice and shipping mode (IMDO, 2021). Figures from Q3 2021 demonstrate a bounce-back in volume through ports in the Republic of Ireland (ROI) reflecting those in Q3 2019. Between July and September 2021, 297,920 RoRo units were handled at Dublin, Cork, and Rosslare Europort, just 0.02% more than the same period in 2019 (IMDO, 2021). However, new trends have emerged because of trading and customs arrangements that came into force on January 1st, 2021, after Great Britain's withdrawal from the European Union. The most major impact is a decline in use of the UK Landbridge, a route to market which connects Irish importers and exporters to international markets via the UK road and ports network. As demand to use the Landbridge has significantly decreased, this has resulted in a reduction in ROI- GB traffic and increase in direct ROI-EU traffic.

Other significant trends that have emerged in the RoRo freight market include:

- 71% of all RoRo traffic is now unaccompanied compared to 64% in Q3 2019.
- One third of all RoRo traffic in ROI now operates on direct routes to ports in the European Union, up from a 16% share held throughout 2019. In the first nine months of 2021, ROI-EU traffic is already above 52% annual total for 2019.
- Irish importers are benefitting from the demand for direct EU routes and services. In 2021, there were 13 different direct EU RoRo services available to Irish businesses, compared to 6 in 2019.

Volumes of Lift/on – Lift/off (LoLo) on direct EU routes reached unprecedented levels in 2021, with traffic through ROI ports reaching record-breaking levels in Q2 2021 surpassing 300,000 Twenty-Foot Equivalent units or 20-foot containers (TEUs) - for the first time. LoLo volumes have benefitted from the demand from Irish importers and exports to access EU markets directly.

In terms of passenger numbers, no Irish maritime segment has been more dramatically disrupted because of the pandemic and restrictions on travel impacted passenger numbers. However, following the introduction of the EU Digital Covid certificate in July 2021, the volume of passengers on maritime services in the ROI rose, with passenger numbers in the ROI increasing by 86% in Q3 2021.

It is noted that the Policy Statement on the facilitation of Offshore Renewable Energy by Commercial Ports in Ireland identified a requirement for a minimum of two facilities to support deployment activities, with multiple smaller ports required to support Operational and Maintenance requirements. This therefore has potential to alter the future ports baseline.

5.10.8 Other marine industry

International submarine fibre optic telecommunication cables land in Irish coastal counties including Mayo, Cork, Wexford, and Dublin. These connect Ireland to the United States of America and Canada, as well as other European countries such as the United Kingdom and France, as seen in **Figure 5-14** below.

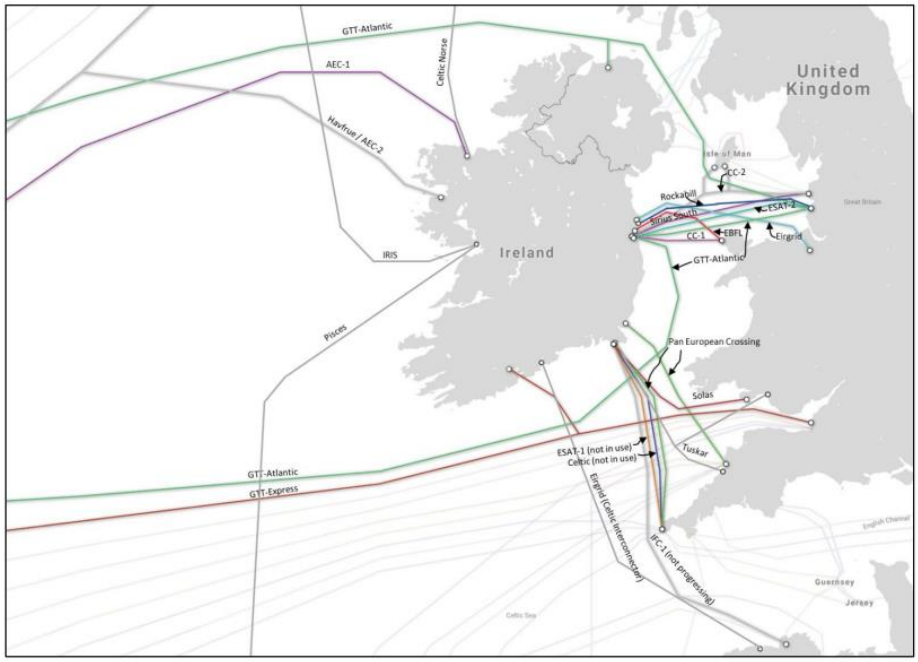


Figure 5-14: Map of Existing and planned subsea cables connecting to Ireland (planned cables in Grey) (DECC, 2021)

5.10.9 Data Gaps

None yet identified.

6 Scope of the SEA

A draft set of SEA Objectives, Indicators and Targets have been developed as part of the scoping stage of the SEA and are proposed to be applied to structure the SEA and Reporting. These have taken into account previous relevant SEA reports, including (but not necessarily limited to) (SEAI, 2010), (Government of Ireland, 2018). Where possible these indicators and targets seek consistency with existing measures and targets for monitoring and maintaining the health of Ireland's marine environment, including GES descriptors as defined under the MSFD and as set out with Ireland's National Marine Planning Framework (Government of Ireland, 2018), and also objectives set out under the Water Framework Directive. The baseline data collated as part of the scoping stage and the consideration of indicative pathways for significant environmental effects has also informed the development of the SEA framework set out below.

Table 6-1: Proposed SEA Objectives, Targets and Indicators

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
Physical Environment				
SEA 1	Protect the quality and character of the seabed and its sediments and avoid significant effects on seabed morphology and sediment transport processes.	Will the plan potentially result in physical damage or change to the seabed and subsurface: • from construction of fixed foundation structures? • from anchoring systems etc? • from other infrastructure (e.g. subsea cable) installation? Is there potential for indirect physical effects on seabed and subsurface as a result of the plan: • from changes to sedimentation regime? • from changes to seabed morphology (scour)? • from dredge deposits etc? Does the plan have potential to result in changes to hydrodynamics and coastal processes. Is there potential for indirect effects on the water column	GES Descriptor 6: Sea floor integrity. Partial extent and distribution of physical loss does not adversely affect structure and functions of the ecosystem. GES Descriptor 7. Good status is achieved when the nature and scale of any permanent changes (individual and cumulative) to the prevailing hydrographical conditions do not lead to significant long-term impacts on marine ecosystems.	Plan activities avoid adverse effects on designated geological and geomorphological sites of international and national importance. No adverse change in quality of seabed sediments, and seabed sediment transport. Plan activities do not result in permanent alteration of hydrographical conditions which adversely affect coastal and marine ecosystems. Extent of the area potentially affected by the plan activities.
SEA 2	Protect the integrity of coastal and estuarine processes.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
		• from mixing of water stratifications (pH, temperature, salinity etc), • from sediment mobilisation (turbidity), • from resuspension of existing/historic contaminated sediments.		
Water				
SEA 3	Protect, maintain, and improve status of classified water bodies within the Plan area in line with requirements of the WFD and MSFD.	Could plan activities result in the release of construction contaminants to marine waters? Could plan activities result in the release of contaminants from construction / operational service vessels?	GES Descriptor 5: Human induced eutrophication is minimised and nutrient levels do not cause an accelerated growth of algae or higher forms of	Evidence of commitment to maintaining nutrient enrichment and microbial pathogen indicators within EQS levels as defined by WFD. (including inorganic

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
SEA 4	Avoid pollution of the coastal and marine environment.	Is there potential for plan activities to: • disturb historic contamination in marine sediments? • disturb natural sediments resulting in potential mobilisation and effects on turbidity?	plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned. GES Descriptor 8: Concentration of contaminants within marine environment are within agreed levels and adverse effects on marine receptors do not occur. GES Descriptor 9 Concentrations of contaminants in fish and other seafood harvested for consumption do not exceed relevant maximum levels listed in EU Regulation 1881/2006 (as amended).	nutrient and chlorophyl and dissolved oxygen concentrations, as well as abundance measures of indicator species groups including macroalgae and seagrasses). Evidence of commitment to maintain concentrations of marine contaminants within agreed levels as defined by WFD Environmental Quality Standards (EQS) and by relevant OSPAR criteria. Evidence of commitment to improvements on existing water quality status (NMPF OMPP Water Quality Policy 2). Commitments to minimise effects of unanticipated pollution events (e.g. avoidance of areas of particular sensitivity etc.
Climate and Air Quality				

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
SEA 5	Avoid, prevent or reduce harmful emissions to air, promoting air quality improvements through reduction of emissions As Low as Reasonably Practical (ALARP).	Are effects on local air quality as a result of installation and operational support vessel activity anticipated? Is the plan expected to make contribution to net Green House Gas reductions? Will the plan result in permanent loss of areas of seabed sediments and/or shallow geology identified as natural carbon sequestration\storage areas? Will the plan contribute to Climate Resilient Development (e.g. macro-contributions to GHG emissions, but also local contributions such as local hydrodynamics and coastal erosion (see physical environment), or local/regional effects on biological health indicator habitats/species such as seaweeds and seagrasses?	Targets relating to airborne emissions at a regional and National level are not exceeded. Emissions from plan activities do not contribute to, or result in, air quality issues which adversely affect human health or the wider environment. Climate adaptation measures. Recognition of the potential impact of and on climate change during the plan period. (coastal change, flood risk, or other climate change adaptation). Achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050.	Monitoring of local air quality shows no adverse impact. Promote renewables in line with relevant government targets? Number of developments coming forward as part of the plan which demonstrate climate resilience.
SEA 6	Promote and prioritise use of renewable energy and energy efficiency measures.			
SEA 7	Minimise emissions of Green House Gases.			
SEA 8	Promote resilience to Climate Change.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
Marine Pollution				
SEA 9	Reduce/prohibit release of marine litter to the marine environment.	Temporary (short-term) introduction of sound sources, not naturally present in the marine environment (Sound profile will vary by noise type and intensity)? Permanent (long-term) introduction of sound sources, not naturally present in the marine environment? Contribution to release of plastics waste either as microplastics, or as larger plastics which may be broken down by physical or chemical processes within the marine environment? Introduction of EMF profiles individually or cumulatively, not naturally present in marine environment? Release of contaminants to marine waters (see Water section of baseline information)?	GES Descriptor 10: The amount of litter, and its degradation products (including small plastic particles and micro plastic particles), on coastlines and in the marine environment is reducing over time and are at levels which do not result in harmful effects to the coastal or marine environment. GES Descriptor 11: Human introduced loud low and mid frequency impulsive sounds and continuous low frequency sounds do not have adverse effects on marine ecosystems. There are no specific targets set for EMF within the marine environment.	Commitment to waste reduction, reuse, recycling through Waste Management Planning Plan activities do not lead to the introduction of noise at levels which adversely affect the marine environment. Plan activities seek to minimise risk of cumulative operating EMF profiles at seabed, water column or sea surface.
SEA 10	Minimise generation and propagation of manmade noise within the marine environment.			
SEA 11	Promote energy transmission technologies and configurations which seek to minimise EMF within the marine environment.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
Biodiversity				
SEA 12	Preserve, protect, maintain and, where appropriate, enhance biodiversity and ecosystems within Plan area.	Colonisation of epifauna on infrastructure, providing hard surface habitats that did not previously exist in the Plan area? Introduction of non-indigenous species? Opportunities for habitat restoration/enhancement (e.g. artificial reefing /artificial roosts for seabirds)? Fish aggregation and effects on trophic food webs e.g. increases in fish recruitment improving resilience of species population but also increasing prey availability leading to increased CRA for higher trophic species? Disruption to foraging and migration patterns in electrosensitive fish from transmission cable EMF profile? Localised changes in temperature from operating cables? Disturbance effects, particularly to marine mammals, fish and seabirds from underwater sound profile (during both installation and operation). (Sound	Maintain and Protect designated sites and species. Maintain and protect Marine Protected Areas Safeguarding provision of ecosystem goods and services. GES 2: Minimise risk to movement / introduction or establishment of non-native species.	No adverse change in the environmental status of marine area for MSFD descriptors (Descriptor 1-Biodiversity, and Description 2 Non-indigenous species); or in the ecological status of WFD transitional waters and the attainment of good status/potential Species and habitats identified as needing protection under national or international agreements are effectively protected or conserved.
SEA 13	Avoid significant impact to EU and National level designated sites, Qualifying Interests and protected species.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
		profile will vary by noise type and intensity)? Barrier effects from physical presence of infrastructure, including inter-array cabling in water column for dynamic cabling suspended in water column? Collision risk marine mammals and fish with moving parts of infrastructure (particularly where aggregations of prey species may occur as a result of infrastructure presence)? Collision risk seabirds (above and below sea surface)? Collision risk for other marine fauna (e.g. sea turtles) (likely low risk given their slow swimming speed)?		
Cultural Heritage				
SEA 14	Protect known wrecks and historic and cultural features of the Plan area.	Seabed disturbance leading to damage or loss of maritime heritage features?	Maintain and protect designated sites and features. Plan activities contribute to the archaeological and cultural knowledge of the marine and coastal	No significant effect on condition of designed sites and features or their setting. Provides evidence of commitment to protocol for management and recording
SEA 15	Incorporate opportunities to enhance cultural/historic			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
	knowledge and understanding.		environment through survey and discovery.	of future archaeological finds etc.
Landscape and Seascape				
SEA 16	Implement the requirements of the European Landscape Convention through high quality design for the sustainable stewardship of Ireland's landscape and by integrating landscape into Ireland's approach to sustainable development.	Visibility of infrastructure from human receptors (coastal communities, shipping routes (commercial and leisure). Visibility of onshore support infrastructure e.g. substations etc. Introduction of light sources (temporary during installation and/or permanent during operation). Compatibility of infrastructure with receiving landscape character.	Maintain and preserve landscape / seascape character of the Plan area. Protect visual resource associated with the Plan area.	Plan avoids significant impact on nationally-designated landscape areas. Extent of areas considered to be of landscape sensitivity potential affected by Plan proposals.
Population and Human Health				
SEA 17	Avoid significant impact on human health and wellbeing.	Marine space conflicts (e.g. fishing activity; reduced wave resources for leisure activities as a result of changes to hydrodynamics (see physical environment); and effects on tourism (see seascape and landscape). Changes to wave resources for leisure activities (e.g. surfing, sailing,	Avoid adverse nuisance to communities, for instance through noise or vibration. Adverse effects on the quality or access to areas used for recreation (e.g.	Monitoring of local air quality and noise shows no adverse impact. See also landscape/seascape and indicators for material assets.
SEA 18	Avoid disruption, disturbance or nuisance to local communities.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
		windsurfing, other water sports) as a result of changes to hydrodynamics (see physical environment). Effects on tourism? (see seascape and landscape). Changes to availability of employment for local communities? Changes to availability of employment for skilled technical workers?	amenity, sailing, surfing), are minimised or avoided.	
Material Assets				
SEA 19	Protect marine material assets (including fisheries, shellfish, military activity and infrastructure) and resources.	Physical presence of construction vessels and activities affecting other sea users (shipping channels, fishing grounds, other marine infrastructure etc)? Temporary or permanent displacement from traditional fishing grounds. Potentially leading to over concentration of activity elsewhere? Direct or indirect disturbance to fishing grounds and/or fish stocks? Temporary disruption to military activities and exercise, during installation activities?	GES Descriptor 3: Populations of commercially exploited fish and shellfish are within safe biological limits. Repurpose and optimise reuse of existing infrastructure where at all possible.	Considers potential for collision risk, accidental events etc.
SEA 20	Ensure continuity and safety of navigation.			

Reference	SEA Objectives	Indicative Impact pathways	Targets	Potential Indicators
		Permanent restrictions to military practice areas? Interference with radar, communications from operating devices? Temporary disruption to transit routes to and from marine aggregates and/or disposal areas? Permanent loss of areas suitable for aggregate and/or other mineral extraction? Increased journey times and distances for shipping? Displacement of shipping activity and/or density? Reduction in access to ports/harbours either temporarily during construction or permanently? Will the plan proposals increase the risk of navigational collision in Ireland's waters? Effects on visibility for safe navigation?		

7 Next Steps

Following consultation on this Scoping Report, the baseline data and SA Framework will be amended as necessary in response to comments received.

The next step in the SEA will be Stage B, during which plan alternatives and draft policies for the OREDP II will be assessed.

The timetable for preparing the OREDP II SEA is set out in Table 7-1 below. SEA reports will be available for consultation alongside the OREDP II as it is prepared.

Table 7-1: Next steps

Stage of SEA	Timeframe
Development of alternatives and assessment of the draft OREDP II	Q2-Q3 2022
Preparation of SEA Environmental Statement	Q3 2022
Consultation on Environmental Report	October – December 2022
Preparation of SEA Statement	January 2023

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Appendix 1: NMPF Overarching Marine Planning Policies

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
NMPF Overarching Marine Planning Policy (OMPP) for the achievement of Environmental Ocean Health. **Ocean Health Policy 1**	2021	Requires compliance with NMPF policies relating to: - biodiversity - non-indigenous species - water quality -seafloor and water column Integrity -marine litter - underwater noise. Evidence of compliance should include demonstration of contribution to the relevant MSFD targets. This OMPP sets a series of more detailed Descriptors and Targets established based on the MSFD Annex I descriptors) which should be taken account of within the SEA.	All
OMPP - Ocean Health. **Biodiversity Policy 1**	2021	Proposals incorporating features that enhance or facilitate species adaptation or migration, or natural native habitat connectivity will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals that may have significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c)	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		mitigate significant adverse impacts on species adaptation or migration, or on natural native habitat connectivity.	
OMPP - Ocean Health. **Biodiversity Policy 2**	2021	Proposals that protect, maintain, restore and enhance the distribution and net extent of important habitats and distribution of important species will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must avoid significant reduction in the distribution and net extent of important habitats and other habitats that important species depend on, including avoidance of activity that may result in disturbance or displacement of habitats.	Biodiversity
OMPP - Ocean Health. **Biodiversity Policy 3**	2021	Where marine or coastal natural capital assets are recognised by Government: • Proposals must seek to enhance marine or coastal natural capital assets where possible. • Proposals must demonstrate that they will in order of preference, and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts on marine or coastal natural capital assets, or d) if it is not possible to mitigate significant adverse impacts on marine or coastal natural capital assets proposals must set out the reasons for proceeding.	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
OMPP - Ocean Health. **Biodiversity Policy 4**	2021	Proposals must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant disturbance to, or displacement of, highly mobile species.	Biodiversity
OMPP - Ocean Health. **Protected Marine Sites 1**	2021	Proposals must demonstrate that they can be implemented without adverse effects on the integrity of Special Areas of Conservation (SACs) or Special Protection Areas (SPAs). Where adverse effects from proposals remain following mitigation, in line with Habitats Directive Article 6(3), consent for the proposals cannot be granted unless the prerequisites set by Article 6(4) are met.	Biodiversity
OMPP - Ocean Health. **Protected Marine Sites 2**	2021	Proposals supporting the objectives of protected marine sites should be supported and: • be informed by appropriate guidance • must demonstrate that they are in accordance with legal requirements, including statutory advice provided by authorities relevant to protected marine sites.	Biodiversity
OMPP - Ocean Health. **Protected Marine Sites 3**	2021	Proposals that enhance a protected marine site's ability to adapt to climate change, enhancing the resilience of the protected site, should be supported and: • be informed by appropriate guidance • must demonstrate that they are in accordance with legal requirements, including statutory advice provided by authorities relevant to protected marine sites.	Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
OMPP - Ocean Health. **Protected Marine Sites 4**	2021	Until the ecological coherence of the network of protected marine sites is examined and understood, proposals should identify, by review of best available evidence (including consultation with the competent authority with responsibility for designating such areas as required), the features, under consideration at the time the application is made, that may be required to develop and further establish the network. Based upon identified features that may be required to develop and further establish the network, proposals should demonstrate that they will, in order of preference, and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant impacts on features that may be required to develop and further establish the network, or d) if it is not possible to mitigate significant impacts, proposals should set out the reasons for proceeding.	Biodiversity
OMPP - Ocean Health. **Non-indigenous Species**	2021	Reducing the risk of the introduction and / or spread of non-indigenous species is a requirement of all proposals. Proposals must demonstrate a risk management approach to prevent the introduction of and / or spread of non-indigenous species, particularly when: a) moving equipment, boats or livestock (for example fish or shellfish) from one water body to another, b) introducing structures suitable for settlement of non-indigenous species, or the spread of non-indigenous species known to exist in the area of the proposal.	Biodiversity
OMPP - Ocean Health. **Water Quality 1**	2021	Proposals that may have significant adverse impacts upon water quality, including upon habitats and species beneficial to water quality, must demonstrate that they will, in order of preference and in accordance with legal	Water

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts.	
OMPP - Ocean Health. **Water Quality 2**	2021	Proposals delivering improvements to water quality, or enhancing habitats and species, which can be of benefit to water quality, should be supported.	Water
OMPP - Ocean Health. **Sea-floor and Water Column Integrity 1**	2021	Proposals that incorporate measures to support the resilience of marine habitats will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority and where they contribute to the policies and objectives of this NMPF. Proposals which may have significant adverse impacts on marine, particularly deep sea, habitats must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate significant adverse impacts on marine habitats, or d) if it is not possible to mitigate significant adverse impacts on marine habitats must set out the reasons for proceeding.	Biodiversity Physical environment
OMPP - Ocean Health. **Sea-floor and Water Column Integrity 2**	2021	Proposals, including those that increase access to the maritime area, must demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate adverse impacts on important habitats and species.	Biodiversity Physical environment

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
OMPP - Ocean Health. **Sea-floor and Water Column Integrity 3**	2021	Proposals that protect, maintain, restore and enhance coastal habitats for ecosystem functioning and provision of ecosystem services will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must take account of the space required for coastal habitats, for ecosystem functioning and provision of ecosystem services, and demonstrate that they will, in order of preference and in accordance with legal requirements: a) avoid, b) minimise , or c) mitigate for net loss of coastal habitat.	Biodiversity Material Assets Population and Human Health
OMPP - Ocean Health. **Marine Litter 1**	2021	Proposals that facilitate waste re-use or recycling, or that reduce marine and coastal litter will be supported, where they contribute to the policies and objectives of this NMPF. Proposals that could potentially increase the amount of litter that is discharged into the maritime area, either intentionally or accidentally, must include measures (such as development of a waste management plan) to, in order of preference and in accordance with legal requirements: a) avoid, b) minimise, or c) mitigate the litter. Demonstration of these measures must provide satisfactory evidence that the proposal is able to manage all waste without creation of litter.	Marine Pollution
OMPP - Ocean Health. **Underwater Noise 1**	2021	Proposals must take account of spatial distribution, temporal extent, and levels of impulsive and / or continuous sound (underwater noise) that may be generated and the potential for significant adverse impacts on marine fauna. Where the potential for significant impact on marine fauna from underwater noise is identified, a Noise Assessment Statement must be prepared by the	Marine Pollution Biodiversity

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		proposer of development. The findings of the Noise Assessment Statement should demonstrably inform determination(s) related to the activity proposed and the carrying out of the activity itself. The content of the Noise Assessment Statement should be relevant to the particular circumstances and must include: • Demonstration of compliance with applicable legal requirements, such as necessary assessment of proposals likely to have underwater noise implications, including but not limited to: Appropriate Assessment (AA); Environmental Impact Assessment (EIA); Strategic Environmental Assessment (SEA); specific response to 'strict protection' requirements of Article 12 of the Habitats Directive in relation to certain species listed in Annex IV of the Directive; and species protected under the Wildlife Acts. • An assessment of the potential impact of the development or use on the affected species in terms of environmental sustainability. • Demonstration that significant adverse impacts on marine fauna resulting from underwater noise will, in order of preference and in accordance with legal requirements be: a) avoided, b) minimised, or c) mitigated, or d) if it is not possible to mitigate significant adverse impacts on marine fauna, the reasons for proceeding must be set out. This policy should be included as part of statutory environmental assessments where such assessments require consideration of underwater noise.	
OMPP - Ocean Health. **Air Quality 1**	2021	Proposals that support a reduction in air pollution should be supported, subject to the outcome of statutory environmental assessment processes and	Air Quality and Climate

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals must demonstrate consideration of their contribution to air pollution, both direct and cumulative.	
OMPP - Ocean Health. **Air Quality 2**	2021	Where proposals are likely to result in or facilitate an increase in air pollution, proposals should demonstrate that they will, in order of preference in accordance with legal requirements and standards: a) avoid, b) minimise, or c) mitigate air pollution.	Air Quality and Climate
OMPP - Ocean Health. **Climate Change 2**	2021	Proposals should demonstrate how they: • avoid contribution to adverse changes to physical features of the coast; • enhance, restore or recreate habitats that provide a flood defence or carbon sequestration ecosystem services where possible. Where potential significant adverse impacts upon habitats that provide a flood defence or carbon sequestration ecosystem services are identified, these must be in order of preference and in accordance with legal requirements: a) avoided, b) minimised, c) mitigated, d) if it is not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out. This policy should be included as part of statutory environmental assessments where such assessments are required.	Air Quality and Climate
OMPP - Ocean Health. **Climate Change 2**	2021	For the lifetime of the proposal, the following climate change matters must be demonstrated:	Air Quality and Climate

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		• estimation of likely generation of greenhouse gas emissions, both direct and indirect; • measures to support reductions in greenhouse gas emissions where possible; • likely impact of climate change effects upon the proposal from factors including but not limited to: sea level rise, ocean acidification, changing weather patterns; • measures incorporated to enable adaptation climate change effects; • likely impact upon climate change adaptation measures adopted in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities; • where likely impact upon climate change adaptation measures in the coastal area relevant to the proposal and/or adaptation measures adopted by adjacent activities is identified, these impacts must be in order of preference and in accordance with legal requirements: a) avoided, b) minimised, c) mitigated, d) if it is not possible to mitigate significant adverse impacts, the reasons for proceeding must be set out.	
OMPP - Economic (Thriving Maritime Economy). **Co-existence 1**	2021	Proposals should demonstrate that they have considered how to optimise the use of space, including through consideration of opportunities for co-existence and co-operation with other activities, enhancing other activities where appropriate. If proposals cannot avoid significant adverse impacts (including displacement) on other activities they must, in order of preference:	Material Assets

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		a) minimise significant adverse impacts, b) mitigate significant adverse impacts, or c) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding.	
OMPP - Economic (Thriving Maritime Economy). **Infrastructure 1**	2021	Appropriate land-based infrastructure which facilitates marine activity (and vice versa) should be supported. Proposals for appropriate infrastructure that facilitates the diversification or regeneration of marine industries should be supported.	Material Assets
OMPP - Social - Engagement with the Sea. **Access 1**	2021	Proposals, including in relation to tourism and recreation, should demonstrate that they will, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts on public access.	Population and Human Health
OMPP - Social - Engagement with the Sea. **Access 2**	2021	Proposals demonstrating appropriate enhanced and inclusive public access to and within the maritime area, and that consider the future provision of services for tourism and recreation activities, should be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF.	Population and Human Health
OMPP - Social - Engagement with the Sea. **Employment 1**	2021	Proposals should demonstrate contribution to a net increase in marine related employment in Ireland, particularly where the proposals are • in line with the skills available in Irish coastal communities adjacent to the maritime area,	Population and Human Health

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		• improve the sustainable use of natural resources, • diversify skills to enable employment in emerging industries.	
OMPP - Social - Engagement with the Sea. **Heritage Assets 1**	2021	Proposals that demonstrate they will contribute to enhancing the significance of heritage assets will be supported, subject to the outcome of statutory environmental assessment processes and subsequent decision by the competent authority, and where they contribute to the policies and objectives of this NMPF. Proposals unable to contribute to enhancing the significance of heritage assets will only be supported if they demonstrate that they will, in order of preference: a) avoid, b) minimise, or c) mitigate harm to the significance of heritage assets, and d) if it is not possible, to mitigate harm, then the public benefits for proceeding with the proposal must outweigh the harm to the significance of the heritage assets.	Cultural Heritage
OMPP - Social - Engagement with the Sea. **Rural Coastal and Island Communities 1**	2021	Proposals contributing to access, communications, energy self-sufficiency or sustainability of rural coastal and / or island communities should be supported. Proposals should ideally be inclusive of continual education, skills development and training in marine sectors, thus improving the sustainability, social benefits and economic resilience of rural and island communities.	Population and Human Health
OMPP - Social - Engagement with the Sea. **Seascape and Landscape 1**	2021	Proposals should demonstrate how the likely significant impacts of a development on the seascape and landscape of an area have been considered. Proposals will only be supported if they demonstrate that they, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts on the seascape and landscape of the area. d) If it is not possible to	Landscape and Seascape

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		mitigate significant adverse impacts, proposals must set out the reasons for proceeding. This policy should be included as part of statutory environmental assessments.	
OMPP - Social - Engagement with the Sea. **Social Benefits 1**	2021	Proposals should demonstrate how the likely significant impacts of a development on the seascape and landscape of an area have been considered. Proposals will only be supported if they demonstrate that they, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts on the seascape and landscape of the area. d) If it is not possible to mitigate significant adverse impacts, proposals must set out the reasons for proceeding. This policy should be included as part of statutory environmental assessments.	Landscape and Seascape
OMPP - Social - Engagement with the Sea. **Social Benefits 2**	2021	Proposals that increase the understanding and enjoyment of the marine environment (including its natural, historic and social value), or that promote conservation management and increased education and skills, should be supported.	Population and Human Health Biodiversity Cultural Heritage
OMPP - Social - Engagement with the Sea. **Transboundary 1**	2021	Proposals that have transboundary impacts beyond the maritime area, on either the terrestrial environment or neighbouring international jurisdictions, must show evidence of consultation with the relevant public authorities, including terrestrial planning authorities and other country authorities. Proposals should consider transboundary impacts throughout the lifetime of the proposed activity.	Transboundary

Appendix 2: MPPS Strategic Principles

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
MPPS Strategic Principles (SP) 1: Marine planning will be plan-led and evidence-based.	2020	To ensure that marine forward planning, marine development management and marine planning enforcement work together to support the achievement of Ireland's marine planning policies, including those relating to our international connectivity.	All
MPPS SP 2: Marine planning will enable Ireland to meet its relevant obligations under EU and International law	2020	EU and International commitments including, but not limited to, the Marine Strategy Framework Directive, the Maritime Spatial Planning Directive, the Habitats and Birds Directives, the Common Fisheries Policy, the OSPAR Convention, the Aarhus Convention, the SOLAS Safety of Life at Sea Convention, the UN Convention on the Law of the Sea, the Urban Waste Water Treatment Directive and the Water Framework Directive.	All
MPPS SP 3: Marine planning will facilitate Ireland's transition to a low carbon and climate resilient economy	2020	To ensure developments in the marine environment consider ways to reduce the emission of GHG and have due regard to the impacts of a changing climate. Also to support realisation of measures set out within the Government Plan to Tackle Climate Breakdown	Air Quality and Climate
MPPS SP 4: Marine planning will take into account land-sea interactions	2020	Consideration of LSI as it relates to the environment, society and economy should be a feature of each part of the marine planning system.	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
MPPS SP 5: While seeking to integrate environmental, economic and social considerations, marine planning will also support safety at sea	2020	Contributing to a culture of continuing vigilance, good practice and improvement in this area, the marine planning system will provide opportunity at all stages for expert participation and provision of advice. Safe activity also has meaning in relation to environmental protection as well as in the provision of secure jobs	All
MPPS SP 6: Ensure that the marine environment is used sustainably and in a manner consistent with the Good Environment Status requirements of the MSFD	2020	Should ensure the requirements of relevant national, European and OSPAR Convention standards, including the 2030 Agenda for Sustainable Development, by guiding development towards optimal locations.	Biodiversity Water
MPPS SP 7. To support the maintenance and restoration of biodiversity:	2020	The marine planning system will support the maintenance and restoration of biodiversity as a necessary prerequisite for healthy and resilient marine ecosystems and the sustainable development of our maritime and coastal areas.	Biodiversity
MPPS SP 8: support the preservation and enjoyment of Ireland's rich marine heritage	2020	This policy covers both natural and cultural heritage and includes marine related cultural and heritage assets.	Cultural Heritage

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
MPPS SP 9: support the maintenance and sustainable development of seafood industry	2020	This policy particularly recognises Ireland's strong fishing heritage and its contribution to vibrant, accessible sustainable coastal and island communities.	Material Assets
MPPS SP10: Treat all marine interests in a fair and transparent manner.	2020	Decisions should be made in the marine environment in a fair and transparent manner, including early and effective public engagement with the public and all marine stakeholders across all forward planning, development management and enforcement elements of the system.	All

Appendix 3: NMPF Sector Specific Policies for Offshore Renewable Energy

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
NMPF Offshore Renewable Energy Policy 1	2021	Proposals that assist the State in meeting the Government's offshore renewable energy targets, including the target of achieving 5GW of capacity in offshore wind by 2030 and proposals that maximise the long-term shift from use of fossil fuels to renewable electricity energy, in line with decarbonisation targets, should be supported. All proposals will be rigorously assessed to ensure compliance with environmental standards and seek to minimise impacts on the marine environment, marine ecology and other maritime users.	All
NMPF Offshore Renewable Energy Policy 2	2021	Proposals must be consistent with national policy, including the Offshore Renewable Energy Development Plan (OREDP) and its successor. Relevant Projects designated pursuant to the Transition Protocol and those projects that can objectively enable delivery on the Government's 2030 targets will be prioritised for assessment under the new consenting regime. Into the future, areas designated for offshore energy development, under the Designated Marine Area Plan process set out in the Maritime Area Planning Bill, will underpin a plan-led approach to consenting.	All
NMPF Offshore Renewable Energy Policy 3	2021	Any non-ORE proposals that are in or could affect sites held under a permission or that are subject to an ongoing permitting or consenting process for renewable energy generation (wind, wave or tidal should demonstrate that they will in order of preference: a) avoid, b) minimise, c) mitigate adverse	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
		impacts, or d) if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding. Applicants for non-ORE proposals in or affecting ORE sites should engage ORE developers in consultation during the pre-application processes as appropriate.	
NMPF Offshore Renewable Energy Policy 4	2021	Decisions on ORE developments should be informed by consideration of space required for other activities of national importance described in the NMPF.	All
NMPF Offshore Renewable Energy Policy 5	2021	Proposals for activity that may adversely impact ORE test projects by virtue of being within or adjacent to ORE test sites, or between site and landfall of ORE test projects that may adversely impact ORE test site projects, should demonstrate that they will in order of preference: a) avoid, b) minimise, c) mitigate adverse impacts.	All
NMPF Offshore Renewable Energy Policy 6	2021	Proposals for infrastructure enabling local use of excess energy generated from emerging marine technologies (wave, tidal, floating wind) should be supported.	All
NMPF Offshore Renewable Energy Policy 7	2021	Where potential for ports to contribute to ORE is identified, plans and policies related to this port must encourage development in such a way as to facilitate ORE and related supply chain activity.	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
NMPF Offshore Renewable Energy Policy 8	2021	Proposals for ORE must demonstrate consideration of existing cables passing through or adjacent to areas for development, making sure ability to repair and carry out cable-related remedial work is not significantly compromised. This consideration should be included as part of statutory environmental assessments where such assessments are required.	All
NMPF Offshore Renewable Energy Policy 9	2021	A permission for ORE must be informed by inclusion of a visualisation assessment that supports conditions on any development in relation to design and layout. Where a development consent is applied for in an area already subject to permission, proposals must include a visualisation assessment to inform design and layout. Visualisation assessments should demonstrate consultation with communities that may be able to view the proposal, in addition to any other ORE development, which had received consent to proceed at a given site at the time the consent application is made, with the aim of minimising impact. Visualisation assessments will be informed by specific emerging guidelines (detailed in the actions set out in Annexes to this NMPF). Prior to specific guidelines being available, policy and best practice relating to visualisation assessment should be used. This consideration must be included as part of statutory environmental assessments where such assessment is required.	All
NMPF Offshore Renewable Energy Policy 10	2021	Opportunities for land-based, coastal infrastructure that is critical to and supports development of ORE should be prioritised in plans and policies, where possible.	All

Plan/Policy	Date	Description/Relevance	Applicable SEA Topics
NMPF Offshore Renewable Energy Policy 11	2021	Where appropriate, proposals that enable the provision of emerging renewable energy technologies and associated supply chains will be supported.	All

Appendix 4: SEA Baseline Data

See separate spreadsheet.