

# **POWERING UP OFFSHORE SOUTH COAST**

Assessments of Impact on the Maritime Usage (AIMU)



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# 1 Introduction

## 1.1 Overview

The Irish Government is taking major steps to make Ireland carbon neutral by 2050. These steps include a commitment to increase the proportion of electricity generated from renewable sources up to 80% by 2030. The Climate Action Plan 2024 (DECC, 2024) places offshore wind power at the centre of this commitment, with a key target being the grid connection of at least 5 Gigawatts (GW) of offshore wind by 2030.

EirGrid develops, manages, and operates Ireland's electricity grid and are responsible for the safe, secure and reliable supply of Ireland's electricity. EirGrid was established to act as the independent Transmission System Operator (TSO), in line with the requirements of the EU Electricity Directive (EU) 2019/944 (EU Electricity Directive). EirGrid became operational as the TSO on 1 July 2006 and is a public limited company, registered under the Companies Acts. The Irish Government has also designated EirGrid as the TSO and Transmission Asset Owner (TAO)/ Offshore Asset Owner (OAO) for Ireland's offshore electricity grid.

In March 2023, the Department of the Environment, Climate and Communications (DECC) published the "Accelerating Ireland's Offshore Energy Programme; Policy Statement on the Framework for Phase Two Offshore Wind" (the Framework). This policy identified EirGrid as the developer of new offshore grid transmission infrastructure to connect new offshore wind farms on the south coast.

On the basis of the policy, EirGrid has initiated the Powering Up Offshore South Coast (PUOSC) project. This will be the first state led offshore renewable electricity connection in Ireland. The project was included in the European Network of Transmission System Operators for Electricity (ENTSO-E) Ten Year Network Development Plan (TYNDP) in 2024. While the project is at an early stage of development, it is expected to include the development of offshore substation(s) off the southern coast of Ireland, new onshore and offshore transmission cables, and new onshore compensation compound as required to accommodate the connection on the existing onshore transmission system. The development area will be established based on the South Coast Designated Maritime Area Plan (SC-DMAP), which was published by the Government on 25<sup>th</sup> October 2024. This infrastructure will facilitate up to 900 MW of power generated by offshore wind farms in Irish waters into our national electricity grid.

DECC's Framework outlined a four-phase process for developing offshore wind energy infrastructure. In the short-term, the framework is based on a developer-led approach, taking advantage of projects that have been in development for several years. In the medium to long-term it transitions to a plan-led approach in which EirGrid plays a key role.

EirGrid are undertaking the engineering, planning and environmental services necessary to provide the grid infrastructure to support the development of offshore wind.

#### PHASE 2

As part of the government-led approach to the delivery of offshore wind, known as Phase 2, approximately 900 MW of electricity will be supplied from wind farms off Ireland's south coast. It is anticipated that these offshore wind farms will be constructed in Area A – Tonn Nua within the SC-DMAP area (see Figure 1.1).

These wind farms will be provided by private developers. EirGrid will be responsible for delivering the infrastructure that will connect the power from these wind farms off the south coast to the onshore grid. This will be realised through EirGrid's PUOSC project.

Following the publication of the SC-DMAP, EirGrid plans to develop offshore electricity substation(s) and associated offshore transmission cables. This new infrastructure will bring the power generated by offshore windfarms to the national electricity grid.



Figure 1.1 SC-DMAP Area

The main components of the PUOSC project are:

- Offshore substation(s) to be located within Maritime Area A (Tonn Nua) of the SC-DMAP (Figure 1.1).
- A connection between the offshore substation(s) and onshore compensation compounds. This will involve laying offshore transmission cables; and
- Onshore compensation compounds.

The precise locations of the offshore substations have not yet been determined, nor has it been determined how and where they will connect to the national electricity grid onshore. However, due to onshore grid capacity constraints, it is anticipated that one 450 MW offshore to onshore connection will be developed in the Cork area and the other 450 MW offshore to onshore connection will be developed in the Waterford/ Wexford area.



Figure 1.2 Typical Offshore Wind Project Schematic

## 1.2 Accompanying Reports

The Maritime Usage Licence Application (MULA) consists of the following documents and reports:

- Maritime Usage Licence Application;
- Project Description including drawings;
- Assessment of Impact on the Maritime Usage (AIMU);
- Supporting Information for Screening for Appropriate Assessment (SISAA);
- Annex IV Species Risk Assessment;
- Subsea Noise Technical Report.

In order to avoid repetition, this report makes reference to these other reports and drawings throughout.

## **1.3 Purpose of this Report**

This Assessment of Impact on the Maritime Usage (AIMU) report has been prepared by RPS, on behalf of EirGrid, to provide information on the site investigation works (the SI works) proposed to be undertaken for the PUOSC project in support of the MULA to the Maritime Area Regulatory Authority (MARA). This report, in accordance with applicable best practice guidance and professional judgment, provides the required level of detail to MARA to ensure they can fully assess all potential impacts of the SI works.

This report provides a brief description of the SI works, consisting of geophysical, geotechnical, metocean, environmental, archaeological and other investigations and surveys that are proposed to be undertaken, but a more detailed description is provided in the separate 'Project Description' document referred to in Section 1.2 above. The Project Description includes details of the methods, equipment and quantities for proposed activities. The results of the SI works will be used to inform engineering design and will also provide baseline data for any subsequent environmental assessments.

### **1.4** Statement of Authority

The technical competence of the authors is outlined below:

s Technical Director in the Environmental Services Business Unit in RPS. He has over 24 years' experience. He holds an honours degree in Civil Engineering (B.E.) from NUI, Galway, a postgraduate diploma in Environmental Sustainability from NUI, Galway, and a Master's in Business Studies from the Irish Management Institute/ UCC. The second is also a Chartered Engineer and Project Management Professional with the Project Management Institute (PMI-PMP). He has managed the delivery of numerous environmental projects including marine and terrestrial projects that have required environmental impact assessment, appropriate assessment, and Annex IV species reports.

is a Principal Scientist in the Environmental Services Business Unit in RPS. She has over 13 years' experience in the marine science field and is a Chartered Environmentalist and a Full Member of the Institute of Environmental Sciences. Holds an honours degree in Environmental Science from Trinity College Dublin and a Master's in Marine Environmental Protection from Bangor University, Wales. Has delivered the environmental assessments for a wide range of marine and coastal projects, including environmental impact assessment, appropriate assessment and Annex IV species reports.

is a Project Scientist in the Environmental Services Business Unit in RPS. She holds a Bachelor's Degree in Marine Science from the University of Galway and Master's Degree in Climate Change and Managing the Marine Environment from Heriot-Watt University Edinburgh. She has three years' experience working in consultancy, assisting on a wide range of projects from offshore renewable energy projects to flood relief schemes, including marine and terrestrial surveys. She is a qualifying CIEEM member.

is a Scientist in the Environmental Services Business Unit in RPS. He holds a Bachelor's Degree in Environmental Science from the University of Galway. He has two years' experience working in consultancy, assisting on a wide range of projects from offshore renewable energy projects to flood relief schemes, including terrestrial surveys.

# 2 **Project Description**

A detailed Project Description report, including drawings, has been included as a separate report to the MULA to reduce repetition in reports. Please refer to this document for the detail on each of the elements summarised in the text below.

In summary, the PUOSC project SI works Area of Interest (AoI) is located off the south coast of Ireland from the High-Water Mark (HWM) out into the Celtic Sea. The AoI has been developed to include:

- Potential areas where offshore substations (OSS) may be constructed;
- Potential offshore transmission cable corridors from the OSS locations towards seven potential landfall zones in coastal areas; and
- The intertidal area below the HWM at seven potential landfall zones where the offshore transmission cables will come to shore and connect to onshore infrastructure.

Drawings illustrating the AoI and the proposed location of the SI works are included in Appendix A to the Project Description.

The total AoI encompass an area of 2,336 km<sup>2</sup>. The western extent of the AoI is at Ringroe in County Cork (approx. 10 km south of Crosshaven and 13 km east of Kinsale) and extends eastwards to Cullenstown in County Wexford (approx. 4 km east of Bannow Bay and 6 km south of Wellingtonbridge). The AoI extends into the offshore area to approx. 34 km (18.4 nm) from the coastline at its furthest distance (measured from Bunmahon).

The Aol includes coastal areas below the HWM from Ringroe, Co. Cork to Ballycrenane Co. Cork, and from west of Bunmahon, Co Waterford to east of Bannow Bay, Co. Wexford.

The activities proposed to be carried out within the AoI are summarised in Table 2.1.

Table 2.1         Proposed Site Investigations and Surveys	
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Survey Type	Survey Elements	Maximum Quantity (where relevant)
Coastal Geophysical Surveys	Ground Penetrating Radar (GPR) and/or Seismic Refraction.	n/a
	Topographical surveying techniques including UAS, GPS, GNSS devices	n/a
Marine Geophysical Surveys	Multi Beam Echosounder (MBES).	n/a
(undertaken from survey vessel(s))	Sub-bottom profiler (SBP) including Ultra-High Resolution Seismic (UHRS) survey.	n/a
	Side Scan Sonar (SSS).	n/a
	Magnetometer.	n/a
Coastal Geotechnical Surveys (undertaken on land below the HWM)	Trial Pit Investigations.	42
Marine Geotechnical Surveys (undertaken from survey vessel(s) or	Grab sampling (this is the same campaign as the surveys included under the Environmental Surveys).	420 (subtidal)
jack-up barge; JUB)	Vibrocore testing.	276
	Borehole investigations (including downhole Cone Penetration Testing; CPT and sampling).	21 (inshore) 8 (OSS locations)
	Shallow CPT.	276
	Deep Drive CPT.	16
Metocean and Marine Mammal	Metocean buoy.	2
Acoustic Device Deployment (deployed by vessel and moored to	Acoustic Doppler Current Profiler (ADCP).	3
seabed)	Marine mammal static acoustic monitoring (SAM)	16 locations (4 SAMS x 4 different locations)
Coastal Environmental Surveys (land-based below the HWM)	Ecological walkover surveys (habitats, bat activity and roose assessment, mammals including otter).	n/a
	Ornithological vantage point surveys.	n/a

Survey Type	Survey Elements	Maximum Quantity (where relevant)
	Marine mammal vantage point surveys.	n/a
	Intertidal core sampling survey.	Intertidal cores = 126
Marine Environmental Surveys (undertaken from survey vessel(s))	Drop-down video (DDV) and/or Remotely Operated Vehicles (ROV) survey	n/a
	Ornithological surveys (boat-based)	n/a
	Marine mammal surveys (boat-based) including passive acoustic monitoring (PAM).	Monthly surveys for minimum two- year period.
	Grab sampling (this is the same campaign as the surveys included under the Marine Geotechnical Surveys Surveys).	Subtidal = As per geotechnical specification.
	Water Quality Samples, including Conductivity, Temperature and Depth (CTD) Measurements	n/a
Archaeological Surveys	Intertidal Survey.	n/a
	Marine Geophysical Survey (this is the same campaign as the Marine Geophysical Survey above).	n/a
	Sampling	n/a
	Dive Survey.	n/a
	Wade Survey.	n/a
	Monitoring.	n/a
Other Surveys	Noise Surveys.	n/a
	Shipping & Navigation Survey.	n/a
	Unmanned Aircraft Systems (UAS)/ drone surveys.	n/a
	Aerial Surveys (birds and marine mammals).	n/a

# 3 Need and Alternatives

EirGrid has responsibility for delivering the offshore infrastructure required to deliver on the Irish Government's Phase 2 programme. In order to be able to advance this work, EirGrid needs to obtain detailed information on, inter alia: the water column, subsea ground conditions, the environment, and underwater archaeology. The existing baseline data is not of a sufficient level of detail to complete engineering design and undertake environmental assessment of the proposed onshore infrastructure, including the landfall locations, offshore transmission cables, and offshore substations (OSS).

This MUL is required in order to carry out detailed surveys and investigations to progress the PUOSC project engineering design and environmental assessments.

With regards to alternatives considered, there are no alternatives to undertaking site investigations, environmental and archaeological surveys and investigations. This information is critical to the engineering design and environmental assessment of the project in support of any future planning application.

Best practise methods and equipment will be used to carry out the SI works which will be undertaken in accordance with standard operating procedures by competent contractors. Appointed survey contractors will be required to use methods and equipment which aligns with the parameters of the standard equipment described in the Project Description report and assessed in this MULA in order to ensure that no greater environmental impacts than those assessed in this MULA will arise.

# 4 Planning and Development Context

## 4.1 National Energy Policy Context

#### 4.1.1 Climate Action and Low Carbon Development Act 2015 to 2021

The Climate Action and Low Carbon Development Act 2015 to 2021<sup>1</sup>, as amended, (the Climate Act), was signed into law in July 2021. The Climate Action and Low Carbon Development (Amendment) Act 2021 amends the Climate Action and Low Carbon Development Act 2015. The Climate Act supports Ireland's transition to Net Zero and achieve a climate neutral economy by no later than 2050.

The Climate Act commits to a National Long Term Climate Action Strategy which will be prepared every five years and embeds the process of carbon budgeting into law. The Government is now required to adopt a series of economy-wide-five-year carbon budgets, including sectoral targets for each relevant sector, on a rolling 15-year basis, starting in 2021. The first of these is titled *Carbon Budgets 2022* and comprises a 5-year carbon budget for the period 2021-2025. This legislation also strengthens the role of the Climate Change Advisory Council tasking it with proposing carbon budgets to the Minister for Environment, Climate, Communications and Transport (the Minister).

In this regard, it is noted that the proposed SI works will support the PUOSC project which will in turn support carbon reduction through the enhancement of the grid and the development of offshore renewable energy and thereby support sustainable energy production and transmission into the future.

#### 4.1.2 National Energy and Climate Plan 2021-2030

In accordance with the Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action (Governance of the Energy Union and Climate Action Regulation), Ireland's *National Energy and Climate Plan*<sup>2</sup> (NECP) 2021-2030 was prepared. The NECP collates the policies, measures and actions related to energy and climate outlined in a range of government plans and outlines the Government's energy and climate policies in detail for the period from 2021 to 2030, looking onwards to 2050. The current NECP reflects the more ambitious renewable energy and decarbonisation objectives established through the European Green Deal.

The proposed SI works will support the PUOSC project which will in turn contribute to accelerating the deployment of renewable energy to replace fossil fuels and delivering a flexible system to support renewables and demand. As such, the proposed SI works are considered to be aligned with, and fully supported by, the NECP.

#### 4.1.3 Climate Action Plan 2024

The *Climate Action Plan 2024*<sup>3</sup> (CAP24) is the third annual update to Ireland's Climate Action Plan 2019. It implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to halve our emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. CAP24 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development.

Section of CAP24 12.3.1 seeks to "Ensure a flexible and supportive spatial planning policy framework for onshore and offshore renewable electricity generation development that seeks to deliver a strong pipeline of renewables."

Among the most important measures in the CAP24 is the objective to increase the proportion of renewable electricity to 80% by 2030 with a target of 9 GW from onshore wind, 8 GW from solar, and at least 5 GW of offshore wind energy by 2030. The wider infrastructural project of which these proposed SI works will form a

<sup>&</sup>lt;sup>1</sup> <u>Climate Action and Low Carbon Amendment Act 2015-20</u>

<sup>&</sup>lt;sup>3</sup> Climate Action Plan 2024, 2023, DECC

part, the PUOSC project, will play a key role in meeting the 5 GW offshore wind energy target set by the CAP24 and supports the policies and measures set to increase the deployment of renewable energy generation and strengthen the electricity grid:

*"Increasing renewable generation to supply 80% of demand by 2030 through the accelerated expansion of onshore wind and solar energy generation, developing offshore renewable generation, and delivering additional grid infrastructure."* 

Section 12.4.1 of CAP24 notes that achieving further emissions reductions between now and 2030 requires a major step up across three key measures:

- "Accelerate and increase the deployment of renewable energy to replace fossil fuels;
- Deliver a flexible system to support renewables and demand;
- Manage demand."

The proposed SI works directly address these objectives and measures through its role in contributing to the enhancement of the grid as part of the PUOSC project. More specifically, the PUOSC project will contribute to accelerating and increasing the deployment of renewable energy to replace fossil fuels and delivering a flexible system to support renewables and demand. The proposed SI works are therefore considered to align with CAP24.

#### 4.1.4 Ireland's Transition to a Low Carbon Future 2015-2030

*Ireland's Transition to a Low Carbon Energy Future*<sup>4</sup> (2015-2030) is a White Paper which sets out a framework for the development of National energy policy, aiming to transform Ireland's fossil fuel-based energy sector into a low carbon system by 2050.

It is noted that the proposed SI works will support the PUOSC project which will contribute to ensuring the electricity grid can accommodate the deployment of renewable energy. As such, it is considered that the proposed SI works are supported by *Ireland's Transition to a Low Carbon Energy Future (2015-2030)*.

#### 4.1.5 Government Policy Statement on Security of Electricity Supply

The *Government Policy Statement on Security of Electricity Supply*<sup>5</sup> was published in 2021 and sets out a number of updates to national policy in the context of the Programme for Government commitments relevant to the electricity sector, planning authorities and developers.

The Statement notes that the Government recognises that:

"Ensuring security of electricity supply continues to be a national priority as the electricity system decarbonises towards net zero emissions;

There is a need for very significant investment in additional flexible conventional electricity generation, electricity grid infrastructure, interconnection and storage in order to ensure security of electricity supply;

In advance of the development of new conventional electricity generation capacity, there is a need to retain existing conventional electricity generation capacity in order to ensure security of electricity supply".

The proposed SI works are a necessary part of the overall PUOSC project which, when completed, will contribute to accelerating and increasing the deployment of renewable energy to replace fossil fuels and delivering a flexible system to support renewables and demand. The proposed SI works are therefore considered to be fully aligned with the Statement.

<sup>&</sup>lt;sup>4</sup> Ireland's Transition to a Low Carbon Energy Future, 2015-2030, DCENR

<sup>&</sup>lt;sup>5</sup> Policy Statement on Security of Electricity Supply, 2021, DECC

#### 4.1.6 Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure

The Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure<sup>6</sup> was published in 2012 by the Department of Communications, Energy and Natural Resources. This policy statement sets out the strategic and economic importance of investment in networks and energy infrastructure, whilst acknowledging the importance of early consultation and engagement with local communities and gaining public and local community acceptance. The Statement notes that Ireland must "deliver a world class electricity transmission system in all the regions which meets the needs of Ireland in the 21st Century".

The proposed SI works will support the PUOSC project, which will in turn contribute to an upgraded, stronger network of electricity infrastructure across the Southern Region. In this regard, the proposed SI works are considered to be fully aligned with this Statement.

# 4.1.7 Government Policy Statement on the Future Framework for Offshore Renewable Energy

The Government Policy Statement on the Future Framework for Offshore Renewable Energy<sup>7</sup> was published in 2024 by the Department of the Environment, Climate and Communications. The Framework includes 29 key actions to develop Ireland's long-term, plan-led approach to offshore wind. It sets out a plan-led approach to the deployment of Offshore Renewable Energy (ORE) to achieve Ireland's targets of 5GW of ORE by 2030, 20GW by 2040, and at least 37GW in total by 2050.

The proposed SI works will support the PUOSC project, which will in turn contribute to achieving Ireland's targets for 2030, 2040 and 2050. In this regard, the proposed SI works are considered to be fully aligned with this Statement.

## 4.2 EirGrid's Strategic Planning and Development Context

#### 4.2.1 Transmission Development Plan 2024-2033

The *Transmission Development Plan 2024-2033*<sup>8</sup> (the TDP) sets out EirGrid's proposed updated list of projects which are committed to and those that are in the development stages for the progression of the Irish transmission network and interconnection over the next ten years. The TDP was published for consultation in April 2024 and adopted in late 2024. The Plan states (p.21) that in the plan-led approach to ORE, "EirGrid will plan and develop the offshore transmission infrastructure, with the potential, where possible, to optimise the connections of multiple projects to the offshore transmission system from areas deemed suitable for offshore renewable energy development."

The proposed SI works will support the planning, design and environmental assessment of the PUOSC project which will provide the necessary transmission system to connect offshore projects to the national grid. The SI works are therefore aligned with the TDP.

#### 4.2.2 Ireland's Grid Development Strategy; Your Grid, Your Tomorrow

*Ireland's Grid Development Strategy; Your Grid, Your Tomorrow<sup>9</sup>* (the Strategy), prepared by EirGrid, is a development strategy published in 2017 resulting from a review of the grid development strategy, Grid 25. The Strategy is in accordance with the Government's Energy White Paper and is based on grid information that was available in 2017.

There are three core strategy statements in the Strategy, as follows:

<sup>&</sup>lt;sup>6</sup> Government Policy Statement on the Strategic Importance of Transmission and Other Energy Infrastructure, 2012, EirGrid

<sup>&</sup>lt;sup>7</sup> gov.ie - Future Framework for Offshore Renewable Energy (www.gov.ie)

<sup>&</sup>lt;sup>8</sup> Transmission Development Plan 2024-2033, EirGrid

<sup>&</sup>lt;sup>9</sup> Ireland's Grid Development Strategy - Your Grid, Your Tomorrow, 2017, EirGrid

- 1. "Inclusive consultation with local communities and stakeholders will be central to our approach.
- 2. We will consider all practical technology options.
- 3. We will optimise the existing grid to minimise the need for new infrastructure".

The proposed SI works as part of the PUOSC project aligns with the Strategy by optimising the existing grid to meet regional demand growth.

#### 4.2.3 Grid Implementation Plan 2023 - 2028

The *Grid Implementation Plan 2023-2028<sup>10</sup>* (the GIP) sets out EirGrid's approach to the planning and development of the grid that will be undertaken.

The GIP was adopted in October 2024 and states objectives and policies to implement the long-term vision statements contained in the *Shaping Our Electricity Future* strategy (see Section 4.2.5).

The GIP supports the PUOSC project, stating that "EirGrid has identified available onshore grid capacity for connection of offshore renewables of up to 900 MW in total off the South coast of Ireland".

#### 4.2.4 Strategy 2020-25: Transform the Power System for Future Generations

EirGrid published the *Strategy 2020-25: Transform the Power System for Future Generations*<sup>11</sup> in 2019 for the period 2020-25. The overall strategy is set out on page 25, and the purpose of this strategy is to "*Transform the power system for future generations*". The strategy consists of a set of key goals, underpinned by its purpose. The primary goal is to "*Lead the island's electricity sector on sustainability and decarbonisation*". The supporting goals are:

- "Operate, develop and enhance the all- island grid and market",
- "Work with partners for positive change" and
- "Engage for better outcomes for all".

The proposed SI works, part of the PUOSC project, will support this policy by supporting sustainable energy production and transmission through the provision of new infrastructure.

#### 4.2.5 Shaping our Electricity Future

EirGrid published the *Shaping our Electricity Future Roadmap Version 1.1*<sup>12</sup> in 2023 as the result of the review on the original roadmap published in 2021. It outlines a pathway towards meeting enhanced 2030 government electricity ambitions on the Island and provides a foundation to support the broader transition to net zero by 2050. It states:

"EirGrid's Shaping Our Electricity Future Roadmap identifies network projects as a strategic enabler to achieving 2030 RES-E targets. The programme of network investment needed in advance of 2030 is significant and requires both EirGrid and ESB Networks to streamline how grid infrastructure is delivered. EirGrid and ESB Networks will develop and implement an end-to-end TSO/TAO joint approach to optimise delivery of grid infrastructure projects."

The proposed SI works will support the PUOSC project and support the development and optimisation of the existing grid and will contribute towards meeting enhanced 2030 government electricity ambitions in Ireland and therefore, support the broader transition to net zero by 2050.

<sup>&</sup>lt;sup>10</sup> Grid Implementation Plan 2023-2028, 2024, EirGrid

<sup>&</sup>lt;sup>11</sup> Strategy 2020-25: Transform the Power System for Future Generations, 2019, EirGrid

<sup>12</sup> Shaping our Electricity Future Roadmap, 2023, EirGrid

## 4.3 National Planning Policy Context

Key legislation, together with national, regional and local policy documents of relevance to the SI works, are set out in the paragraphs that follow.

# 4.3.1 Project Ireland 2040: National Planning Framework, 2018 and National Development Plan 2021-2030

Project Ireland 2040 is the government's long-term overarching development strategy for the state. The *National Development Plan 2021-2030*<sup>13</sup> (NDP) and the *National Planning Framework*<sup>14</sup> (NPF) combine to form Project Ireland 2040. The NPF sets the vision and strategy for the development of Ireland until 2040 and the NDP provides the enabling investment to implement that strategy.

The NPF sets out the overall national planning policy objectives and targets for the Country over the next 20 years. It provides a framework to guide public and private investment "*to create and promote opportunities for our people, and to protect and enhance our environment.*"

Ten National Strategic Outcomes (NSOs) articulate the primary objectives of the NPF, while National Policy Objectives (NPOs) outline more precise ambitions and targets. NSO 8 notes that "new energy systems and transmission grids will be necessary for a more distributed, more renewables focused energy generation system". In this regard, one of the key goals of NSO 8 is to transition to a low carbon and climate resilient society by "harnessing both the considerable on-shore and off-shore potential from energy sources such as wind, wave and solar and connecting the richest sources of that energy". This is also reflected in NPO 55:

**NPO 55** – "Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a low carbon economy by 2050."

In order to further enhance energy security and resilience and support Ireland's population of 8 million people, the NPF notes the need to support electricity grid connectivity throughout the island.

The NDP aims to deliver up to 80% of Ireland's electricity from a mix of onshore and offshore renewable sources by 2030. Achieving this ambitious target will necessitate a coordinated investment program in several key areas, including:

- "grid-scale renewable electricity generation and storage;
- an expanded and strengthened electricity transmission and distribution network;
- conventional electricity generation capacity to support the operation of the electricity system and provide security of supply for when variable generation (wind/solar) is not sufficient to meet demand."

The proposed SI works forms part of the PUOSC project which will enable Ireland's grid to use the electricity generated from offshore wind energy. The proposed SI works are, as such, considered to be fully supported by the policies of the NPF and the NDP.

#### 4.3.2 National Marine Planning Framework

Ireland's Marine Spatial Plan is called the *National Marine Planning Framework*<sup>15</sup> (NMPF) and was published in 2021. The NMPF, which applies to a maritime area of approximately 495,000 km<sup>2</sup>, outlines a vision for the future development of Ireland's marine planning system up to 2040.

Regarding offshore renewable energy, the NMPF outlines the following objectives:

• Develop the offshore electricity transmission system, and connection between the offshore and onshore electricity grids, which is necessary for wider development of Ireland's offshore renewable energy sector.

<sup>&</sup>lt;sup>13</sup> National Development Plan, 2021, DPER

<sup>&</sup>lt;sup>14</sup> National Planning Framework, 2018, DHPLG

<sup>&</sup>lt;sup>15</sup> National Marine Planning Framework, 2021, DHLGH

• Strengthen the existing policy framework to incentivise further future electricity interconnection.

The proposed SI works will support this policy by supporting the PUOSC project, which will increase and strengthen offshore and onshore energy transmission.

# 4.3.2.1 Statement of Consistency with the National Marine Planning Framework (NMPF)

The proposed SI works is consistent with the NMPF. The proposed SI works are essential to providing scientific, environmental, and engineering information to support the PUOSC project. The overall project will contribute to accelerating the deployment of renewable energy to replace fossil fuels and delivering a flexible system to support renewables and demand. A review of these policies relative to the proposed SI works and consistency with the NMPF is summarised in Table 4.1 below.

The NMPF sets out Overarching Marine Planning Policies (OMPPs) that will apply to all marine activities or development. These include policies in relation to, inter alia, co-existence with biodiversity, coastal and island communities, and infrastructure.

#### Table 4.1 Assessment of compliance with the National Marine Planning Framework (NMPF)

Environmental -Ocean Health		
3iodiversity and Protected Marine Sites		
Biodiversity	The SI works is supported by the following documents:	
	AIMU	
	SISAA	
	Annex IV Species Risk Assessment	
	The SISAA confirms that the SI works are not connected with or necessary to the management of the nature conservation interest of any European site. The SISAA further concludes that, in the absence of mitigation measures, there is the potential for likely significant effects on the following European sites including two protected sites from the UK:	
	Bannow Bay SAC	
	Hook Head SAC	
	River Barrow and River Nore SAC	
	Saltee Islands SAC	
	Blackwater River (Cork/Waterford) SAC	
	Lower River Suir SAC	
	Slaney River Valley SAC	
	Carnsore Point SAC	
	Blackwater Bank SAC	
	Roaringwater Bay and Islands SAC	
	Glengarriff Harbour and Woodland SAC	
	Pembrokeshire Marine/ Sir Benfro Forol SAC - UK	
	West Wales Marine / Gorllewin Cymru Forol SAC - UK	
	Bannow Bay SPA	
	Ballycotton Bay SPA	
	Mid Waterford Coast SPA	
	Keeragh Islands SPA	
	Ballyteige Burrow SPA	
	Tramore Back Strand SPA	

Environmental -Ocean Healt	th
	Dungarvan Harbour SPA
	Tacumshin Lake SPA
	Wexford Harbour and Slobs SPA
	The conclusion of the Annex IV Species Risk Assessment and AIMU is that with the implementation of the mitigation measures listed, any impacts on marine mammals will be reduced to as low as reasonably practicable and will not result in any significant effects on these species. The scale and nature of the SI works will be of limited duration and therefore will not impact on the wider marine environment of the North Celtic Sea.
Protected Sites	The impacts of the SI works on Protected Sites are discussed in the SISAA.
Non-Indigenous Species	The SISAA and AIMU did not identify any potential for the introduction of non-indigenous species.
Water Quality	The SISAA and AIMU did not identify potential for impacts on water quality.
Sea Floor and Water Column Integrity	Given the scale and scope of the SI works, and as discussed in the AIMU, there is no potential for impacts on sea floor and water column integrity based on the mitigation measures that will be utilised.
Marine Litter	Given the scale and scope of the SI works, as stated in the AIMU, there is no potential for the SI works to introduce litter into the marine environment.
Underwater Noise	Underwater noise is discussed in full in the SISAA and Annex IV Risk Assessment and supported by the separate Subsea Noise Technical Report, all submitted with the MULA. The SISAA concludes that in the absence of mitigation, the geophysical, geotechnical and metocean surveys will introduce subsea noise that has the potential to impact on otter, migratory fish species, bottlenose dolphin, harbour porpoise, harbour seal and grey sea. The Annex IV Risk Assessment concluded that, with the implementation of mitigation measures, there was no potential for impact due to underwater noise on any Annex IV species. The AIMU concluded that, there was no potential for impact on any otter, fish or marine mammals with the implementation of the mitigation measures discussed.
Air Quality	The use of vessels and machinery as part of the onshore and offshore surveys works, have the potential to contribute to greenhouse gases (GHGs), but as stated in the AIMU based on the size and scale and vessels and machinery that will be in use relative to the background of shipping activity there will be no impact on air quality from the proposed SI works.
Climate Change	The proposed SI works will support future ORE development through establishing an offshore grid connection system, which will, contribute to Climate change by reducing CO <sub>2</sub> emissions.
Economic- Thriving Maritime	Economy
Co-existence	The proposed SI works have the potential to disrupt commercial fishery activity within the AoI. However, given the nature and scale of the works and the proposed mitigation measures, including that consultation with these groups (fishers, ports, harbours etc) will be ongoing and notification of activities will be made known well in advance of the SI works throughout the SI works period, no significant impact is expected.
Infrastructure	The proposed SI works will support future infrastructure policy as the results of these surveys will support the development of an OSS for future ORE developments. All ancillary works will be developed to support the transition and in turn supporting future infrastructure projects to support ORE developments in Ireland.
Social- Engagement with the	sea
Access	No access issues have been identified with the proposed SI works
Employment	The proposed SI works will support local employment with the personnel involved in the SI works likely to be spending money on indirect activities associated with the works, e.g. accommodation, food, etc. There is also the opportunity for local vessel owners and their crews to provide support services to EirGrid and/or their suppliers in undertaking the SI works.
Heritage assets	Heritage assets are discussed in <b>Chapter 13</b> of this AIMU. Mitigation measures will be utilised to mitigate any impact on heritage assets within the AoI.
Rural Coast and Island Communities	Potential impact at landfall locations along the south coast in Waterford, Wexford and Cork. Surveys will be conducted within the intertidal and subtidal areas so therefore direct impact on these communities is anticipated to be minimal. Indirect impacts include

Environmental -Ocean Health		
	visual (e.g. JUBs and increases in personnel/ machinery at landfall locations and offshore vessels) and noise and light from these activities.	
Seascape and Landscape	As stated in the AIMU no seascape or landscape impacts are expected.	
Social benefits	Social benefits anticipated relate to supporting ORE development in Ireland through future job opportunities, climate resilience and future energy needs.	
Transboundary	No transboundary effects are expected	

The proposed SI works are therefore consistent with the overall objectives and policies of the NMPF.

## 4.4 Regional Planning Policy Context

#### 4.4.1 Regional Spatial and Economic Strategy for the Southern Region

The Southern Regional Assembly's *Regional Spatial and Economic Strategy*<sup>16</sup>, 2020 (the RSES) outlines the spatial and economic policies and targets for the region. The RSES is a strategic plan and investment framework to shape the future development of the region to 2031 and beyond.

The RSES, prepared in accordance with the NPF, sets the context for each local authority within the Southern Region to develop county and city development plans in a manner that will ensure that national, regional and local plans align. Regional Policy Objectives (RPOs) provide a framework for city and county development plans and align with international, EU and national policy.

Section 4.9 of the RSES relates to the Marine and Coastal Assets and RPOs 76, 77, 78, 83 and 85 deal with the management of developments within the Marine and coastal areas. For clarity, these are presented below.

**RPO 76 - Marine Economy:** *"It is an objective to ensure alignment, and consistency between land use and ocean-based planning, and to ensure co-ordination, which supports the protection of the marine environment and the growth of the marine economy."* 

**RPO 77 - Maritime Spatial planning - Consistency and Alignment:** "It is an objective to support the integration of different uses in the marine environment and ensure consistency and alignment between high-level plans such as the National Marine Planning Framework, regional based approaches to maritime spatial planning and localised coastal management plans and local integrated coastal zone management plans. It is important to be cognisant of the need to promote cross boundary management of coastal areas within the Region. Any development of plans in coastal zones should be informed by the Strategic Flood Risk Assessment."

**RPO 78 - First Mover under the National Marine Planning Framework:** *"It is an objective to support the sustainable development of the potential of the marine environment, to foster opportunities for innovation in the maritime economy and drive forward the Region as a first mover under marine spatial planning while preserving the environmental and ecological conservation status of our marine natural resource. Initiatives arising from this objective shall be subject to robust feasibility and site selection, which includes flood risk assessments and explicit consideration of likely significant effects on European sites and potential for adverse effects on their integrity in advance of any development. The RSES encourages close interaction between higher education, state agencies, and enterprise to position the Region as a leader in this field."* 

**RPO 83 - Island and Coastal Communities:** *"It is an objective to seek investment in the sustainable development of infrastructure (physical and social), access (upgraded pier infrastructure, landing facilities and passenger and cargo ferry services), regional connectivity (transport networks and digital), enterprise growth and deliver initiatives by Local Authorities, Udaras na Gaeltachta, local communities and other stakeholders to strengthen and sustainably grow our Region's island and coastal communities. Robust site selection* 

<sup>&</sup>lt;sup>16</sup> Southern Regional Assembly RSES 2020 High Res.pdf (southernassembly.ie)

and environmental feasibility is required in advance of seeking investment including all necessary flood risk assessments."

**RPO 85 - Renewable offshore energy:** "To promote regional cooperation in terms of offshore renewable energy development, environmental monitoring and awareness of the benefits of realising the Region's offshore energy potential. Initiatives arising from this objective shall be subject to robust feasibility and site selection, which includes explicit consideration of likely significant effects on European Sites and potential for adverse effects on the integrity of European sites in advance of any development."

Section 5.1 of the RSES relates to Climate Change and notes that future development in the Region must be transitioned to a low carbon usage.

**RPO 87 - Low Carbon Energy Future:** "The RSES is committed to the implementation of the Government's policy under Ireland's Transition to a Low Carbon Energy Future 2015-30 and Climate Action Plan 2019. It is an objective to promote change across business, public and residential sectors to achieve reduced GHG emissions in accordance with current and future national targets, improve energy efficiency and increase the use of renewable energy sources across the key sectors of electricity supply, heating, transport and agriculture."

**RPO 95 - Sustainable Renewable Energy Generation:** *"It is an objective to support implementation of the National Renewable Energy Action Plan (NREAP), and the Offshore Renewable Energy Plan and the implementation of mitigation measures outlined in their respective SEA and AA and leverage the Region as a leader and innovator in sustainable renewable energy generation."* 

**RPO 96 - Integrating Renewable Energy Sources:** "It is an objective to support the sustainable development, maintenance and upgrading of electricity and gas network grid infrastructure to integrate renewable energy sources and ensure our national and regional energy system remains safe, secure and ready to meet increased demand as the regional economy grows."

**RPO 97 - Power Stations and Renewable Energy**: "It is an objective to support the sustainable technology upgrading and conversion of power stations in the Region to increase capacity for use of energy efficient and renewable energy sources."

**RPO 100 - Indigenous Renewable Energy Production and Grid**: *"Injection It is an objective to support the integration of indigenous renewable energy production and grid injection."* 

**RPO 103 - Interconnection Infrastructure:** *"It is an objective to support the sustainable development of interconnection infrastructure, in particular the potential for the sustainable development of an international connection between Ireland and France in the Region."* 

The above RPOs support the proposed SI works as part of a broader commitment of the PUOSC project to a transition towards a low-carbon energy future.

### 4.5 Local Planning Policy Context

#### 4.5.1 Wexford County Development Plan

The *Wexford County Development Plan 2022-2028*<sup>17</sup> (hereafter, the Wexford CDP) outlines the policy objectives and strategic vision to guide the future growth and development of the County. One of the key objectives regarding energy infrastructure is to support the reinforcement of the electricity transmission grid to enhance energy supply within the County.

Relevant planning policies and objectives of the Wexford CDP are outlined below:

**PT01:** "To facilitate the provision of and improvements to energy networks in principle, provided that it can be demonstrated that:

<sup>&</sup>lt;sup>17</sup> https://consult.wexfordcoco.ie/en/system/files/materials/1281/WexfordDevelopmentPlanVol201\_0.pdf

• The development is required in order to facilitate the provision or retention of significant economic or social infrastructure.

• The route proposed has been identified with due consideration for social, environmental and cultural impacts.

• The design is such that will achieve least environmental impact consistent with not incurring excessive cost.

• Where impacts are inevitable mitigation features have been included.

• Proposals for energy infrastructure should be assessed in accordance with the requirements of Article 6 of the Habitats Directive."

Having regard for the above, it is noted that the proposed SI works represent a critical step in the delivery of the PUOSC project which will contribute to the necessary energy network improvements that are required to facilitate the ongoing enhancement of economic and social infrastructure across the southern region. The proposed SI works and future PUOSC project have been designed with careful consideration for all social, environmental and cultural impacts, with mitigation measures proposed where necessary to protect all sensitive receptors. In this regard, the proposed SI works are considered to be fully supported by policy PT01.

**PT02:** "To support, subject to the objectives of this section and Volume 10 Energy Strategy, connecting infrastructure for the integration of low carbon and renewable energy generation projects including community scaled projects with power transmission infrastructure."

The proposed SI works, as an integral component of the delivery of the PUOSC project, will support the enhancement of connecting infrastructure for low carbon and renewable energy projects, thereby aligning with PT02 and the Wexford CDP's Energy Strategy.

**PT03:** "To support the upgrading of existing electricity networks and the reuse of existing power line routes."

The proposed SI works, as an integral step in delivering the PUOSC project, will support the upgrading of the County's electricity network, contributing to Ireland's transition to a low carbon electricity future. This directly addresses the CDP by safeguarding and enhancing the grid, thereby supporting sustainable energy production and transmission. The proposed SI works are considered to be fully supported by policy PT03.

**PT04:** "To support the upgrade of existing and development of new electricity substations in locations that do not have a significant negative impact on nearby residents and are subject to landscaping screening."

The proposed SI works have been planned to ensure minimal negative impacts on the landscape and residents in the wider area. Potential impacts of the SI works have been assessed and mitigated. The proposed SI works are considered to be aligned with policy PT04.

Further relevant objectives are set out in the CDP's Energy Strategy (Vol 10), including:

**Objective ES35:** "To facilitate the provision of and improvements to energy networks in principle, provided that it can be demonstrated that:

• The development is required in order to facilitate the provision or retention of significant economic or social infrastructure

• The route proposed has been identified with due consideration for social, environmental and cultural impacts

• The design is such that will achieve least environmental impact consistent with not incurring excessive cost

• Where impacts are inevitable mitigation features have been included

• Proposals for energy infrastructure should be assessed in accordance with the requirements of Article 6 of the Habitats Directive

Having regard for the above, it is submitted that the proposed SI works are fully aligned with the CDP's goals by facilitating the PUOSC project which will in turn enhance energy infrastructure, support renewable energy integration, and ensure sustainable development with minimal environmental impact.

#### 4.5.2 Waterford City and County Development Plan

The *Waterford City and County Development Plan 2022 - 2028*<sup>18</sup> (hereafter, the Waterford CDP) outlines the strategic vision and policy objectives to guide the future growth and development of Waterford. In alignment with national policy, the Waterford CDP emphasises a shift towards low carbon energy solutions to foster a greener future. Key objectives include enhancing electrical generation and distribution infrastructure to meet current and future energy demands.

Relevant planning policies and objectives of the Waterford CDP are outlined below:

**UTL 13 - Renewable Energy**: "It is the policy of Waterford City and County Council to promote and facilitate a culture of adopting energy efficiency/ renewable energy technologies and energy conservation and seek to reduce dependency on fossil fuels thereby enhancing the environmental, social and economic benefits to Waterford City and County. As such, renewable energy developments may require support from such sources in times of high energy demand. This will be achieved by:

• <u>Supporting the delivery of renewable energy</u> to achieve the targets of the Development Plan.

• <u>Facilitating and encouraging, where appropriate, proposals for renewable energy</u> <u>generation, transmission and distribution</u> and ancillary support infrastructure facilities including the necessary infrastructure required for the development of offshore renewable energy developments developed fully in accordance with the Waterford Renewable Energy Strategy, the wind energy designation map (Appendix 2 of the RES), the Waterford Landscape and Seascape Character Assessment undertaken to inform this Development Plan, and the National Wind Energy Guidelines, or any subsequent update/ review of these

• The Council recognizes and supports the role that the County can play in facilitating the onshore infrastructure required for the construction, operation and maintenance of offshore wind farm developments. This infrastructure includes but is not limited to: construction facilities, storage and lay-down areas, cable landfalls, onshore cable routing to substations, port and harbour infrastructure and coastal operations and maintenance bases, as well as use, reuse or repowering of existing infrastructure where appropriate.

• The Wind Energy Designation Map and the Landscape and Seascape Character Assessment Map identify different landscape character areas and associated landscape sensitivities. These designations encompass the concept of buffers between areas of sensitivity which vary across the different landscape character types and their different locations. These buffers allow for a gradual change between contrasting landscape sensitivities and associated wind energy designations to be considered, as necessary, when determining any development proposal.

• Promote and encourage the use of renewable energy, and low carbon resources, namely solar photovoltaic, geothermal, heat pumps, district heating, solar thermal, hydro, tidal power, offshore and onshore wind, biomass as well as micro-generation among business, agriculture, education, health, and other sectors.

• Promoting, encouraging, ensuring, and facilitating community engagement, participation and implementation of/ in renewable energy projects.

• To support in conjunction with other relevant agencies, wind energy initiatives, both onshore and offshore, and wave energy, and onshore grid connections and reinforcements to facilitate offshore renewable energy development when these are undertaken in an environmentally acceptable manner.

At initial design stage full consideration should be to reasonable alternatives and existing infrastructural assets. In this regard environmental assessments should address reasonable alternatives for the location of new energy developments, and where existing infrastructural assets such as sub-stations, power lines and roads already exist within proposed

<sup>&</sup>lt;sup>18</sup>Waterford City and Council Development Plan, 2022, WCC

development areas, then such assets should be considered for sustainable use by the proposed development where the assets have capacity to absorb the new development.

All planning applications for Renewable Energy Projects such as wind farms and solar farms shall be accompanied by a Decommissioning and Restoration Plan (DRP) consistent with the Wind Energy Guidelines 2006 or any update thereof. Issues to be addressed shall include details of proposed restorative measures, the removal of above ground structures and equipment, the restoration of habitats, landscaping and/or reseeding roads etc."

The proposed SI works are fully aligned with and supported by objective UTL 13 as the works are required to facilitate the PUOSC project which in turn will contribute to the enhancement of the grid and electricity supply, promoting and facilitating the adoption of renewable energy technologies and energy conservation. This supports the delivery of renewable energy to achieve the targets of the Waterford CDP and facilitates the necessary infrastructure for offshore renewable energy developments.

**UTL 24 - Electricity Infrastructure**: "Subject to appropriate environmental assessment and compliance with the policy objectives and development management standards of the development plan, we will support and facilitate the development of a safe, secure and reliable supply of electricity, associated electricity networks and transmission infrastructure to serve existing and future demand."

The proposed SI works will facilitate the PUOSC project, which will deliver increased sustainable energy production and strengthening electricity infrastructure transfer. The potential environmental impacts of the SI works have been fully assessed in this application, in accordance with UTL 24.

**C&M 01 - Protecting our Coast and Marine:** *"All development proposals will be required to comply with standards and legal requirements of the following where they apply;* 

- National Seascape Character Assessment.
- NMPF National Marine Planning Framework.
- Maritime Area Planning Act (2021) as amended
- Geological Survey Ireland Coastal Vulnerability Index (CVI)"

The SI works are being developed in compliance with all applicable standards and legal requirements.

The proposed SI works, in their role as part of the PUOSC project, will enable Waterford's grid to use the electricity generated from offshore wind energy and will contribute to Ireland's transition to a low carbon electricity future. In this regard, it is considered that the proposed SI works are aligned with the Waterford CDP through the enhancement of the grid, thereby supporting sustainable energy production and transmission.

#### 4.5.3 Cork County Development Plan 2022-2028

The *Cork County Development Plan 2022-2028*<sup>19</sup> (hereafter, the Cork CDP) sets out the policy objectives and the overall strategy to guide future growth and development in the County. The Cork CDP sets out an approach centred on sustainability with a focus on creating vibrant, liveable, climate resilient communities over the plan period from 2022 to 2028.

A key aim of the Cork CDP is to achieve 70% renewable electricity by 2030 and will involve "phasing out coal and peat-fired electricity generation plants, increasing our renewable electricity, reinforcing our grid (including greater interconnection to allow electricity to flow between Ireland and other countries), and putting systems in place to manage intermittent sources of power, especially from wind".

Relevant planning policies and objectives of the Cork CDP are outlined below:

#### ET 13-1 – Energy:

a) Ensure that County Cork fulfils its potential in contributing to the sustainable delivery of a diverse and secure energy supply and to harness the potential of the county to assist in meeting renewable energy targets and managing overall energy demand.

<sup>&</sup>lt;sup>19</sup> Cork County Development Plan, 2022, CCC

*b)* During the life of this plan, the Planning Authority will prepare a renewable energy strategy for the county.

The proposed SI works will facilitate the PUOSC project which will directly address objective ET 13-1 through the enhancement of the grid and electricity supply, ensuring that County Cork will successfully contribute to a diverse and secure energy supply and meets renewable energy targets.

#### ET 13-21: Electricity Network

a) Support and facilitate the sustainable development, upgrade and expansion of the electricity transmission grid, storage, and distribution network infrastructure.

*b)* Support the sustainable development of the grid including strategic energy corridors and distribution networks in the region to international standards.

c) Facilitate where practical and feasible, infrastructure connections to wind farms, solar farms, and other renewable energy sources subject to normal proper planning considerations.

d) Proposals for development which would be likely to have a significant effect on nature conservation-sites and/or habitats or species of high conservation value will only be approved if it can be ascertained, by means of an Appropriate Assessment or other ecological assessment, that the integrity of these sites will not be adversely affected.

In this regard, the proposed SI works, as a critical step in the delivery of the PUOSC project, will support the sustainable upgrade and expansion of the electricity grid, including strategic energy corridors and connections to renewable sources. The SI works have been carefully planned and assessed to minimise impacts on the receiving environment, with mitigation measures proposed where required.

#### ET 13-22: Transmission Network

a) To co-operate and liaise with statutory and other energy providers in relation to power generation in order to ensure adequate power capacity for the existing and future needs of the County including business and residential demands.

b) Proposals for new electricity transmission networks will need to consider the feasibility of undergrounding or the use of alternative routes especially in landscape character areas that have been evaluated as being of high landscape sensitivity. This is to ensure that the provision of new transmission networks can be managed in terms of their physical and visual impact on both the natural and built environment and the conservation value of European sites.

c) Proposals for development which would be likely to have a significant effect on nature conservation-sites and/or habitats or species of high conservation value will only be approved if it can be ascertained, by means of an Appropriate Assessment or other ecological assessment, that the integrity of these sites will not be adversely affected.

Having regard for the above, it is noted that the proposed SI works will facilitate the delivery of the PUOSC project which will contribute to ensuring that adequate power capacity is provided for the County's needs. The SI works have been carefully planned and assessed to minimise impacts on the receiving environment, with mitigation measures proposed where required. The proposed SI works are therefore considered to be fully aligned with objective ET 13-22 of the Cork CDP.

# 5 Land and Soils

## 5.1 Assessment of Impact

The land and soils of the AoI are described within this section, and includes coastal areas below the HWM, beaches, the seabed and seafloor. It should be noted that marine sediments and habitats are also discussed in further detail under the Biodiversity chapter (see **Chapter 7**).

The bedrock geology of the terrestrial zones adjacent to the Aol is predominantly underlain by Palaeozoic, Middle - Upper Ordovician Rhyolite, rhyolitic tuff & slate, Palaeozoic, Cambrian (Marine) Slate along the eastern section of the Aol with smaller patches of Palaeozoic, Upper Devonian – Carboniferous Continental redbed facies; Sandstone, conglomerate & siltstone (in places extends into the Carboniferous) and Palaeozoic, Carboniferous, Mississippian Marine shelf & ramp facies; Argillaceous dark-grey bioclastic limestone, subsidiary shale. The western section of the Aol is predominately comprised of a mix of Palaeozoic, Carboniferous, Mississippian Marine (Cork Group) (extends into the Visean); Mudstone, sandstone & thin limestone, Palaeozoic, Upper Devonian – Carboniferous Continental redbed facies; Sandstone, conglomerate & siltstone (in places extends into the Carboniferous).

In the transition between the terrestrial and marine environments the Quaternary Sediments are expected to include marine beach sands, estuarine silts and clays, and bedrock outcrop or subcrop.

The pre-Quaternary bedrock within the AoI is expected to be a mixture of chalk, limestone, claystone, sandstone and igneous/ metamorphic rock.

Within the Aol along the nearshore areas, the predominant habitat types are rock or other hard substrata (A4.1 Atlantic and Mediterranean high energy circalittoral rock) and sand (A5.25 or A5.26 Circalittoral fine sand or Circalittoral muddy sand). Further offshore and within the middle of the Aol the predominant habitat types are A5. 14 Circalittoral coarse sediment and A5.27 Deep circalittoral sand. To the west of the Aol there are small areas of A5.37 Deep circalittoral mud. On the approaches to Cork Harbour there are several habitat types present including A5.25 or A5.26, A5.14, A5.35: Circalittoral sandy mud and A5.35: Circalittoral sandy mud (EMODnet, 2024)<sup>20</sup>.

The proposed coastal and marine geophysical surveys will not have any impacts on the land and soils as there is no pathway from the source (geophysical survey equipment) to the receptor (sediments/ bedrock).

The coastal and marine geotechnical surveys, and the coastal and marine environmental surveys involving the taking of grab samples (intertidal and subtidal), will interact with the land and soils (intertidal and subtidal sediments, including bedrock). However, the SI works are limited to the proposed sampling locations which will remove relatively small quantities of sediment. The areas and the volumes of material likely to be sampled and/or removed are summarised in Table 5.1. Summing the areas stated in Table 5.1 equates to a total area of impact of 345 m<sup>2</sup> which is 0.000015% of the AoI (2336 km<sup>2</sup>).

Table 5.1	Summary of Geotechnical S	Sampling/ Boreholes and Quantities
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Activity	Maximum Quantity	Unit Area m²	Total % of Aol Area (2,336 km²)	Maximum Volume Removed m <sup>3</sup>
Sediment/Benthic Sampling (Subtidal)	420	0.100	0.000002%	6.30
Sediment/Benthic Sampling (Intertidal)	126	0.010	0.0000005%	0.25
Vibrocore (120 mm dia. x 6 m deep)	276	0.011	0.0000001%	18.71
Inshore/onshore borehole (250 mm dia. x 15 m deep)	21	0.049	0.0000004%	15.44
Offshore borehole (250 mm dia. x 100 m deep)	8	0.049	0.000002%	39.20
Shallow CPT (10 cm <sup>2</sup> x 6 m deep) - no material removed	276	0.010	0.0000001%	0.00
Deep drive CPT	16	0.010	0.0000001%	0.00

<sup>20</sup> https://emodnet.ec.europa.eu/EUSeaMap 2023 Broad-Scale Predictive Habitat Map for Europe Accessed October 2024

Activity	Maximum Quantity	Unit Area m²	Total % of Aol Area (2,336 km <sup>2</sup> )	Maximum Volume Removed m <sup>3</sup>
(10 cm <sup>2</sup> x 15 m deep) - no material				
Trial pit (1 m <sup>2</sup> x 2 m deep) - excavated material backfilled.	42	1.000	0.000002%	0.00
Jack-up barge (4 legs x max 3m <sup>2</sup> each)	21	12.000	0.00001%	0.00

Given the dynamic marine environment there is anticipated to be a rapid recovery of the sediment over a number of tidal cycles and therefore there will be no significant impacts on land and soils from these activities.

Where a JUB is used as a platform to undertake the geotechnical surveys, the legs will result in the disturbance to sediments during the placement operations (i.e. "spudding"). Similarly, given the dynamic marine environment there is anticipated to be a rapid recovery of the sediment over a number of tidal cycles and therefore any impact is fully reversible.

The JUB and the coastal and marine geotechnical surveys and the grab samples have the potential to result in sediment becoming suspended in the water column, resulting in Suspended Sediment Concentrations (SSC) that may cause an impact on protected habitats through smothering, as discussed below. Similarly, intrusive SI works (e.g. grab samples, boreholes, etc.) will damage marine habitats if undertaken directly on or through that habitat.

To the east of the AoI, there are two SACs of relevance to the Land and Soils assessment, namely Bannow Bay SAC (000697) and Hook Head SAC (000764) whereby the SI works have the potential to interact with habitats that are the Qualifying Interests (QI) of these SACs.

In relation to Bannow Bay SAC, none of the proposed SI locations overlap with the mapped QI as provided in the NPWS Conservation Objectives Series<sup>21</sup> publication. Any SSC arising from the SI works will be insignificant in terms of the existing dynamic marine conditions and will rapidly disperse. Therefore, smothering of the QI is unlikely and therefore no negative impacts are predicted.

In relation to Hook Head SAC, there is the potential for the SI works to have a negative impact on the QI habitats, namely: Large shallow inlets and bays [1160]; Reefs [1170]; Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] which are illustrated in the NPWS Hook Head Conservation Objectives Series report<sup>22</sup>. The offshore transmission cable corridors on the approaches to Landfall Zones E, F and G all traverse through areas highlighted for Large shallow inlets and bays [1160] and Reefs [1170]. The area around Landfall Zone E is also within an area marked for Vegetated sea cliffs of the Atlantic and Baltic coasts [1230].

Any SSC arising from the SI works will be insignificant in terms of the existing dynamic marine conditions and will rapidly disperse. Therefore, smothering of the QI is unlikely to result in negative impacts.

The intrusive investigation locations are of such a small scale that they will have no appreciable impact on Large shallow inlets and bays. However, the intrusive investigations do pose a risk of damaging Reef habitat if it is present at the location of the SI works.

The deployment of metocean equipment (e.g. ADCP) and other equipment (e.g. moorings for SAMs) on the seafloor will cause some localised disturbance of the seafloor sediments. However, this will be temporary (weeks to months) as the equipment will be fully removed once operations are complete.

In the intertidal areas, vehicles or machinery traversing the intertidal zone may result in localised compression of the top sand and mud layers. This activity will be limited to accesses to/from investigation locations. Any impacts will be localised to the tracking areas of the machines and investigation locations, e.g. trial pits. Once the equipment and machinery are demobilised, it is anticipated that any negative impacts will

<sup>&</sup>lt;sup>21</sup> Bannow Bay SAC Conservation Objectives Series report: <u>https://www.npws.ie/sites/default/files/protected-sites/conservation\_objectives/CO000697.pdf</u>

<sup>&</sup>lt;sup>22</sup> Hook Head SAC Conservation Objectives Series report

be fully reversible. The top layer of sediments will be subject to regular tidal movements within a dynamic marine environment and there is anticipated to be a rapid recovery of the sediment over a number of tidal cycles.

The coastal geophysical surveys, environmental surveys, and archaeological surveys will cause minimal disturbance to the land and soils as these are predominantly non-intrusive survey techniques involving personnel walking over the area below the HWM. Where archaeological surveys detect features of interest, there may be localised excavation of sediments to expose and recover the feature. Based on the information available at the time of this assessment, these archaeological investigations will not result in significant negative impacts on land and soils. Archaeological surveys and investigations will also be undertaken under licence from the National Monuments Service (NMS).

There will be no transboundary effects to land and soils due to the proposed SI works.

## 5.2 Mitigation

In advance of undertaking the coastal and marine geotechnical surveys, including the positioning of the jackup barge (JUB), and the marine environmental surveys (grab samples), drop down video (DDV) of the investigation locations will be undertaken to confirm that there are no sensitive Annex I habitats present which are unlikely to recover, i.e. reef. Similarly, walkover environmental surveys will be undertaken in advance of coastal intrusive investigations (i.e. trial pits and intertidal core sampling) and areas that constitute vegetated sea cliffs of the Atlantic and Baltic coasts will be avoided by the intrusive works.

## 5.3 Conclusion

Taking into consideration the nature scale and duration of the SI works, and the implementation of the measures specified above (i.e. drop-down video, walkover surveys), there will be a negligible impact on land and soils as a result of the SI works.

# 6 Water

## 6.1 Assessment of Impact

The AoI includes and/or adjoins a number of transitional and coastal waterbodies as summarised in the following table.

Table 6.1	Coastal and Transitional Waterbodies in and adjoining the AoI (EPA) <sup>23</sup>

Waterbody	Туре	EPA Ref	Status
Outer Cork Harbour	Coastal	IE_SW_050_0000	Moderate
Ballycotton Bay	Coastal	IE_SW_040_0000	Good
Tramore Bay	Coastal	IE_SE_110_0000	Good
Waterford Harbour	Coastal	IE_SE_100_0000	Moderate
Bannow Bay	Coastal	IE_SE_090_0000	Moderate
Barrow Suir Nore Estuary	Transitional	IE_SE_100_0100	Intermediate
Western Celtic Sea (HAs 18;19;20)	Coastal	IE_SW_010_0000	High
Eastern Celtic Sea (HAs 13;17	Coastal	IE_SE_050_0000	High

The following elements of the SI works will have no impact on water quality as they will not result in direct discharges to the water column.

- Coastal geophysical surveys.
- Marine geophysical surveys.
- Metocean and marine mammal acoustic device deployment, including moorings.
- Coastal environmental surveys.
- Marine environmental surveys, excluding subtidal benthic grab sampling.
- Archaeological surveys.
- Other surveys, including noise, shipping and navigation, UAS, aerial surveys.

The intrusive coastal and marine geotechnical and subtidal environmental grab sampling works may give rise to the mobilisation of sediment resulting in Suspended Sediment Concentrations (SSC) in the water column. The proposed SI works will involve up to 420 sediment/benthic sampling locations, 276 vibrocores, 29 boreholes, 292 CPTs, and 42 trial pits. Plumes of SSC can potentially cause deterioration of water quality, with subsequent negative impacts on aquatic habitats and communities, and the species which depend upon them (e.g., fish, foraging birds, marine mammals etc.). However, these SI works will be of a very limited area of impact, i.e. the width of a borehole, CPT hole, and grab. Any heavy particles that are mobilised will rapidly settle out of the water column while finer sediments will disperse and be carried away from investigation locations in tidal currents. Any sediment that enters the water column will not be in large enough quantities to significantly impact water quality or aquatic habitats/species.

The proposed locations of these investigations are also not located within any ports, harbours or other areas that have been under significant anthropogenic pressures that could result in contaminated sediments being present. Therefore, no impacts are predicted as a result of contaminated sediments being mobilised from the SI works.

All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Sea Pollution Act, 1991 ratified MARPOL in Ireland. In addition, all substances handled and/or used whilst undertaking the

<sup>&</sup>lt;sup>23</sup> <u>https://gis.epa.ie/EPAMaps/agriculture</u> and <u>https://gis.epa.ie/EPAMaps/</u>

works are required to be handled, used, stored, and documented in accordance with assessments and the Chemicals Act 2008 (No. 13 of 2008) and Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated Regulations.

Given the standard legal and regulatory pollution control requirements that apply to all vessels, the nature of the proposed SI works, their limited scale and duration, and the insignificant increase in vessel activity. Therefore, there will be no negative impact on Water quality from the operation of vessels during the SI works.

Overall, the SI works will not lead to the mobilisation of contaminated sediments, there will be no significant quantities of sediment resulting in SSC, and vessels must operate in accordance with legislation and regulations preventing marine pollution. For these reasons impacts on water quality from SSC is deemed to be negligible and no impact on the status of the various waterbodies are predicted as a direct result of the SI works.

There are no blue flag beaches located within AoI. Garryvoe (Landfall Zone C) and Bunmahon Beach (Landfall Zone D) are both included in the EPA (2024b) report on bathing water quality status at beaches monitored and managed under the Bathing Water Regulations in Ireland. Garryvoe Beach was given a bathing water quality status of "Good" while Bunmahon beach was given a bathing water quality status of "Sufficient." Other beaches in the AoI that are also monitored, but not under the Bathing Water Regulations in Ireland, are also included in the EPA (2024b) report. The relevant beaches are Inch (Landfall Zone A), Ballynamona and Shanagarry beach (Ardnahanich) (close to Landfall Zone C), Baginbun (close to Landfall Zone E). All of these beaches were given a bathing water quality of "Highest Quality." Given the localised scale of the Si works investigations and the negligible quantities of SSC likely to be produced by the SI works, there will be no impact on water quality at these beaches.

There will be no transboundary effects to water due to the proposed SI works.

### 6.2 Mitigation

None proposed.

### 6.3 Conclusion

Taking into consideration the nature scale and duration of the SI works, there will be a negligible impact on Water as a result of the SI works.

# 7 Biodiversity

## 7.1 Assessment of Impact

An assessment of potential impacts arising from the SI works to biodiversity receptors is presented in the sub-sections below. The accompanying documents to the MUL provide more detail on biodiversity and, in particular, assessments required under the Habitats Directive. Refer to the Risk Assessment for Annex IV Species (ref: IE001220-RPS-RP-XX-RP-EN-0004), the Supporting Information for Screening for Appropriate Assessment (SISAA) (ref: IE001220-RPS-RP-XX-RP-EN-0006), and the Subsea Noise Technical Report (ref: IE001220-RPS-RP-XX-RP-EN-0005).

#### 7.1.1 Habitats

The AoI spans a large area (2,336 km<sup>2</sup>) and covers a range of habitat types, from coastal/ intertidal to subtidal. In order to understand the habitat types likely to be encountered, the boundary of the AoI was reviewed against EUSeaMap, a broad-scale predictive seabed habitat map for Europe (EMODnet, 2024). A band of moderate to high energy circalittoral rock (MC12 and MD12) extends from the coast out to approximately the 50 m depth contour, interspersed with pockets of moderate to high energy circalittoral coarse sediment and sand (MC32 and MC52). Beyond the 50 m depth contour, the predominant habitat type is a mosaic of high energy circalittoral coarse sediment (MC32) and moderate energy circalittoral sand (MC52), with smaller patches of offshore circalittoral mud (MD62).

The table below summarises the predominant sediment types at each potential landfall zone.

Landfall Zone	Nearest Townlands	County	Predominant Sediment Type (EMODnet, 2024)
A	Ballintra West, Ballintra East, Inch, Lahard	Cork	Ranges from sand to rock or other hard substrate and high energy infralittoral seabed
В	Ballybrangan, Ballycroneen West, Ballyrobin South	Cork	Mainly rock or other hard substrate
С	Garryvoe Lower, Ballybutler, Ballycrenane	Cork	High energy infralittoral seabed and rock or other hard substrate
D	Templeyvrick, Ballynasissala, Bunmahon, Ballynagigla, Knockmahon	Waterford	Ranges from sand to rock or other hard substrate
E	Ramstown	Wexford	Ranges from sand to rock or
F	Bannow	Wexford	other hard substrate and pockets
G	Haggard, Blackhall, Ballymadder	Wexford	of high energy circalittoral seabed

Table 7.1	Predominant sediment t	vpes at each	potential landfall zone
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The AoI intersects with or is adjacent to the following SACs designated for Annex I habitats; Bannow Bay SAC (IE000697), Hook Head SAC (IE000764), and River Barrow and River Nore SAC (IE002162). Annex I habitats identified within and adjacent to the AoI are vegetated sea cliffs of the Atlantic and Baltic coasts (1230), estuaries (1130), mudflats and sandflats not covered by seawater at low tide (1140), large shallow inlets and bays (1160) and reefs (1170).

The following survey activities which will take place at the potential landfall zones have the potential to interact with the habitats identified above: coastal geophysical surveys, coastal geotechnical (trial pits), coastal environmental surveys (ecological walkovers, ornithological and marine mammal vantage point surveys and intertidal core sampling) and archaeological intertidal walkovers/sampling. Geotechnical trial pits and intertidal core sampling are intrusive and have the potential to remove and/or disturb sedimentary habitats at the landfall zones, below the HWM. Up to 6 trial pits will be excavated at each potential landfall zone and 18 intertidal core sampling) have the potential to directly remove, alter or fragment the habitats at the landfall zones, including Annex I habitats at Bannow Bay SAC and Hook Head SAC. The accompanying SISAA report assesses the potential for likely significant effects to European sites.

All other coastal survey types are non-intrusive in nature and will not result in permanent habitat loss, alteration or fragmentation.

The following marine survey activities will be intrusive, with the potential to remove or damage subtidal habitats: geotechnical (vibrocore testing, boreholes, CPT), environmental (grab sampling) and metocean/acoustic moorings i.e., metocean buoy, ADCP and static acoustic monitors (SAM). Vibrocore investigations are proposed at up to 276 locations along the potential offshore transmission cable routes and approaches to the landfall zones. The vibrocores will be coincided with the shallow CPT locations and dependent upon the findings of the geophysical survey. Up to 16 deep drive CPT investigations will be performed at the potential OSS locations. Up to 21 boreholes will be drilled at the approaches to the potential landfall zones and 8 boreholes will be drilled at the potential OSS locations. 420 grab samples will be taken across the AoI, which includes two grabs collected at each location: one for faunal analysis and a second for sediment analysis.

Intrusive sampling equipment, including grab samplers, borehole drilling, jack-up barge (JUB) legs and anchoring points have the potential to lead to habitat loss or damage. There is also potential for the suspension of sediments and subsequent smothering of sensitive habitats such as Annex I Reefs, although given the high energy marine environment off the south coast, it is likely that the small amounts of sediments disturbed by each sample will settle out of suspension quickly. There is the potential for overlap with the QI habitats of the SACs listed above and the Bannow Bay SAC, Hook Head SAC, and River Barrow and River Nore SAC. The accompanying SISAA report assesses the potential for likely significant effects to European sites.

Significant effects due to the introduction of invasive alien species can be excluded. The International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004, entered into force globally on 8 September 2017. It is a treaty, adopted by the International Maritime Organization (IMO) in order to help prevent the spread of potentially harmful aquatic organisms and pathogens in ships' ballast water, including invasive species. The Sea Pollution (Miscellaneous Provisions) Act 2006 gives effect to a number of internationally agreed instruments including the International Convention on Ballast Water Management 2004. The Convention stipulates that ships must manage their ballast water so that aquatic organisms and pathogens are removed or rendered harmless before the ballast water is released into a new location. All vessels used as part of the SI works will take actions to prevent the spread of invasive alien species as part of their standard operating procedures. Therefore, it can be excluded on the basis of objective evidence that invasive alien species will be introduced by the SI works and thereby cause a likely significant effect to habitats.

Final sampling locations will be dependent on review and interpretation of the marine geophysical data and drop-down video (DDV) will take place prior to grab sampling. This will allow the avoidance of potentially sensitive benthic habitats such as reef. Due to the size, location and nature of the SI works, and the application of precautionary mitigation measures any residual impacts on habitats will be negligible.

#### 7.1.2 Otter

Otter (*Lutra lutra*) occurs throughout Ireland, including along the coasts in Cork and Waterford (NPWS, 2019). A desk-based study utilising records from NBDC (2024)<sup>24</sup> indicated that otters have been sighted in the last 10 years in coastal habitats adjacent to the Aol. Otter sightings (live animal sightings, spraints and footprints) were recorded between 2014 and 2017; Three otter sightings were recorded along the Aols northern boundary at Ballycotton Bay Co. Cork in 2015. Sightings to the east of the Aol were at Bunmahon in 2016, Annestown in 2015, Brownstown in 2014 and a further three sightings in Bannow Bay between 2016 and 2017. Another live sighting in close proximity to the Aol (c. 2 km northwest of the Aol) was recorded at Ballydwane Bay Co. Waterford in 2016. According to NBDC (2024) live otter sightings have been recorded at Bunmahon in Co. Waterford and Ballinwilling Beach (at Ballycrenane in Co. Cork), both of which are potential landfall zones and will be investigated during the SI works. It is therefore reasonable to conclude that otters are likely to be present at the potential landfall zones. There are four SACs for which otter is a qualifying interest within 20km of the Aol (considered as a precautionary coastal range for otter): Lower River Suir SAC (IE002137), River Barrow and River Nore SAC (IE002162), and Blackwater River (Cork/Waterford) SAC (IE002170) and Slaney River Valley SAC (IE000781).

Intrusive sampling works will not interact with otter holts or couches as these are not likely to be on beaches below the HWM where intrusive sampling will take place, therefore there will be no impact on otters due to habitat loss, alteration and/or fragmentation.

<sup>&</sup>lt;sup>24</sup> https://maps.biodiversityireland.ie/Map/Marine/Species/119290 accessed October 2024

IE001220-RPS-RP-XX-RP-EN-0003 | Powering Up Offshore South Coast | A1 C02 | 29 January 2025 rpsgroup.com

With the exception of the intrusive coastal surveys (trial pits, intertidal core sampling and archaeological sampling (if required)), the coastal surveys will involve a small team of surveyors walking along the beach or intertidal zone (below the HWM) using non-intrusive equipment. No above-water noise, vibration or light will be emitted beyond baseline levels (all potential landfall zones are accessible beaches where human recreational activities regularly occur). As otter are typically most active at night, it is considered unlikely that otter will be present during coastal surveys which will take place during daylight hours. Coastal geotechnical surveys (excavation of trial pits) have the potential to emit above-water noise and vibration beyond baseline levels on land, while above-water noise from geotechnical sampling (borehole and vibrocore drilling from a JUB) in the marine environment close to shore (<15 m LAT) also have the potential to disturb otters using the area. However, given the limited number of samples to be retrieved (up to six trial pits at each potential landfall zone), any disturbance caused is likely to be temporary and limited in nature. Therefore, there will be no impact to otters due to the SI works.

As otter tend to forage within 80 m of the shoreline (NPWS, 2009), any potential effects are likely to be associated with survey activity at the potential landfall zones, rather than survey activity further offshore. However, as otters may be present in the marine environment, there is potential for interaction between foraging otters and underwater noise generated during the geophysical and geotechnical surveys, as well as from survey vessels. The Subsea Noise Technical Report concluded that, in the absence of mitigation, the geophysical surveys have the potential to cause auditory injury to otters within 30 m of the sound source and temporary threshold shift (TTS) within 800 m. The geotechnical works have the potential to cause auditory injury within 10 m of the sound source and TTS within 170 m.

It is unlikely that survey vessels emitting underwater noise will be within the seaward foraging range of otters (80 m from shore), and in the unlikely event that a vessel is within otter foraging range, the presence of the survey vessel is likely to act as a deterrent to otters. Therefore, it is considered highly unlikely that otters will be present within the ranges that could give rise to auditory injury, as outlined above. In addition, mitigation in the form of soft starts will be applied to underwater noise-producing activities, which will further decrease auditory injury ranges for otter to <10 m for all activities. Therefore, impacts to otters due to the proposed SI works will be negligible.

#### 7.1.3 Marine Mammals

The Celtic Sea supports the following key marine mammal species: harbour seal (*Phoca vitulina*), grey seal (*Halichoerus grypus*). common dolphin (*Delphinus delphis*), bottlenose dolphin (*Tursiops truncates*), Rissos dolphin (*Grampus griseus*), harbour porpoise (*Phocoena phocoena*), minke whale (*Balaenoptera acutorostrata*), humpback whale (*Megaptera novaeangliae*), and fin whale (*Balaenoptera physalus*) (IWDG, 2024; Paradell et al., 2024). More detailed desk studies of marine mammal abundance and distribution in the waters surrounding the AoI are provided in the Risk Assessment for Annex IV Species report (ref: IE001220-RPS-RP-XX-RP-EN-0004) and the SISAA (ref: IE001220-RPS-RP-XX-RP-EN-0006).

The following marine mammal SACs are within 100 km of the AoI, and the potential for likely significant effects to these SACs and their marine mammal QIs are considered in the SISAA Report.

Table 7.2	Marine mammal SACs within 100 km of the Area of Interest
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European Site (Code)	Distance from the Area of Interest (km)	Marine Mammal Qualifying Interests
Hook Head SAC (000764)	Within SAC boundary	Harbour porpoise ( <i>Phocoena phocoena</i> ) Bottlenose dolphin ( <i>Tursiops truncatus</i> )
Saltee Islands SAC (000707)	3	Grey seal (Halichoerus grypus)
Slaney River Valley SAC (000781)	17	Harbour seal (Phoca vitulina)
Carnsore Point SAC (002269)	20	Harbour porpoise ( <i>Phocoena phocoena</i>
Blackwater Bank SAC (002953)	32	Harbour porpoise (Phocoena phocoena)
Roaringwater Bay and Islands SAC (000101)	75	Harbour porpoise ( <i>Phocoena</i> phocoena) Grey seal ( <i>Halichoerus grypus</i> )
Pembrokeshire Marine/Sir Benfro Forol SAC (UK0013116)	75	Grey seal (Halichoerus grypus)

European Site (Code)	Distance from the Area of Interest (km)	Marine Mammal Qualifying Interests
Glengarriff Harbour and Woodland SAC (IE000090)	81	Harbour seal (Phoca vitulina)
West Wales Marine/Gorllewin Cymru Forol SAC (UK0030397)	81	Harbour porpoise ( <i>Phocoena phocoena</i> )

There will be no impact from above-water noise, vibration and lighting on marine mammals. The nearest SAC and known haul-out site for grey seals is the Saltee Islands SAC and its marine boundary is over 3 km from the AoI boundary, with the islands themselves approximately 8 km away.

There will be no direct habitat loss, alteration and/or fragmentation to seal haul out sites as the SI works so not spatially overlap any European site designated for harbour or grey seals. The proposed SI works overlap with Hook Head SAC (designated for harbour porpoise and bottlenose dolphin), therefore there is potential for interaction between the proposed SI works and supporting habitats for harbour porpoise and bottlenose dolphin. However, as the AoI is in an exposed location off the south coast of Ireland, and benthic habitats in the area are generally high energy, therefore it can be expected that habitats will recover quickly from relatively limited sediment extraction, suspension and settling of sediment. Similarly, it is likely that prey species such as benthic and pelagic fish are adapted to the high energy environment and as such will not be affected by the temporary and spatially limited sediment sampling. The extent of sediment to be removed is relatively limited (maximum of 420 grab samples, 276 vibrocores, 29 boreholes across the AoI), and there will be plenty of alternative foraging habitat and prey sources available for temporarily displaced foraging marine mammals.

There is the potential for underwater noise generated during the geophysical and geotechnical surveys to result in injury and/or disturbance to marine mammals. Refer to Chapter 10 for further discussion on underwater noise and also refer to the Risk Assessment for Annex IV Species report and the SISAA report, both of which discuss the underwater noise impacts on marine mammals species in detail. Technical detail is provided in the Subsea Noise Technical Report.

Maximum auditory injury impact ranges and temporary threshold shift (TTS) ranges are outlined below. For the geophysical surveys, in the absence of mitigation, bottlenose dolphins and seals could experience auditory injury within 70 m of the sound source and TTS could occur within 1,500 m. For harbour porpoise auditory injury could occur within 2,200 m of the sound source while TTS could occur within 4,300 m, in the absence of mitigation. For geotechnical survey, in the absence of mitigation, bottlenose dolphin and seals could experience auditory injury within 20 m of the sound source and TTS could occur within 550 m. For harbour porpoise auditory injury could occur within 180 m and TTS could occur within 3,800 m in the absence of mitigation. For the ADCP survey bottlenose dolphin and seals could experience auditory injury within 10 m of the sound source and TTS could occur within 10 m. For harbour porpoise auditory injury could occur within 10 m.

When applying criterion for behavioural disturbance strictly (i.e. unweighted for the hearing abilities of different marine mammals), behavioural disturbance ranges could occur out to 19 km, however, in their guidance document for assessing noise disturbance against the conservation objectives of harbour porpoise SACs, JNCC (2020) advises that fixed distances should be applied to assess behavioural disturbance, based on empirical evidence. For geophysical surveys, the JNCC's 'effective deterrence range' is 5 km. While the JNCC document focuses on harbour porpoise, this is precautionary for all other hearing groups, as harbour porpoise is considered to be the most sensitive.

When mitigation is applied in the form of soft-starts, auditory injury ranges for all geophysical activities is reduced to 390 m for all marine mammals. A pre-activity search will also be conducted by a marine mammal observer (MMO) to establish the likely absence of marine mammals from the zone of injury prior to commencing soft start of the noise-producing activities. Therefore, underwater noise impacts to marine mammals will be significantly reduced through the implementation of mitigation measures, as outlined in the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).

It has been calculated on a highly precautionary basis that a maximum of eight vessels could be operating at any one time within the AoI and therefore the risk of collision with marine mammals has been considered. For the geophysical surveys, the vessels will be travelling in a predefined trajectory. It is considered that this will allow animals to predict the movement of the vessels and therefore avoid collisions. It is likely that the other survey vessels (i.e. benthic survey vessels, geotechnical survey vessel and metocean equipment deployment vessels) will be stationary for extended periods throughout their operations which will reduce the

potential for collision with these vessels. As stated in Chapter 12 the area supports reasonably high levels of baseline marine traffic, with cargo vessels, fishing boats and pleasure craft traversing the AoI to access commercial and fishing ports and harbours in the region. It is, therefore, reasonable to assume that marine mammals in the area are exposed to vessel traffic on a regular basis and may exhibit some habituation. In addition, the increase in vessel traffic at any one time is considered to be very low, given the location of the AoI. There is therefore a very low risk of a collision occurring.

### 7.1.4 Migratory Fish

A number of Annex II diadromous fish species (which migrate between the sea and fresh water) have the potential to occur within (pass through) the Aol during certain times in their life cycle. The proposed SI works do not overlap spatially with any European sites designated for relevant migratory fish species (river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), Atlantic salmon (*Salmo salar*), and twaite shad (*Alosa fallax*). There are a number of SACs on the south coast of Ireland which are designated for these fish species including: Lower River Suir SAC, River Barrow and River Nore SAC, Blackwater River (Cork/Waterford) SAC and Slaney River Valley SAC.

There is no risk of direct habitat loss to spawning habitats of the above migratory fish species as the Aol does not overlap sites designated for these species. However, there is potential overlap between the Aol and the migratory routes of these species, migrating to/from their natal rivers, with the potential for interaction with increased SSC in the water column as a result of intrusive SI works (grab sampling, borehole drilling, vibrocoring). The intrusive subtidal sampling will be limited to discrete locations sampled sequentially (i.e. only one location sampled at any time), and it is expected that suspended sediment will settle out relatively quickly in the high energy environment with no likelihood of extensive sediment plumes. Therefore, there will be no impact on migratory fish species due to the SI works caused by increased SSC or any habitat loss.

The proposed geophysical and geotechnical surveys will produce underwater noise, which has the potential to impact Annex II migratory fish. As no European sites designated for migratory fish overlap with the AoI, the risk is that fish could experience adverse effects as they migrate to/from their natal rivers and transit through the AoI. Utilising the findings of the Subsea Noise Technical Report and in the absence of mitigation, the geophysical surveys have the potential to cause auditory injury within 30 m of the sound source (during parametric SBP surveys) and fish could experience TTS within 140 m of the sound source (during boomer SBP surveys). The geotechnical surveys (borehole drilling, CPT and vibrocore surveys), have the potential to cause auditory injury within 30 m. For ADCP surveys fishes could experience auditory injury within 20 m of the source and TTS within 70 m of the sound source.

When mitigation is applied in the form of soft-starts, auditory injury and TTS ranges for all geophysical and geotechnical activities is reduced to <10 m for fish. It can therefore be concluded that migratory fish transiting through the AoI are unlikely to experience significant effects as a result of the underwater noise generated during the geophysical and geotechnical surveys.

#### 7.1.5 Bats

The presence or otherwise of bats is typically relevant only to onshore SI activities; although bats are known to forage over water and along coastlines, they will not interact with underwater works. According to the NBDC (2024)<sup>25</sup> there are numerous recordings of bat species along the south coast within the 10 km grid squares that cover the coastline and their adjacent waters between Waterford and Cork. The proposed SI works including access/egress from each potential landfall zone will not result in any direct or indirect impacts on any structure or feature which could be used by roosting bats therefore no direct habitat loss will occur. Works at the potential landfall zones will be carried out during daylight hours only and will be subject to tidal conditions. Any artificial lighting, if used, will be localised to either the vessels (or JUB) or at trial pit/test locations within the intertidal zone. Therefore, there will be no impact to bat species due to above water noise, vibration and lighting from the SI works.

<sup>&</sup>lt;sup>25</sup> <u>https://maps.biodiversityireland.ie/Map</u> accessed October 2024

#### 7.1.6 Birds

Aerial surveys undertaken from 2021 to 2023 under Phase II of the ObSERVE Programme recorded 24 species or species groups of seabirds (Paradell et al., 2024). The AoI overlaps the boundaries of the following SPAs, designated for seabird QIs: Keeragh Islands SPA (IE004118), Mid-Waterford Coast SPA (IE004193), and Seas off Wexford SPA (IE004237). The AoI overlaps the boundaries of the following SPAs, designated for wintering waterbirds: Bannow Bay SPA (IE000697) and Ballycotton Bay SPA (IE004022). While the AoI is adjacent to Cork Harbour SPA (IE004030), Ballyteigue Burrow SPA (IE004020) and Tramore Back Strand SPA (IE004027).

The SI works have the potential to interact with overwintering bird species at the nearshore and intertidal areas. The coastal surveys (geophysical, geotechnical and environmental surveys) and the marine surveys (geophysical, geotechnical, environmental deployment of metocean equipment/ acoustic buoys) have the potential to interact with these overwintering species. The coastal surveys will involve a small team of surveyors using non-intrusive handheld equipment therefore no above-water noise, vibration or light will be emitted beyond the baseline levels at the potential landfall zones (all potential landfall zones are popular beaches where human recreational activities regularly occur). Although there is no spatial overlap between the landfall zones and SPAs designated for overwintering birds, there is the possibility that foraging birds from more distant SPAs may be present during the overwintering period. Therefore, on a highly precautionary basis, the potential for effects to these bird species will be considered in more detail in the Natura Impact Statement (NIS).

The operation of vessels and equipment in the nearshore areas of the AoI have the potential to disturb nesting/ breeding birds within coastal SPAs which border the AoI, if the timing of the proposed surveys was to overlap with breeding periods.

In the offshore marine environment, survey works may temporarily displace seabirds found on surface waters near the survey vessel, but relative to background levels of activity within the area, birds using the area are likely to be habituated to vessel activity and therefore no significant impact will occur.

There will be no impact due to the proposed SI works to habitat loss, alteration and/or fragmentation on wetland habitat associated with SPAs which overlap the AoI. A relatively limited number of samples are to be extracted from the beaches/ intertidal zones across seven possible landfall sites (up to six trial pits and 18 intertidal cores at each landfall zone, and three boreholes on the seaward side of each landfall zone). The sediment from trial pits and intertidal cores will be returned following sampling, and beaches/intertidal zones are dynamic sedimentary environments in constant flux, therefore, it is unlikely that these temporary survey works will impact on wetland habitats of SPAs which the AoI overlaps. Seabirds which utilise the marine SPAs which overlap the AoI, i.e. Keeragh Islands SPA, Seas off Wexford SPA and neighbouring SPAs may be impacted due to the potential increased SSC and associated smothering on benthic or pelagic prey species. However, as the AoI is located off the south coast of Ireland, these benthic habitats are generally high energy and will recover quickly from relatively limited suspension and settling of sediment. Similarly, it is likely that prey species such as invertebrates and benthic and pelagic fish are adapted to the high energy environment and as such will not be significantly affected by the temporary and spatially limited sediment sampling. Therefore, there will be no significant effects on seabirds due to prey availability.

There is potential for diving seabirds to interact with the marine surveys while underwater noise is being produced. However, given the limited extent of sound-producing activity, the limited time diving birds spend underwater, and given that birds are likely to be temporarily displaced to the surrounding area due to the presence of the vessel, there is a very low likelihood of interaction between underwater noise sources and diving birds during the proposed SI works.

In summary, there is potential for likely significant effects on wintering birds using the landfall zones and seabirds nesting in coastal areas due to disturbance, and therefore a detailed assessment of relevant SPAs will be undertaken in the Natura Impact Statement (NIS).

#### 7.1.7 Other Marine Megafauna

Between 2004 and 2023<sup>26</sup>, 224 observations of leatherback turtle (*Dermochelys coriacea*) were recorded in Irish waters (NBDC, 2024a). Leatherback turtle (*Dermochelys coriacea*) sightings data show several records

<sup>&</sup>lt;sup>26</sup> No data for 2024 was available when accessed October 2024

along the south coast and within the Aol. The most recent recording was in 2021 where one animal was recorded stranded on Tramore beach in Co. Waterford (NBDC, 2024a). The most recent sighting of Kemp's Ridley turtle (*Lepidochelys kempil*) was in 2016 where the animal washed up stranded on Tramore beach in Co. Waterford (NBDC, 2024b) and the most recent recording of a hawksbill turtle (*Eretmochelys imbricata*) was in 1983 at Cork Harbour (NBDC, 2024c). Loggerhead turtle (*Caretta caretta*) was most recently recorded in 2015 where one animal was found stranded at Ballybrannigan beach in Co. Cork and one was stranded at Portally beach in Co. Waterford (NBDC, 2024d). It can, therefore, be concluded that sightings of turtles within the AoI are possible but rare, with leatherback and loggerhead turtles being the most common species. Data on turtle hearing is limited, however, turtles are adapted to detect sound in water and are known to detect sound at less than 1,000 Hz (Popper et al., 2014). While the majority of the survey equipment to be used operates across higher frequency range (see Table 4-1 in the Subsea Noise Technical Report), injury and disturbance to turtles due to noise impacts is unlikely given the rarity of turtle occurrence. Due to the rarity of turtles within the AoI, the limited scale and duration of the survey activities, it is concluded that there will be no impact on turtle species as a result of the SI works.

Basking sharks (*Cetorhinus maximus*) have been recorded within the AoI, although according to NBDC (2024<sup>27</sup>) no basking sharks were recorded from November 2023 to November 2024. Four records were noted further west between Clonakilty Bay and Roaringwater Bay Co. Cork. The most recent recording of basking sharks within the AoI was in 2022 off Helvick Head, Co. Waterford and Hook Head, Co. Wexford (NBDC, 2024<sup>28</sup>). This would indicate that while basking shark may occur on occasion within the area it is likely of a more transitory nature rather than a hotspot. As basking shark lack a swim bladder (possessing a large oily liver), they are only sensitive to the particle motion component of underwater noise. Intrinsically, as with other elasmobranchs, they are considered to have low sensitivity to sound pressure (Popper et al., 2014). As basking shark occurrence within the AoI is relatively rare and given the limited scale and duration of the SI works activities, it is concluded that there will be no impact on basking sharks as a result of the SI works.

## 7.2 Mitigation

Potential effects to biodiversity receptors will be reduced by ensuring that best practice methods are followed and standard control measures for prevention of impacts on the environment during the SI works are complied with.

Mitigation for biodiversity receptors comprises:

- In advance of undertaking the coastal and marine geotechnical surveys, including the positioning of the jack-up barge (JUB), and the marine environmental surveys (grab samples), drop down video (DDV) of the investigation locations will be undertaken to confirm that there are no sensitive Annex I habitats present which are unlikely to recover, i.e. reef. Similarly, walkover environmental surveys will be undertaken in advance of coastal intrusive investigations (i.e. trial pits and intertidal core sampling) and areas that constitute vegetated sea cliffs of the Atlantic and Baltic coasts will be avoided by the intrusive works.
- A suitably qualified and experienced MMO will be onboard for the duration of the geophysical and geotechnical surveys as appropriate. They will be responsible for advising and ensuring compliance with the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).
- Any equipment used will not exceed the modelled equipment broadband levels (see Table 4-1 in the Subsea Noise Technical Report) or band-wise levels for overall levels (Figure 4-2 to Figure 4-24 in the Subsea Noise Technical Report).

Note that following assessment of likely significant effects in the accompanying SISAA report, disturbance impacts to wintering birds at landfall zones and nesting seabirds have been screened in for detailed assessment in the Natura Impact Statement (NIS). If required, appropriate mitigation for birds will be established following assessment in the NIS.

<sup>&</sup>lt;sup>27</sup> https://maps.biodiversityireland.ie/Map/Marine/Species/15533/DatasetFilter/259 Accessed November 2024
#### 7.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, effects on biodiversity receptors as a result of the SI works will be reduced to as low as reasonably practicable such that no significant impacts are predicted. While marine mammals and other megafauna are likely to be temporarily impacted (temporary avoidance behaviour of the area due to noise from geophysical works and or the presence of additional vessels), this disturbance will be brief to temporary in nature due to the limited duration of the works.

There will be no transboundary effects to biodiversity due to the proposed SI works. Although marine mammals from SACs in the UK have the potential to be within impact ranges for underwater noise, mitigation measures as described above will ensure that there is no residual effect to marine mammals.

#### 8 Fisheries and Aquaculture

#### 8.1 Assessment of Impact

Drawings illustrating the fisheries areas are included in Appendix A of the Project Description submitted as part of the MULA. The assessment of the potential impacts arising from the SI works on Fisheries and Aquaculture is presented in Table 8.1.

Table 8.1	<b>Assessment of Potential</b>	Impacts on	<b>Fisheries and</b>	Aquaculture

Aspect of the Impact	Assessment of the Impact
Nature of the Impact	The SI works will be conducted wholly within the AoI outlined in the drawings included with the Project Description. The AoI covers a total area 2,336 km <sup>2</sup> . The western extent of the AoI is at Ringroe in County Cork (approx. 10 km south of Crosshaven and 13 km east of Kinsale) and extends eastwards to Cullenstown in County Wexford (approx. 4 km east of Bannow Bay and 6 km south of Wellingtonbridge). The AoI extends into the offshore area to approx. 34 km (18.4 nm) from the coastline at its furthest distance (measured from Bunmahon Beach). The AoI includes coastal areas from Ringroe, Co. Cork to Ballycrenane Co. Cork, and from west of Bunmahon, Co Waterford to east of Bannow Bay, Co. Wexford.
	There are two ports within the Aol, these are Ballycotton Harbour Co. Cork and Dunmore East Harbour Co. Waterford. Ballycotton Harbour is a traditional fishing harbour on the southwestern side of Ballycotton Bay which provides good anchorage and holding outside the harbour and is used predominately by fishing boats <sup>28</sup> . Dunmore East Harbour is at the western entrance to Waterford Estuary. It is a busy fishing port and one of the five designated National Fishery Harbours which has the second highest figure for fish landings after Killybegs. It is a popular leisure craft area on a seasonal basis <sup>29</sup> . To the west of the Aol at the mouth of the River Lee on the approaches to Port of Cork, there are several other ports which are adjacent to the Aol. Commercial and fishing ports such as the Port of Cork includes locations at the City Quays, Tivoli, Ringaskidy and Cobh. Ports such as Cobh (c. 10 km from the boundary of the Aol) and Crosshaven (c. 3 km from the boundary of the Aol) are also in close proximity to the Aol. Marinas of note here are the Crosshaven Boat Yard (c. 3 km from the boundary of the Aol). To the east of the Aol on the approach to Waterford Harbour lies the Port of Waterford (c. 18 km from the boundary of the Aol) which is a busy commercial port. Two ferry ports are also to the north of the Aol at Passage East and Ballyhack (c. 11 km from the boundary of the Aol) which operates a continuous car ferry service across the River Suir linking Ballyhack and Passage East. One fishing port is located to the north of the Aol at Duncannon (c. 7 km from the boundary of the Aol). Other popular fishing and commercial ports which are outside of the Aol along the coastline between Waterford and Cork include Helvick Harbour situated at the southeastern point of Dungarvan Bay beneath Helvick Head and Dungarvan Marina. The Port located at Youghal is mainly used for recreational and fishing activity.
	There are 17 licenced aquaculture sites within the Aol, these are located within designated shellfish waters within the Waterford Estuary at Creedan Head and adjacent to the designated shellfish waters within Bannow Bay Co. Wexford. Aquaculture sites at Creedan Head harvest blue mussel ( <i>Mytilus edulis</i> ) and aquaculture sites within Bannow Bay harvest pacific oyster ( <i>Crassostrea gigas</i> ) and manila clam ( <i>Venerupis philippinarum</i> ). There are 18 active aquaculture licences within Waterford Harbour beyond Creedan Head at its closest point to the Aol (c. 300 m). There are 55 active aquaculture licences within Dungarvan Harbour, these are beyond the Aol to the west (c. 13 km). There are three licensed aquaculture sites to the north of the Aol at Ring,

<sup>&</sup>lt;sup>28</sup> <u>https://eoceanic.com/sailing/harbours/32/ballycotton</u> Accessed October 2024

<sup>&</sup>lt;sup>29</sup> <u>https://eoceanic.com/sailing/harbours/13/</u> Accessed October 2024

Assessment of the Impact
Ballymacoda Co. Cork (c. 8 km). Within Cork Harbour there are two licensed aquaculture sites to the north of the AoI (c. 8km) (Irelands Marine Atlas, 2024). Given the distances between the SI works areas and the aquaculture sites, and more specifically the SI works on the approaches to and at the potential landfall zones in County Cork, County Waterford and County Wexford, there will be no effect on aquaculture sites in the area.
There are nine known nursery grounds for commercially important fish species that overlap the Aol including: herring ( <i>Clupea harengus</i> ), cod ( <i>Gadus morhua</i> ), haddock ( <i>Melanogrammus aeglefinus</i> ), horse mackerel ( <i>Trachurus trachurus</i> ), mackerel ( <i>Scomber scombrus</i> ), hake ( <i>Merluccius merluccius</i> ), whiting ( <i>Merlangius merlangus</i> ), megrim ( <i>Lepidorhombus whiffiagonis</i> ) and white belly angler monk fish ( <i>Lophius piscatorius</i> ). Four spawning grounds which overlap the Aol are for herring, cod, haddock and whiting. Other commercially important fish species which use the Aol as spawning and nursery grounds include sprat ( <i>Sprattus sprattus</i> ), common ling ( <i>Molva molva</i> ), sandeels ( <i>Ammodytes tobianus</i> ) and nephrops. Of particular importance within the Aol are the herring spawning grounds located at Ballycotton and Youghal Co. Cork (Daunt, Rams Head and East Cork) (peak season in October to January) (Irelands Marine Atlas, 2024b). To the east of the Aol herring spawning grounds at Baginbun, Brownstone, Hook Head, Kerragh Island, the Big Rocks and the Roads off the Wexford and Waterford coast are important fishing areas from September until February (O'Sullivan et al., 2013). These areas also contain herring spawning beds which are highly sensitive features during peak season (October-February).
Inshore fishing activity within the AoI includes pot, dredge, midwater and nets fishing. Pot fishing activity within the AoI is from Reen to Carnsore for species such as shrimp, lobster and crab which can take place all year round for lobster and crab or between August to February for shrimp. Inshore dredge fishing activity within the AoI is for species such as razor clam, cockle, mussels, scallops and surf clam. Midwater trawls within the AoI are for species such as sprat and herring from September until March. Nets fishing within the AoI are for species such as pollock and cod from August to February and February to October. There are also four periwinkle harvesting locations within the AoI at Ballycotton and Ardnahinch in Co. Cork and Fethard Quay in Co. Wexford (Irelands Marine Atlas, 2024c).
Offshore fishing effort by all vessels between 2019 to 2023 <sup>30</sup> (Gerritsen, 2024) show that the Aol is a busy fishing area with gear types such as beam trawls, bottom otter trawls, dredge, gill nets, longlines, pelagic, pots and seine fishing used within the Aol. Beam trawl fishing effort is recorded throughout the Aol but areas of high intensity are noted to the mid-east along the outer reaches of the Aol and extending further offshore. Areas off Hook Head to the east and Port of Cork to the west show medium fishing effort. Bottom otter trawl effort is recorded throughout the Aol with areas of high intensity noted within the Waterford Estuary, off Hook Head, and off Dungarven at Helvick Head. Along the Aol southern boundary are areas of higher fishing effort. Dredge fishing effort is noted as high to the east of the Aol off Hook Head to the south. Further offshore and beyond the Aol to the south is an additional large area where dredge fishing effort is high. Between Ardmore in Co. Waterford and Helvick Head there is a small area of high fishing effort for dredges. Gillnet fishing effort is recorded as low throughout the Aol, with some small medium activity areas further offshore. There was no longline fishing effort noted within the eastern and middle area of the Aol, to the west off Roches Point a small area of low activity was noted. Pelagic frawls show high levels of fishing effort to the east off Tramore. High pelagic fishing effort was recorded to the west of the Aol off Roches Point between Aghade and the mouth of Port of Cork. High levels of pelagic fishing effort was recorded off Dungarvan along the northern boundary of the Aol. Pot fishing effort was recorded off Dungarvan along the northern boundary of the Aol. Pot fishing effort is noted across the Aol mainly to the east off Hook Head, in the Waterford Estuary and along its southern boundary further offshore. Effort was low in these areas with little effort to the

<sup>&</sup>lt;sup>30</sup> <u>Atlas of Commercial Fisheries around Ireland, Fourth Edition 2024 (marine.ie)</u> Accessed October 2024

Aspect of the Impact	Assessment of the Impact
	north of the Aol or to the west of the Aol. High levels of seine fishing effort was mainly concentrated to the east of the Aol off Hook Head and Dungarvan and then further offshore beyond the Aol. Seine fishing effort is also recorded off Roches Point but to a lesser extent.
	Other fish species including elasmobranchs could be found within the AoI. Based on modelled studies carried out by Dedman et al., (2015 and 2017) it was predicted that suitable habitat is available in the Celtic Sea for species such as thornback ray ( <i>Raja clavate</i> ), blonde Ray ( <i>Raja brachyura</i> ) and spotted ray ( <i>Aetobatus narinari</i> ). According to NBDC (2024) <sup>31</sup> records a thornback ray was recorded in close proximity to the AoI in 2018 at Myrtleville beach Co. Cork, four blonde rays have been recorded since 2008 on NBDC (2024) within the AoI with the most recent in 2020 at Garryvoe Beach. Approximately 20 spotted rays have been recorded within the AoI since 1993, the most recent in 2021 at Roberts Cove in Co. Cork. Therefore, it is possible that these species utilise the waters within and adjacent to the AoI.
	In summary, the AoI is a busy fishing area with a wide range of species and fishing activities, both inshore and offshore. There is the potential for the SI works to result in conflicts with fishing activities if not managed appropriately.
Magnitude and spatial extent of	The Aol overlaps with several very active fishery grounds, as well as a number of important fish spawning and nursery grounds.
the Impact	All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Sea Pollution Act, 1991 ratified MARPOL in Ireland. In addition, all substances handled and/or used whilst undertaking the works are required to be handled, used, stored, and documented in accordance with assessments and the Chemicals Act 2008 (No. 13 of 2008) and Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated Regulations. Therefore, there will be no impact from pollution events.
	The largest spatial extent is the marine geophysical survey which will focus on the potential OSS, offshore transmission cable corridors and landfall zones. The marine geophysical survey is mobile and therefore will be in almost continuous movement across the areas of survey. The magnitude of impact is related to the vessel movements and the underwater noise emissions. The vessel movements are not considered to be significant in terms of the existing vessel activity in the AoI. Standard operating procedures will be employed to ensure that the risk of vessel collisions is removed, including the publication of marine notices, use of marker buoys, and broadcasts. Other measures, such as consultations, will also be undertaken. The underwater noise emissions are discussed further in <b>Chapter 10</b> .
	Coastal and marine geotechnical investigations will be focused on individual locations before moving on to the next location. Therefore, the spatial extent of disturbance is limited to the area of investigation and/ or anchoring or spudding sites associated with the JUB. The geotechnical survey vessel will be stationary during investigations. Standard operating procedures will be employed to ensure that the risk of vessel collisions is removed, including the publication of marine notices, use of marker buoys, and broadcasts. Other measures, such as consultations, will also be undertaken.
	The coastal and marine geophysical, coastal and marine geotechnical investigations, and environmental grab sampling may result in brief to temporary disruption to fishing activities where fishing activity occurs in proximity to the SI works vessel(s). However, the interactions can be managed in accordance with standard vessel practices for the avoidance of collisions at sea.
	Coastal and marine environmental and archaeological surveys and the other surveys described in the Project Description will have no impact on fishing activities.

<sup>&</sup>lt;sup>31</sup> <u>Maps - Biodiversity Maps (biodiversityireland.ie)</u> Accessed October 2024

Aspect of the Impact	Assessment of the Impact
Transboundary nature of the Impact	There will be no transboundary impacts to fisheries.
Intensity and complexity of the Impact	The intensity and complexity of impacts on fisheries and aquaculture arising from the SI works are typical in nature to that of similar types of marine SI works that utilise standard survey techniques, with no novel or complex methodologies.
Probability of the Impact	All vessels will display warning notices, signs a lighting in accordance with standard procedures and Marine Notices will be published with all relevant details to warn other marine users of the dates, times, types of activities, and active survey areas. This will reduce the probability of there being an impact resulting from conflicting SI works and fishing activities being undertaken in the same area at the same time. The probability of impact is low to moderate. With the implementation of best practice methods and mitigation measures the impacts on fisheries and aquaculture from the SI works is a same to be activities.
Expected onset and duration, frequency, and reversibility of the Impact	The majority of the SI works described in the Project Description will be completed within the first 24 months of the granting of the MUL. The main interactions are expected during the marine geophysical and marine geotechnical surveys. The marine geophysical surveys will be in near-constant movement across the AoI and therefore any impacts in any one area are likely to be brief (lasting less than one day). The marine geotechnical surveys and the JUB locations will be at fixed points for a number of days, depending on progress in drilling boreholes, CPTs, etc. They will then be demobilised from a location and moved to the next location and therefore any impact will be temporary. The potential for impacts on Fisheries and Aquaculture will commence when the vessels are in use and may occur across the duration of the SI phases. SI activities that contribute to impacts on Fisheries and Aquaculture will be carried out in accordance with best practice and mitigation measures (see below). On completion of the SI Works all vessels and equipment will be removed. Therefore, any impacts will be fully reversible.

#### 8.2 Mitigation

The potential effects on Fisheries and Aquaculture during the SI works will be reduced by ensuring that best practice methods are followed and standard control measures for prevention of impacts on the environment during the SI works are complied with.

Mitigation for Fisheries and Aquaculture comprise the following:

 EirGrid has appointed a Fisheries Liaison Officer (FLO) and a communications team to consult with local fisheries and the wider community. The FLO will liaise with the seafood/ ORE working group, fishery organisations and associations, RIFFs & NIFFs, and local fishers on a one-to-one basis at pier/site visits. Organised group meetings will be established in fishing communities minimising displacement through early engagement that may be caused by the proposed SI works.

#### 8.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, the impact on Fisheries and Aquaculture from the SI works is predicted to be of negligible.

## 9 Air Quality

#### 9.1 Assessment of Impact

The Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC) deals with each Member State in terms of Zones and Agglomerations. For Ireland, four zones (A, B, C and D) are defined in the Air Quality Standards Regulations 2011. The AoI is located within the immediate vicinity of EPA Zone D which is classified as 'Rural Ireland'. Air quality in this zone is consistently classed as 'good' as measured by the EPA monitoring network<sup>32</sup>. Irish marine air quality is not currently monitored. The MARPOL Convention sets Emission Control Areas (ECAs) a Sulphur ECA (SECA) and Nitrogen ECA (NECA) which reduces these pollutants emitted by vessels.

Vessel emissions will occur as a result of vessel use. Any substances with the potential to affect air quality will be handled and disposed of in accordance with the requirements of the MARPOL Convention and relevant national regulations (e.g., Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive (2008/50/EC), Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011), Air Pollution Act 1987, Environmental Protection Agency Act 1992, Environmental Noise Regulations 2006).

There will be no transboundary effects to air quality due to the proposed SI works.

#### 9.2 Mitigation

None proposed.

#### 9.3 Conclusion

Emissions to air, predominantly greenhouse gases (GHG), will occur as a result of vessel and equipment use during the SI works. The emissions will be in sparsely populated areas near the landfall zones and, otherwise, out to sea. Therefore, there will be an imperceptible impact from the emissions arising from the SI works on air quality.

<sup>&</sup>lt;sup>32</sup> <u>Home | AirQuality.ie</u> Accessed October 2024

#### **10** Noise and Vibration

#### **10.1** Assessment of Impact

A summary of the assessment of potential impacts from noise arising from the SI works are presented in Table 10.1.

No impacts from Vibration are considered likely and are therefore not considered further in this assessment.

A separate subsea noise technical report (RPS Ref: IE001220-RPS-RP-XX-RP-EN-0005) has been included with the MULA documentation. Please refer to this report for details on the activities and equipment that will lead to the generation of subsea noise.

 Table 10.1
 Assessment of Potential Impacts from Noise

Aspect of the Impact	Assessment of the Impact
Nature of the Impact	The proposed SI works introduces the potential for noise disturbance to marine mammals from vessel activities. However, given the wider area of the AoI, the existing baseline of vessel activity within the area and the availability of adjacent waters, the increase in vessel traffic as a result of the SI works is extremely low and temporary in nature. It is considered highly unlikely that there will be any significant disturbance to marine species as a result of the presence of survey vessels within the AoI.
	When assessing the potential impact of underwater noise sources on the marine environment a range of variables such as source level, frequency, duration, and directivity were considered. Increasing the distance from the sound source usually results in attenuation with distance. The factors that affect the way noise propagates underwater include water column depth, pressure, temperature gradients, salinity, as well as water surface and seabed type and thickness. When sound encounters the seabed the amount of noise/sound reflected depends on the composition of the seabed, i.e., mud or other soft sediment will reflect less than rock. The water depth within the AoI ranges from 0m to 70m with mixed substrate type of rock, fine and muddy sand, sandy mud and coarse sediments.
	The active acoustic instruments proposed to be used for the SI works operate by emitting extremely short pulses and are highly directional with narrow beams (Ruppell et al, 2022). While the swathe of the sonars and echosounders will have a maximum range of 6 to 60m in diameter, many of the sources used for this survey, such as multibeam (MBES), side-scan sonar (SSS), sub-bottom profilers (SBP), Ultra Short Base-Line positioning system (USBL), chirper/pinger, and sparker operate at high frequency and attenuate quickly as they spread from the source. Coupled with the narrow beam angle and short duty cycles ('on' for microseconds or milliseconds per second) means that surveying sonars have relatively low acoustic impact.
	Auditory injury in cetaceans can be defined as auditory injury (AUD INJ) previously Permanent Threshold Shift (PTS)33 leading to non-reversible auditory injury, or as a temporary threshold shift (TTS) in hearing sensitivity, which can have negative effects on the ability to use natural sounds (e.g., to communicate, navigate, locate prey) for a period of minutes, hours, or days. With increasing distance from the sound source, where it is audible to the animal, the effect is expected to diminish through identifiable stages (i.e., AUD INJ or TTS in hearing, avoidance, masking, reduced vocalisation) to a point where no significant response occurs. Factors such as local propagation and individual hearing ability can influence the actual effect (DAHG, 2014).
	Should the noise levels from sources exceed the AUD INJ and TTS values stated in Table 2.1 of the Subsea Noise Technical Report, there is the potential for underwater noise generated during the geophysical survey to result in injury and/or disturbance to marine mammals in the vicinity of the SI works.

<sup>&</sup>lt;sup>33</sup> See intensity and complexity section below on DAHG (2014) Guidance.

Aspect of the Impact	Assessment of the Impact
	There are a number of very high frequency and high frequency marine mammal populations near the Aol which could be affected by subsea noise. Principally harbour porpoise and common bottlenose dolphin in the Hook Head SAC. Common bottlenose dolphin and harbour porpoise from neighbouring SACs (i.e. Carnsore Point SAC c. 20 km from Aol, Blackwater Bank SAC c. 32 km from Aol and West Wales Marine / Gorllewin Cymru Forol c. 81 km from Aol) may also be present in the Aol.
	Pinniped phocids which may be present in the survey area from the surrounding SACs include grey seal from the Saltee Islands SAC c. 3km from AoI, harbour seal from the Slaney River Valley SAC c. 17 km from AoI, and grey seal from Pembrokeshire Marine/ Sir Benfro Forol c. 75 km from AoI. Similarly pinniped individuals from distant SACs may be present within the AoI.
	As stated above in Chapter 7 the proposed SI works do not overlap spatially with European sites designated for relevant Annex II migratory fish species. However, there are a number of SACs on the south coast of Ireland which are designated for these fish species including: Lower River Suir SAC, River Barrow and River Nore SAC, Blackwater River (Cork/Waterford) SAC and Slaney River Valley SAC. Therefore, there is potential overlap between the AoI and the migratory routes of fish species, migrating to/from their natal rivers.
	There is potential for diving seabirds to interact with the marine surveys while underwater noise is being produced, however, given the limited extent of sound-producing activity, the limited time diving birds spend underwater, and given that birds are likely to be temporarily displaced to the surrounding area due to the presence of the vessel, there is a very low likelihood of interaction between underwater noise sources and diving birds during the proposed SI works.
Magnitude and spatial extent of the Impact	The DAHG "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters" 2014 (Department of Arts, Heritage and the Gealtacht, 2014) contains the following statement:
	<i>"It is therefore considered that anthropogenic sound sources with the potential to induce TTS in a receiving marine mammal contain the potential for both (a) disturbance, and (b) injury to the animal."</i>
	This states that TTS constitutes an injury and should thus be the main assessment criteria <sup>34</sup> . However, the guidance goes on to specify the use of thresholds from a 2007 publication (Southall et al 2007) which has since been superseded by (Southall et al., 2019; National Oceanic and Atmospheric Administration, 2024) and no longer represents best available science, nor reflects best practice internationally. Thus, the following excerpt from the guidance is relevant:
	"The document will be subject to periodic review to allow its efficacy to be reassessed, to consider new scientific findings and incorporate further developments in best practice."
	As there has been no such update to date, but the guidance clearly states its intention to consider new scientific findings, the latest guidance (National Oceanic and Atmospheric Administration, 2024) has been applied, reflecting the current best available method for assessing impact from noise on marine mammals. This means that it is auditory injury "AUD INJ" (previously "PTS") that is the criteria for injury, not "TTS".
	A recent update to the NOAA (2018) guidelines, with NOAA publishing their final draft of their revision of the NOAA (2018), the Southall et al. (2019) and a large review by the US Navy, published February 2024 (Finneran, 2024). This revision, although in draft is being implemented in the US and represents an increase in scientific understanding of the frequency specific noise levels (peak and exposure) that likely lead to TTS and auditory injury. Generally, weightings have been modified to include more low-frequency content (especially for the HF group), along with an increase in the threshold values for HF and

<sup>&</sup>lt;sup>34</sup> Injury being the qualifying limit in the Irish Wildlife Act 1976, section 23, 5c : <u>https://www.irishstatutebook.ie/eli/1976/act/39/enacted/en/print#sec23</u>

Aspect of the Impact	Assessment of the Impact
	VHF, but a decrease for PW and OW groups. The steepness of the weightings at high frequencies has increased so frequencies above region of best hearing are now excluded more effectively. The nomenclature has changed too, while the use of "TTS" remains unchanged to refer to temporary threshold shift, the use of "PTS" (permanent threshold shift) has stopped, with the shorthand "AUD INJ" taking its place (Auditory Injury), to highlight the severity of the effect.
	The accompanying Subsea Noise Technical Report with the MULA provides a description of the noise producing activities and the results of noise modelling from the impulsive sources. The following discussion is based on the results from this report.
	Parametric SBP and chirper/pinger, no mitigation:
	<ul> <li>LF group (minke, fin and humpback whale), auditory injury could occur less than 10 m of the sound source, and TTS could occur within 230 m.</li> </ul>
	<ul> <li>HF group (bottlenose/common dolphin), auditory injury could occur within 20 m of the sound source, and TTS could occur within 200 m.</li> </ul>
	<ul> <li>VHF group (harbour porpoise), auditory injury could occur within 250 m of the sound source, while TTS could occur within 4,100 m.</li> </ul>
	<ul> <li>PCW group (seals), auditory injury could occur within 20 m of the sound source, while TTS could occur within 690 m.</li> </ul>
	<ul> <li>OCW group (otter), auditory injury could occur within 10 m of the sound source, while TTS could occur within 200 m.</li> </ul>
	<ul> <li>For Fish, auditory injury could occur within 30 m of the sound source, while TTs could occur within 150 m.</li> </ul>
	Behavioural disturbance could occur out to 16 km for all marine mammals and 660 m for fish.
	Sparker and boomer, no mitigation:
	<ul> <li>LF group (minke, fin and humpback whale), auditory injury could occur less than 40 m of the sound source, and TTS could occur within 1,200 m.</li> </ul>
	<ul> <li>HF group (bottlenose/common dolphin), auditory injury could occur less than 10 m of the sound source, and TTS could occur within 90 m.</li> </ul>
	<ul> <li>VHF group (harbour porpoise), auditory injury could occur within 2,200 m of the sound source, while TTS could occur within 4,300 m.</li> </ul>
	<ul> <li>PCW group (seals), auditory injury could occur within 70 m of the sound source, while TTS could occur within 1500 m.</li> </ul>
	<ul> <li>OCW group (otter), auditory injury could occur within 30 m of the sound source, while TTS could occur within 800 m.</li> </ul>
	<ul> <li>For Fish, auditory injury could occur less than 10 m of the sound source, while TTs could occur within 140 m.</li> </ul>
	<ul> <li>Behavioural disturbance could occur out to 19 km for all marine mammals and 720 m for fish</li> </ul>
	Geotechnical survey, no mitigation:
	<ul> <li>LF group (minke, fin and humpback whale), auditory injury could occur less than 10 m of the sound source, and TTS could occur within 180 m.</li> </ul>
	<ul> <li>HF group (bottlenose/common dolphin), auditory injury could occur less than 10 m of the sound source, and TTS could occur within 130 m.</li> </ul>
	<ul> <li>VHF group (harbour porpoise), auditory injury could occur within 180 m of the sound source, while TTS could occur within 3,800 m.</li> </ul>
	<ul> <li>PCW group (seals), auditory injury could occur within 20 m of the sound source, while TTS could occur within 550 m.</li> </ul>
	<ul> <li>OCW group (otter), auditory injury could occur less than 10 m of the sound source, while TTS could occur within 170 m.</li> </ul>

• For Fish, auditory injury could occur less than 10 m of the sound source, while TTs could occur within 30 m.

Aspect of the Impact	Assessment of the Impact
	<ul> <li>Behavioural disturbance could occur out to 14 km for all marine mammals and 580 m for fish.</li> <li>ADCP, no mitigation:</li> </ul>
	• LF group (minke, fin and humpback whale), auditory injury and TTS could occur less than 10 m of the sound source.
	<ul> <li>HF group (bottlenose/common dolphin), auditory injury and TTS could occur less than 10 m of the sound source.</li> </ul>
	<ul> <li>VHF group (harbour porpoise), auditory injury could occur within 40 m of the sound source, while TTS could occur within 100 m.</li> </ul>
	<ul> <li>PCW group (seals), auditory injury and TTS could occur less than 10 m of the sound source.</li> </ul>
	OCW group (otter), auditory injury and TTS could occur less than 10 m of the sound source.
	<ul> <li>For Fish, auditory injury could occur less than 20 m of the sound source, while TTs could occur within 70 m.</li> </ul>
	Benavioural disturbance could occur out to 14 km for all marine mammals and 580 m for fish.
	<ul> <li>For all marine mammals, behavioural disturbance could occur out to 440 m for marine mammals and 200 for fish when applying the criterion strictly (unweighted for hearing groups). However, given the ADCPs main energy is above 300 kHz (outside the hearing range of the receivers) the behavioural disturbance ranges while accounting for the receivers' hearing capabilities has also been included. Accounting for the frequency dependent sensitivity of the receivers, the behavioural disturbance range decreases to &lt;10 m for all groups.</li> </ul>
	This assessment concludes that there is risk of inducing hearing injury (AUD INJ) and TTS following noise from the SI works.
Transboundary nature of the Impact	There will be no transboundary noise impacts as a result of the SI works as the ensonified area is wholly within Ireland's maritime area .
Intensity and complexity of the Impact	The intensity and complexity of the impacts arising from the SI works due to noise are typical in nature to similar types of marine SI works that utilise these standard techniques, with no novel or complex methodologies.
Probability of the	Marine Mammals and Fish
Impact	Impacts to marine mammals arising from SI works are deemed to be likely, however these impacts will be minimised with the implementation of best practice methods and mitigation measures (outlined below). With the implementation of mitigation measures, residual impacts from underwater noise on biodiversity and species that depend upon them (i.e., other fish, marine mammals) is not deemed significant, however marine mammals may exhibit avoidance behaviour during the active periods of the marine geophysical and geotechnical SI works. The impacts on marine mammals will be significantly reduced through the implementation of the mitigation measures outlined below.
	Diving Birds
	Hartley Anderson Limited (2020) provide a summary of the available evidence on the auditory abilities and effects of underwater noise of diving birds, however, this evidence is very limited. While seabird responses to approaching vessels are highly variable (e.g. Fliessbach et al. 2019), flushing disturbance would be expected to displace most diving seabirds from close proximity to the survey vessel and any towed equipment, thereby limiting their exposure to the highest sound pressures generated. Similarly, behavioural disturbance of seabirds due to acoustic survey activities is most likely to be temporary displacement associated with the physical presence of the vessel, comparable to that experienced by routine shipping traffic (Hartley Anderson Limited, 2020). Given the

Assessments of Impact on the Maritime Usage (AIMU)

Aspect of the Impact	Assessment of the Impact
	limited extent of sound-producing activity, the limited time diving birds spend underwater, and given that birds are likely to be temporarily displaced to the surrounding area due to the presence of the vessel, it is considered that there is a very low probability of interaction between subsea noise sources and diving birds during the proposed SI works.
Expected onset and duration, frequency, and reversibility of the Impact	The majority of the SI works described in the Project Description will be completed within the first 24 months of the granting of the MUL. The main interactions are expected during the marine geophysical and marine geotechnical surveys. The marine geophysical surveys will be in near-constant movement across the AoI and therefore any impacts in any one area are likely to be brief (lasting less than one day). The marine geotechnical surveys and the JUB locations will be at fixed points for a number of days, depending on progress in drilling boreholes, CPTs, etc. They will then be demobilised from a location and moved to the next location and therefore any impact will be temporary.
	The potential for impacts on sensitive receptors will commence when the vessels and equipment are in use. SI activities that contribute to effects on sensitive receptors will be carried out in accordance with best practice and mitigation measures (see below) to ensure that no significant effects arise.
	On cessation of noise producing activities there is no on-going impact.

#### 10.2 Mitigation

The potential effects of Noise during the SI works will be reduced by ensuring that best practice methods are followed and standard control measures for prevention of impacts on the environment during the SI works are complied with.

Mitigation for Noise comprises:

- A suitably qualified and experienced MMO will be onboard for the duration of the geophysical and geotechnical surveys as appropriate. They will be responsible for advising and ensuring compliance with the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).
- Any equipment used will not exceed the modelled equipment broadband levels (see Table 4-1 in the Subsea Noise Technical Report) or band-wise levels for overall levels (Figure 4-2 to Figure 4-24 in the Subsea Noise Technical Report).

#### 10.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, the impact from Noise on marine species within the AoI as a result of the SI works will be reduced to as low as reasonably practicable such that no significant impacts are predicted.

#### 11 Landscape and Seascape

#### 11.1 Assessment of Impact

The SI works will take place within the AoI and will be focused on the seven potential landfall zones and along the offshore transmission cable corridors to the proposed locations of the OSS. The AoI extends from the coastline out to approximately 34 km into the North Celtic Sea.

In terms of the seascape, vessels associated with the SI works taking place in water depths >15 m bLAT will be active within the AoI for periods lasting up to 30 days at any one time before having to return to port for re-supply. It is anticipated that the majority of the SI works will be completed within the first 24 months of the MUL (weather dependent) with the possibility of more targeted investigations thereafter. As discussed in **Chapter 8 Fisheries and Aquaculture**, the AoI is a busy fishing area. The increase in vessel activity from the SI works in water depths > 15 m bLAT will have no appreciable impact on the seascape.

Within the intertidal/ nearshore areas < 15 m bLAT, vessels, including JUB, will be present for the geotechnical investigations. Seven potential landfall zones have been identified along with seven approaches for the offshore transmission cable corridors. These activities closer to shore are the most likely to have a visual impact. The JUB in particular will be visible from the coastline surrounding the location with direct views. The JUB will be present at each landfall zone for a relatively short period of time, days to weeks, and thereafter it will be demobilised and brought to the next location. Therefore, the visual and landscape impact at any one location is temporary only and fully reversible.

There will be no transboundary effects to landscape and seascape due to the proposed SI works.

#### 11.2 Mitigation

None proposed.

#### 11.3 Conclusion

There will be a localised, minor, and temporary impact on landscape and seascape for the duration of the SI works closer to shore which will be removed once all SI works vessels and equipment have been removed.

# 12 Traffic and Transport (including Shipping and Navigation)

#### 12.1 Assessment of Impact

The assessment of the potential impacts arising from the SI works on Traffic and Transport (including Shipping and Navigation) is presented in Table 12.1.

Table 12.1 Assessment of Potential Impacts on Shipping and Navigation

Aspect of the Impact	Assessment of the Impact
Nature of the Impact	Workers, plant and machinery will be transported to/from the SI works areas using both land- based and marine based modes of transport.
	For land-based traffic and transport access to the SI works areas, i.e. the landfall zones, workers, plant and machinery will arrive to locations using existing roads infrastructure. There will be a relatively small team in operation at any one location at any one time. Plant will be delivered to site and loaded/ unloaded on existing hardstanding areas, e.g. carparks, local roads. This will result in a negligible to slight increase in traffic for the duration of the SI works at any one Landfall Zone. Therefore, there will be an overall negligible impact on onshore traffic and transport as a result of the SI works and it is not considered further in this report.
	There are two ports within the AoI, these are Ballycotton Harbour Co. Cork and Dunmore East Harbour, Co. Waterford. Ballycotton Harbour is a traditional fishing harbour on the southwestern side of Ballycotton Bay. Dunmore East Harbour is at the western entrance to Waterford Estuary. It is a busy fishing port and one of the five designated National Fishery Harbours which has the second highest figure for fish landings after Killybegs. It is a popular leisure craft area on a seasonal basis <sup>35</sup> .
	The Port of Cork is adjacent to the AoI which overlaps with the approaches to the Port at Roches Point. Port of Cork receives a large number of container vessels, bulk carriers and cruise ships.
	Waterford Port also receives container ships, bulk carriers and cruise ships but on a significantly smaller scale.
	There are several anchorage areas throughout the AoI. Notable anchorage areas include the following:
	Ballycotton Harbour provides good anchorage and holding outside the harbour.
	Dunmore East anchorage located to the northwest off Lower Village.
	Port of Cork contains three anchorage areas <sup>36</sup> .
	A large proportion of vessel movements for all of the ports are associated with cargo and move in a south-east direction towards Cornwall. Dunmore East Harbour and Ballycotton Harbour are smaller ports located within the AoI. The main vessel activity within Ballycotton Harbour is fishing, military enforcement and sailing <sup>20</sup> . Dunmore East Harbour experiences heavier duty traffic of cargo vessels, dredging activities, fishing, sailing, service vessels, etc. A large proportion of cargo movement from external ports traverses through or adjacent to the AoI running in an east-west direction.
	Fishing accounts for a significant proportion of vessel movements within the centre of the Aol (approximately 1 vessel per square kilometre per hour). Other vessel movements such as pleasure crafts, sailing occur close to shore along the northern boundary of the Aol. Moreover, activities such as military / law enforcement and high-speed crafts are associated with the Port of Cork but they don't have high densities far offshore. The Cork to Santander

<sup>&</sup>lt;sup>35</sup> <u>https://eoceanic.com/sailing/harbours/13/</u> Accessed October 2024

<sup>&</sup>lt;sup>36</sup> Maps of the anchorages and marinas on Navily. Accessed at: Maps of the anchorages and marinas on Navily

Aspect of the Impact	Assessment of the Impact
	ferry route operates within the AoI. Irelands Marine Atlas <sup>37</sup> and EMoDNET <sup>20</sup> have not recorded any domestic ferry routes within the AoI.
	The following fishing ports are in close proximity to the AoI; Helvick Harbour, Co. Waterford, Duncannon Port, Co. Waterford, and Kilmore Quay, Co. Wexford. Due to the existing levels of background shipping activity within the AoI, the proposed SI works will not have significant impacts on other shipping activities within the AoI.
	There are eight Royal National Lifeboat Institution (RNLI) Lifeboat stations located in the vicinity of the Aol. These are located at the ports of Dunmore East, Helvick Harbour, Fethard, Co. Wexford, Tramore, Co. Waterford, Ballycotton in county Cork, Kinsale in County Cork, Crosshaven in County Cork, and Youghal in county Cork. Ballycotton, Fethard and Dunmore East are the only lifeboat stations located within the Aol (RNLI, 2024) <sup>38</sup> . There are four navigational buoys within the Aol. These include the following:
	The Daunt, County Cork,
	Pollock, County Cork
	Power, County Cork
	Smiths, County Cork
	The addition of the extra vessels associated with the SI works will not contribute significantly to the shipping and navigation activity already within and adjacent to the AoI. There is, however, the possibility that inshore fishing vessels may be temporarily impacted by vessels either transiting through, e.g. geophysical survey, or stationary at investigation locations (e.g. JUB).
Magnitude and spatial extent of the Impact	The proposed SI works will be conducted within a busy shipping area, i.e. inshore and offshore fisheries (See <b>Chapter 8</b> ). In the absence of the mitigation measures listed below the proposed SI works have the potential to cause displacement to other users within the AoI.
Transboundary nature of the Impact	There will be no transboundary impacts caused by the proposed SI works.
Intensity and complexity of the Impact	The intensity and complexity of impacts on Shipping and Navigation arising from the SI works are typical to that of similar types of marine surveys that utilise standard SI techniques, with no novel or complex methodologies.
Probability of the Impact	There are standard measures required for all vessels operating offshore in Ireland and internationally. These include broadcasts, navigational aids, buoys, Marine Notices etc. All vessels will display warning notices, signs a lighting in accordance with standard procedures and Marine Notices will be published with all relevant details to warn other marine users of the dates, times, types of activities, and active survey areas. With these measures in place, the probability of any impact on Traffic & Transport (including Shipping and Navigation) as a result of the SI works is negligible.
Expected onset and duration, frequency, and reversibility of the Impact	The majority of the SI works described in the Project Description will be completed within the first 24 months of the granting of the MUL. The main interactions are expected during the marine geophysical and marine geotechnical surveys. The marine geophysical surveys will be in near-constant movement across the AoI and therefore any impacts in any one area are likely to be brief (lasting less than one day). The marine geotechnical surveys and the JUB locations will be at fixed points for a number of days, depending on progress in drilling

<sup>&</sup>lt;sup>37</sup> <u>https://atlas.marine.ie/#?c=53.9108:-15.8862:6</u> Accessed October 2024

<sup>&</sup>lt;sup>38</sup> RNLI (2024) - Royal National Lifeboat Institution - Saving Lives at Sea. Available at: <u>RNLI - Royal National Lifeboat Institution - Saving Lives at Sea</u>

Aspect of the Impact	Assessment of the Impact
	boreholes, CPTs, etc. They will then be demobilised from a location and moved to the next location and therefore any impact will be temporary.
	The potential for impacts on Traffic and Transport (including Shipping and Navigation) will commence when the vessels are in use and will occur only for as long as the SI works are being undertaken. SI works that contribute to impacts on Traffic and Transport (including Shipping and Navigation) will be carried out in accordance with best practice and mitigation measures (see below) to ensure that no significant effects arise.
	On completion of the SI Works all vessels and equipment will be removed. Therefore, any impacts will be fully reversible.

#### 12.2 Mitigation

The potential effects on Traffic and Transport (including Shipping and Navigation) during the SI works will be reduced by ensuring that best practice methods are followed and standard control measures for prevention of impacts on the environment during the SI works are complied with.

Mitigation for Shipping and Navigation comprises:

 EirGrid has appointed a Fisheries Liaison Officer (FLO) and a communications team to consult with local fisheries and the wider community. The FLO will liaise with the seafood/ ORE working group, fishery organisations and associations, RIFFs & NIFFs, and local fishers on a one-to-one basis at pier/site visits. Organised group meetings will be established in fishing communities minimising displacement through early engagement that may be caused by the proposed SI works.

#### 12.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, the impact on Traffic and Transport (including Shipping and Navigation) from the SI works is predicted to be negligible.

## **13** Cultural Heritage (including Underwater Archaeology)

#### 13.1 Assessment of Impact

The assessment of the potential impacts arising from the SI works on Cultural Heritage (including Underwater Archaeology) is presented in Table 13.1. This assessment is based on the Underwater Archaeological Impact Assessment for the proposed SI works prepared by ADCO on behalf of EirGrid.

 Table 13.1
 Assessment of Potential Impacts on Cultural Heritage (including Underwater Archaeology)

Aspect of the Impact	Assessment of the Impact						
Nature of the	The south coast is considered an area of high archaeological potential.						
Impact	Submerged prehistoric archaeological potential:						
	The south coast of Ireland is associated with the potential for prehistoric landscapes to be discovered as submerged lenses in what is a drowned landscape. The EMODNET Geology project indicates the potential for a series of six palaeocoastlines in addition to the present- day coastline, extending several kilometres out to sea. The results are derived mainly from computer modelling rather than empirical data, but they nevertheless suggest a necessary consideration in assessing archaeological risk. It can be concluded from the computer modelled palaeocoastlines that the shoreline along this part of Ireland's south coast has varied since early prehistory. Despite marine transgression, the possibility that material associated with Mesolithic and more recent prehistoric activities might exist along the submerged shorelines should be allowed for.						
	Three of the palaeocoastlines predate the presence of people in Ireland, but the three others would have existed when Ireland was being occupied by people in early prehistoric times, and the potential offshore transmission cable corridor survey areas that will connect the indicative OSS with the landfall zones cross all three of these palaeocoastlines.						
	Archaeological potential of the foreshore:						
	The Copper Coast in Waterford retains remnants not only of the copper and tin mining that characterises the industrialisation of the 18 <sup>th</sup> and 19 <sup>th</sup> centuries, but a series of late prehistoric/ early historic coastal promontory forts that are perched on low headlands between the sand-and-shingle coves, which pepper the coastline. The south coast of Wexford, in turn, is associated with the Anglo-Norman period of the late twelfth century, when it was the focus of the first colonists arriving with the Earl of Pembroke to make their beach-head at Baginbun and proceeding from there through Bannow Bay. Much of the southeast coast sees intense settlement and economic activity associated with the later medieval period more generally, with the 13 <sup>th</sup> -century lighthouse of Hook Head being the most iconic symbol of this activity, still standing today as Ireland's oldest lighthouse complex.						
	As such, along the foreshore and intertidal area, there is the potential for features of archaeological interest to be encountered as these areas were and remain active areas for human activities.						
	Shipwrecks:						
	The more obvious archaeological constraint offshore is associated with encountering shipwrecks. The North Celtic Sea is an historically busy marine traffic route that has coastal shipping connecting Cork and Waterford with destinations in the Irish Sea, and cross-channel shipping from southwest England, France and further afield. Any wrecking events associated with the medieval period have gone unrecorded but the sense of the potential for shipwreck is presented by the entries listed in the HSI <sup>39</sup> for counties Cork, Waterford and Wexford, which mainly only list events from the 1700s and later. Figure 13.1 at the end of						

wrecking events, the numbers remain significant across the Aol.

this section illustrates the recorded wrecks within the AoI and the general North Celtic Sea area. While the known shipwreck sites overall represent only a fraction of the recorded

<sup>&</sup>lt;sup>39</sup> Historic Shipwreck Inventory (HSI) maintained by the NMS at the Department of Housing, Local Government and Heritage (DHLGH).

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	The asse activities area has below.	essment of Cult outlined in the been assesse	ural Herit Project D d and the	age (including Underwater Archaeology) has regard to the Description as set out in Chapter 2 of this report. The study key Cultural Heritage receptors are outlined in the table
	Landfall Zone	Nearest Townlands	County	Cultural Heritage
	Zone	Townlands Ballintra West, Ballintra East, Inch, Lahard	County	Setting: Landfall Zone A is a small cove nestled between outcropping bedrock that reaches to the west and the south of the beach area. There are no recorded cultural heritage sites on the beach, but a scatter of prehistoric stone tools identified as Later Mesolithic in date has been recorded c. 120m above the HWM in Inch townland (C0100-043). <b>Submerged landscape potential</b> There is no record of peat deposits or ancient woodland reported for Landfall Zone A or the nearshore sea area adjacent. <b>Intertial archaeology</b> : These are no features recorded in the historic Ordnance Survey maps on Inch Beach indicative of pre-existing human activity. <b>Offshore archaeology</b> : The seabed morphology offshore indicates the presence of bedrock over much of the area being considered for the potential offshore transmission cable corridor, with a narrow channel of soft sediment that extends approximately 2km south of Inch Beach. The hypothesised palaeocoastline dating to 6,000 BP also lies 2km offshore and appears in part to be coterminous with the elements of the narrow channel. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 3km and 6.2km respectively. The wreck site of the SC Chicago (W08079) is located 1.2km west of Inch Beach and is c. 900m west of the potential offshore transmission cable corridor. It is the closest known shipwreck location to the Landfall Zone A and the potential offshore st Landfall Zone A. The presence of the nearshore channel to the south of Inch Beach contrasts with the bedrock that otherwise is exposed offshore. The channel extends from the two streams that empty onto Inch Beach and may retain buried deposits that have the potential to retain organic material, which in turn may inform questions around submerged landscape at a time when the earliest human settlement is known in Ireland. The presence of a late Mesolithic lithic scatter above the HWM in Inch townland presents supporting evidence for actual activity here at this time. While there are no known shipwreck sites close to
	B	Ballybrangan, Ballycroneen West, Ballyrobin South	Cork	Setting: Landfall Zone B combines an extended sandy expanse to the west with a small cove nestled between outcropping bedrock to the east. There are no recorded cultural heritage sites on the beach, but a scatter of prehistoric stone tools were recorded on the beach (CO100A001).

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Aspect of the Impact	Assessment of the Impa	Another lithic scatter is recorded further inland in Ballycroneen West (CO100-031), while a standing stone that is on top of a small, rounded elevation lies close by (CO100-055). <b>Submerged landscape potential:</b> There is no record of peat deposits or ancient woodland reported for Landfall Zone B or the nearshore sea area adjacent. <b>Intertidal archaeology:</b> The association of the lithic scatter CO100A001 with Landfall Zone B is direct, and its position appears to be close to the ford recorded crossing the stream on the historic OS maps. The historic maps also record Ballycroneen Coastguard Station in this location and suggest that the beach did not formerly reach as far inland at the eastern cove as it does today. This in turn opens the possibility for elements of the former Coastguard Station complex to survive today on the beach and, as such, within the intertidal zone. <b>Offshore archaeology:</b> The seabed morphology offshore indicates the presence of bedrock over much of the area being considered for the potential offshore transmission cable corridor. The hypothesised palaeocoastline dating to 6,000 BP lies 3km offshore. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 4km and 7km respectively. There are three known wreck sites located in proximity to the potential offshore transmission cable corridor close to shore: the wreck site of the SS Irish Plane (W09752) is located some 350m offshore and 1.2km SW of the potential andfall zone. An unknown wreck site (W10427) located 1.7km south of the shore, lies 1.6km east of the potential offshore transmission cable corridor, while the wreck of SS Exeter (W08241) is located 5km offshore and 600m east of the potential offshore transmission cable corridor. <b>Summary:</b> Desktop review indicates some evidence for cultural heritage indicators at Landfall Zone B, focused on the small cove to the east in Ballyrobin South townland. The
		potential landfall zone for the potential offshore transmission cable corridor is to the west of the cove, across an expanse of sand that exists today but where historic OS mapping indicates the presence of bedrock close to the surface. The presence of three known wreck sites offshore in proximity to the potential offshore transmission cable corridor route is noted.
	C Garryvoe C Lower, Ballybutler, Ballycrenane	<ul> <li>Cork Setting: The zone being considered extends over a 1.7km-long stretch of sandy beach that has only small exposures of bedrock at both its eastern and western extents. There is one recorded cultural heritage site on the beach, at its eastern end, where a <i>fulacht fia</i> was recorded (CO089- 076). A second archaeological site is recorded at the western limit of the proposed landing study area, in Garryvoe Lower townland, where a small scatter of flint was found in a ploughed field (CO089-078). Submerged landscape potential: There is no record of peat deposits or ancient woodland reported for Landfall Zone C or the nearshore sea area adjacent. Intertidal archaeology: The association of the lithic scatter CO089-076 with Ballycrenane Beach is direct, and its context indicates</li> </ul>

Aspect of the Impact	Assessment of the Impact	
		coastal erosion has been exposing formerly terrestrial sites as the coastline retreats. The potential for discovery of new information along the foreshore should be allowed for. <b>Offshore archaeology:</b> The seabed morphology offshore indicates the presence of unclassified soft material inshore and exposed bedrock extending offshore over much of the area being considered for the potential offshore transmission cable corridor. The hypothesised palaeocoastline dating to 6,000 BP lies 2km offshore. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 4km and 8.5km respectively. The nearest known shipwreck inshore lies c. 2km SSW of the potential landfall zone and 2km west of the potential offshore transmission cable corridor. The details of the wreck with regard its name, type and date of loss are not known (W10772). Further offshore by some 11km from the landfall zone, a second unknown shipwreck (W11036) is positioned within 350m east of the potential offshore transmission cable corridor, while a third unknown vessel (W10766) lies 700m south of the corridor. <b>Summary:</b> Desktop review indicates evidence for cultural heritage indicators at Landfall Zone C to the east of the potential landfall zone for the potential offshore transmission cable corridor in what is a location of coastal retreat. The presence of known wreck sites inshore is low but this increases offshore in proximity to the potential offshore
	D Templeyvrick, Waterford Ballynasissala, Bunmahon, Ballynagigla, Knockmahon	transmission cable corridor. Setting: The zone being considered extends over a 1.5km-long stretch that includes Bunmahon Strand and a rocky headland, Bunmahon Head, to the west and a series of small coves associated with the headland. There are no recorded cultural heritage sites on the beach. However, there is a series of sites in the immediate vicinity that highlight the archaeological potential for new discovery at Bunmahon. A pair of coastal promontory forts are located on the rocky headlands that lie either side of the beach. To the west, WA024-123 occupies Bunmahon Head, and there is a Deserted Medieval Village (WA024-093001) and associated Church (WA024-070), and burial ground (WA024-069) located within 500m inland from the headland in Templeyvrick. To the east of the beach, WA025-065 refers to Bunmahon promontory fort. In addition to the recorded cultural heritage sites, the historic OS 3rd Edition six-inch map records a series of 'shafts' in the land area of Templeyvrick occupied by the Deserted Medieval Village. <b>Submerged landscape potential:</b> There is no record of peat deposits or ancient woodland reported for Landfall Zone D or the nearshore sea area adjacent. <b>Intertidal archaeology:</b> There is no recorded site on the foreshore at Landfall Zone D but the proximity of the promontory forts to the shoreline highlight potential, while the more recent historical features associated with the village are of interest, including, for example Bunmahon Bridge to the north of the beach. The possibility exists for unrecorded features to survive along the foreshore associated with the development of settlement at Landfall Zone D. <b>Offshore archaeology:</b>

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				The seabed morphology nearshore indicates covering sand and gravel, while the headlands that dominate the Copper Coast in this area reveal bedrock exposures. The hypothesised palaeocoastline dating to 6,000 BP lies 2.5km offshore. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 3km and 4.1km respectively. There are relatively few known shipwreck sites lying close by offshore; that of the schooner Ythan (W11705) is located 2.4km SW of the proposed landing point. An unknown shipwreck recorded by the INFOMAR survey (W11172) is charted 6.3km south of the landing point and 900m east of the potential offshore transmission cable corridor. In contrast, there are 22 recorded wrecking events where the nearest topographic marker given is Bunmahon; such information serves as a cautionary note in the context of the possibility for new discovery arising from new survey work on the seabed. <b>Summary:</b> Desktop review highlights Landfall Zone D as a location of high archaeological potential onshore, with a range of cultural heritage features that extend towards the foreshore. The numbers of recorded shipwrecking events offshore, in turn, serves to caution against considering the low number of known shipwrecks reported as evidence for the absence of wreckage; the soft sediment that lies nearshore will retain good holding content for debris that could become buried and be the only surviving
		Pomotown	Wayford	evidence for shipwreck.
				The zone being considered extends over a 950m-long stretch that includes two small bays, New Bay and Petit's Bay, on the west side of Baginbun Head. There are no recorded cultural heritage sites on Carnivan Beach, but this is a location of considerable archaeological and historical importance, as Baginbun is where the Anglo-Norman beachhead was established in 1169. The presence of a coastal promontory fort (WX050-015001) on the east side of Baginbun Head is thought to have been re-used by the Anglo-Norman adventurers when it was known as <i>Dundonuil</i> (i.e. Donal's Fort). A linear earthwork, WX050-015002, in turn runs across the headland and stops short of the east side of Carnivan Beach and is recorded on the OS maps as the 'Anglo-Norman Entrenchment'. A Martello tower, WX050-027001, located on the headland is later, belonging to the early 19 <sup>th</sup> century. <b>Submerged landscape potential:</b> There is no record of peat deposits or ancient woodland reported for Baginbun or the nearshore sea area adjacent. This observation is cautionary because there has not yet been any record of archaeological inspection of the foreshore area in this regard. The presence of tree roots in glacial deposits has been reported at Wood Village, c. 3km north of Carnivan Beach. The remains may be indicative of an eroded submerged forest; radiocarbon dates on the roots produced a date of 2890-2210 calibrated BC (D-119), or 4030±120 BP. <b>Intertidal archaeology:</b> There is no recorded site on the foreshore at Landfall Zone E but the proximity of the Baginbun complex to the shoreline highlights potential. The possibility exists for unrecorded features to survive along the foreshore.

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		The seabed morphology nearshore indicates bedrock extending offshore. The hypothesised palaeocoastline dating to 6,000 BP lies within 800m other the shore. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 2km and 6km respectively. There are no known shipwreck sites located within 6km of Landfall Zone E, and the closest known wreck site to the potential offshore transmission cable corridor is that of W09690, the MFV Girl Arleen. As the trawler is less than a century old, it is not an historic wreck site. A recent infrastructural project, the Greenlink Interconnector, is understood to have landed a cable on Baginbun Beach, on the east side of Baginbun Head. A series of magnetometer targets were recorded inshore close to Baginbun Beach. It is not known whether archaeological observations were made. <b>Summary:</b> The archaeological sensitivity around Baginbun is very high, and there is a wealth of upstanding remains on Baginbun Head beside Landfall Zone E that testify to this. The absence of such remains at the potential landfall zone and the potential offshore transmission cable corridor is noted, but so too the lack of licensed archaeological intervention and research of the maritime
		environment at this location to date.
	F Bannow Wexford	Setting: The zone being considered extends over a c. 500m-long stretch of Bannow Beach that includes a small landing area, Kiln Bay, and a second unnamed landing area to the east. There are no recorded archaeological sites on Bannow Beach, but there is a Coastguard Station and Boathouse that are both recorded in the Built Heritage register (NIAH 15705011 and 15705012 respectively). More generally, Bannow Bay, lying to the west of Bannow Beach and fed by the Owenduff River, is integrally related to the Anglo-Norman Conquest. <b>Submerged landscape potential:</b> There is no record of peat deposits or ancient woodland reported for Landfall Zone F. This observation is cautionary because there has not yet been any record of archaeological inspection of the foreshore area in this regard. The presence of tree roots in glacial deposits has been reported at Wood Village, c. 3km west of Bannow Beach, in Fethard Bay, on the other side of the Owenduff River estuary. The remains may be indicative of an eroded submerged forest; radiocarbon dates on the roots produced a date of 2890-2210 calibrated BC (D-119), or 4030±120 BP. Intertidal archaeology: There is no recorded site on the foreshore at Landfall Zone F but the proximity of the coastguard station and boathouse to the shoreline highlights potential. The possibility exists for unrecorded features to survive along the foreshore. <b>Offshore archaeology:</b> The seabed morphology nearshore indicates a narrow channel filled with sand extending southeast from Kiln Bay between bedrock exposures. The hypothesised palaeocoastline dating to 6,000 BP lies within 1.5km offshore. The palaeocoastlines of 8,000 BP and 10,000 BP lie further offshore at 4.5km and 8.8km respectively. There are no known shipwreck sites located within 12km of Landfall Zone F, and the closest known wreck site to the potential offshore transmission cable corridor is that of Landfall Zone F, and the closest known wreck site to the potential offshore transmission cable corridor

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				1989 and is not an historic wreck site. There are, however, 22 recorded shipwrecks associated with Bannow Bay, which suggests the potential for elements of shipwreck debris to survive in clefts on the exposed bedrock, or in the sand-filled palaeo channels that are recorded offshore. <b>Summary:</b> The archaeological sensitivity around Landfall Zone F is informed by its wider context as part of the land- and seascape associated with the Anglo-Norman Conquest. There are however no direct recorded observations at this landfall zone. The presence of the coastguard station and boathouse, and the sand-filled palaeo channel providing access seawards from the beach present some basis for anticipating archaeological potential at this location.
	G	Haggard, Blackhall, Ballymadder	Wexford	<ul> <li>Setting:         <ul> <li>The zone being considered reaches over a c. 1km-long stretch that extends from a rock shoals at the west end of the beach in Haggard townland, and crosses through Blackhall townland and Loftus Acre townland to the boundary with Ballymadder townland. There are no recorded archaeological sites on Blackhall Beach, but there are sites recorded inland from the beach. A Holy Well, WX045-050, is located in Haggard townland, 288m above the HWM, and is known locally as Lady's Well. It is next to a Church, WX045-051, in adjacent Blackhall townland, and both sites are beside Slade Cottage, which is recorded in the Built Heritage register, NIAH 15704549. To the east, in Ballymadder townland, is a complex of three earthen ringforts that lie close to the current shoreline.</li> </ul> </li> <li>Submerged landscape potential:         <ul> <li>There is no record of peat deposits or ancient woodland reported for Landfall Zone G. This observation is cautionary because there has not yet been any record of archaeological inspection of the foreshore area in this regard. The presence of tree roots in glacial deposits has been reported at Wood Village, c. 6km west of Blackhall Beach, in Fethard Bay, on the other side of the Owenduff River estuary. The remains may be indicative of an eroded submerged forest; radiocarbon dates on the roots produced a date of 2890-2210 calibrated BC (D-119), or 4030±120 BP.</li> </ul> </li> <li>There is no recorded site on the foreshore at this landfall zone but the proximity of the Holy Well and Church to the western shoreline, and the proximity of the three ringforts to the eastern shoreline highlights potential. The possibility exists for unrecorded features to survive along the foreshore.</li> <li>Offshore archaeology:         <ul> <li>Despite the recorded bedrock in defined clumps interspersed with sand pockets within the foreshore, the seabed morphology nearshore indicates bedrock exposure</li></ul></li></ul>

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Impact			that a f W00000, the MEV Ord Asland, a transfer that was
			lost in 1989 and is not an historic wreck site.
			The archaeological sensitivity around Landfall Zone G is informed by the cluster of recorded monuments that lie above the HWM. While the beach itself has no recorded cultural heritage sites, and the nearshore environment appears to be exposed bedrock, the potential remains for
			unrecorded material to survive as debris caught in clefts
	Offshore N/A	N/A	Submerged landscape potential:
	Offshore N/A environm ent	N/A	Submerged landscape potential: The Aol is located at the continental shelf of the northern Celtic Sea. The potential exists for prehistoric landscapes to be discovered as submerged lenses in what is a drowned landscape. Interpreted site geology suggests the important role that geotechnical investigations will have in recovering material that may reflect the presence of organic deposits within palaeo channels, which owe their origin to events associated with glaciation, and also morainic deposits and glacio-fluvial deposits in what are considered muddy deposits. The matrix of the seabed above bedrock is made up of a series of deposits that represent distinct strata. The strata do not necessarily occur consistently across the area. Eroded sedimentary deposits occur as the earliest formation above rock and are most likely to occur as basal fills of the palaeo channels. Glacial till lies above the sedimentary deposits. Lacustrine deposits are found at a higher level and beneath fluvial-glacial channels that are moulded into sand waves and lie under marine sands and gravels, which form much of the surface of the seabed. The exposure of rock and boulders occurs inshore, while mud and more particularly sands cover much of the sea area offshore across the MUL boundary area. <b>Historic shipwreck events:</b> There is a spatial focus entering Cork Harbour and Waterford Harbour, which can be explained as entry into these two principal ports. There is also a linear trend some 15km offshore, where wrecks appear along a trajectory that is parallel to the coastline. This trend reflects inshore coastal trade. The proximity of known shipwrecks to the proposed offshore transmission cable corridor have been described above in relation to potential landfall zones. It is sufficient here to comment on those further offshore. The proposed offshore transmission cable corridor extending from Landfall Zone C, it passes some 850m north of W17602, an unknown wreck that was recorded by INFOMAR (GSI 335) in 2
			transmission cable corridor from Landfall Zone C joins with the main stem line, and c. 500m north of the Landfall
			Zone C corridor lies the wreck of the SS Gracia (W05420), which was lost on 11/03/1917, and has been
			surveyed by INFOMAR (GSI 337). The stem line
			proceeds east to the Area A/ Tonn Nua DMAP and has been plotted to avoid encountering a series of charted

Aspect of the Impact	Assessment of the Impact					
	shipwreck locations that form a small cluster of sites, with all but one of the sites lying more than 500m away from the proposed offshore transmission cable corridor. The site of W10783, an unknown wreck charted by the UKHO is positioned some 450m south of the proposed offshore transmission cable corridor. There are 26 known shipwreck sites within the Area A/ Tonn Nua DMAP. The sites are located principally within the southern half of the Area A/ Tonn Nua DMAP, with a distributional focus in the southwest quadrant. The proposed offshore transmission cable corridor stem between the Area A/ Tonn Nua DMAP area and the Landfall Zone D Co. Wexford also avoids charted known shipwreck locations, with the closest site being the wreck of the fishing trawler Girl Arleen described previously and lost as recently as 1989, which lies c. 950m to the west of the proposed offshore transmission cable corridor.					
	Observations in the table above with absence of evidence for intertidal archaeology, are cautionary because there has not yet been any publicly available record of intertidal archaeological inspection of these areas.					
	The sources of impact on Cultural Heritage features will result from geotechnical investigations within the intertidal area (trial pits, benthic sampling), and the subtidal investigations (boreholes, CPTs, vibrocores, grab samples). The environmental surveys also have the potential to impact underwater archaeology. The intertidal and subtidal environmental surveys proposed at each of the potential Landfall Zones (A – G) and the moorings proposed to be utilised for the metocean buoy deployment and acoustic monitoring deployment have the potential to disturb the seabed at these locations, if appropriate mitigation measures are not followed. At all locations there is the potential that new surveys, that include side scan sonar and magnetometer surveys of the intertidal area and seabed within the offshore transmission cable corridors, may record material associated with wreckage, such as debris or more intact remains, or previous human activities.					
	The geophysical surveys, walkover archaeological surveys and, where necessary, dive surveys, will be undertaken in advance of any intrusive SI works.					
Magnitude and spatial extent of the Impact	The magnitude of the impact is related to the nature of any Cultural Heritage feature encountered. For example, smaller features may be hand dug and recorded whereas unrecorded wrecks may require more extensive excavations by agreement with and under licence from the National Monuments Service (NMS).					
	Spatially, there are likely to be a significant number of unrecorded submerged Cultural Heritage features (especially wrecks) within the AoI. Whilst the assessment considers the location of the potential SI locations set out in the project description, it considers the potential for the potential sampling locations to be located anywhere within the AoI.					
	Marine geophysical survey:					
	The proposed SI works are planned to take place across two sequential phases. The first investigation phase will involve a non-intrusive geophysical survey campaign. The principal archaeological aims of marine geophysical survey are to clarify the location/s of known archaeological assets within the survey area, and to identify and record new archaeological discoveries arising out of the data acquired. The Department of Housing, Local Government and Heritage (DHLGH) requires marine geophysical survey to be licenced in accordance with the National Monuments Act. The following licences are required: Detection Device, to cover the suite of remote-sensing equipment to be deployed, and Dive Survey, because such survey is operating under the HWM.					
	Both licence applications will be prepared by a competent appointed maritime archaeologist and submitted to the DHLGH. Such licence applications take up to four working weeks to be processed by the DHLGH and are required to be issued before such works take place. The scope and survey line-spacing will be agreed with the archaeologist in advance and, as a minimum, will be in accordance with the guidelines provided in Plets <i>et al. Marine</i>					

Aspect of the Impact	Assessment of the Impact					
	Geophysics Data Acquisition, Processing and Interpretation Guidance Notes (English Heritage, 2013) (which will be implemented in full as part of the surveys). Archaeological Toolbox Talks will be presented by the archaeologist to the marine survey crew/s in advance of surveys commencing, to set out the known archaeological risk; the requirements under the National Monuments Acts to report new archaeological discoveries; and the requirements for data exchange at the conclusion of site operations and post- processing. It is not considered necessary nor proposed for the archaeologist to be present on the survey vessels during the SI works (as part of the mitigation). However, DHLGH will be consulted on this requirement, which will be implemented if required by DHLGH. Additional infill surveys will be necessary to fully complete detailed comprehensive survey and archaeological risk assessment of the emerging Offshore Transmission Cable Corridor /s when known.					
	The survey data sets and supporting mapping and reporting will be provided to the maritime archaeologist to inform their archaeological interpretation report, which will be prepared and submitted to the National Monuments Service (NMS) at the DHLGH in accordance with the consenting conditions of the archaeological licences. The following data sets are anticipated to be provided to the archaeologist:					
	Bathymetry as geo-referenced raster files					
	Backscatter as geo-referenced raster files					
	<ul> <li>Primary side-scan sonar data files as XTF corrected for layback, with viewer software if deploying a bespoke system</li> </ul>					
	<ul> <li>Magnetometer data as magnetic intensity georeferenced DEM</li> </ul>					
	<ul> <li>Sub-bottom profile data as SGY files to be viewable in CODA Survey Engine or other industry standard software</li> </ul>					
	Trackplots for each device deployed as geo-referenced Shape files					
	<ul> <li>Picked targets grouped into class and presented as Shape files and CSV file/s with coordinates</li> </ul>					
	<ul> <li>Marine hydrographer's report and mapping (minimum as Draft version) as PDF</li> </ul>					
	The locations of archaeological sites and sites of archaeological potential observed in the marine geophysical survey data will be identified and listed. Archaeological Exclusions Zones (AEZ) will be placed around such sites, to protect the archaeological asset from impacts and within which intrusive works will not take place.					
	Intertidal/ Onshore geophysical surveys:					
	Onshore survey that may extend on to the intertidal zone would deploy seismic refraction and/or ground penetrating radar or electrical resistivity, to profile geological features and infrastructure. Magnetometer or electromagnetic survey may also be employed. Such devices extend minimum impact across the foreshore, being towed manually on wheel- mounted arrangements and have minimal impact on the known or unknown archaeology within the Aol.					
	Data gaps:					
	The surf zone presents itself as a location where it is possible to have a data gap in the geophysical survey data acquired. Inshore survey vessels operating at High Water may not be able to cruise inshore far enough to reach the intertidal zone. This is especially true where the coastline slopes gently offshore. Even where inshore survey can reach the intertidal zone, the dynamic conditions of the surf zone can make the survey data unusable. Archaeological waded survey (extending out to water depths of 0.75m during Low Water), and archaeological dive survey for water depths greater than 0.75m will be carried out. Such surveys non-intrusive and have minimal impact on the known or unknown archaeology within the Aol.					

#### Marine geotechnical investigations:

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The subsequent investigation phase will involve intrusive geotechnical survey, which will interact physically with the seabed. Where required, additional surveys (up to two within the MUL period) will be carried out for specific zones (of smaller area) of interest within the potential offshore transmission cable corridors and OSSs, using similar types of equipment and to similar depths of investigation, to achieve a better understanding of potential man-made/ existing obstructions and to provide information on specific geohazards on the seabed to the installation and operations of the potential offshore transmission cable corridors and OSSs. Offshore vessels will operate in water depths greater than 15m, and nearshore vessels in water depths less than 15m. The potential offshore transmission cable corridors will be 1km wide. Certain overlap is anticipated with onshore survey in the intertidal zone.

Geotechnical investigations taking place offshore will be completed using dynamically positioned vessels, reducing direct impact on the seabed to the devices being deployed (e.g. vibrocores, cone penetrating tests, boreholes and grab samples). In the shallowest locations, including the intertidal zones, geotechnical investigation may be completed using a jack-up barge supported on a series of four spud legs. It is estimated that an area of approximately  $12m^2$  will have the potential to be disturbed each time the jack-up barge is deployed at a given location. Test-pitting on the foreshore will use a mechanical backhoe. The table below summarises the proposed geotechnical investigations by type and quantify within the Aol. The nature of the potential impacts associated within the geotechnical investigations are summarised in the subsections below.

		floor	
Vibrocore	276	6m	Potential offshore transmission cable corridors and landfall zone approaches.
			Coincident with CPT locations
Cone Penetrating Tests (shallow)	276	Pushed into the seafloo	r Potential OSS and potential offshore transmission cable corridors
Cone Penetrating Tests (deep drive)	16	15m	Potential OSS platform locations
Boreholes, offshore	8	100m	Potential OSS platform locations
Boreholes, inshore/onshore	21	15m	Potential offshore transmission cable corridors / & landfalls Zones
Grab samples	420	0.5m	Potential OSS and potential offshore transmission cable corridors
Trial pits	42	2m	Potential Landfall zones
Metocean buoy deployment	2	Lying on seafloor	Potential OSS locations

Device Number Target depth below sea Potential Location

The processing of the geotechnical data is focused on gathering information to inform the ground modelling and design process. The processing will also allow for archaeological observations and processing of samples that may retain organic remains, as these can provide insight to submerged landscape potential.

#### Metocean buoy deployment and acoustic monitoring deployment:

Two metocean buoys will be deployed at potential OSS platform locations, to gather information (e.g. wind and water current; atmospheric pressure; water quality) that will inform proposed OSS platform design. The buoys will be secured to the seabed with an anchor arrangement. The installation of each buoy may disturb up to 10m<sup>2</sup> of the seabed. Static Acoustic Monitoring (SAM) involves detectors which are deployed in a single location, typically for weeks or months. A minimum of four SAM arrays will be utilised and will be fixed to the seabed by moorings. Moorings deployed on the bottom with no surface buoys are



Aspect of the Impact	Assessment of the Impact
	However, the project marine archaeologist will also consult with the DHLGH to confirm whether a licence for marine GI works are required, based on their review of the proposed works in association with the archaeological risk in the works locations.
	Prior to undertaking the coastal and marine SI works and environmental surveys an Archaeological Management Plan (AMP) will be prepared to facilitate the recording and reporting of any archaeological material discovered during marine geophysical survey which will be used during the geotechnical investigations to ensure no recorded features are disturbed. The AMP will form the basis for the archaeological licensing process that will be required in the course of the project lifetime, to facilitate active survey and monitoring.
	With the implementation of the above mitigation measures. the magnitude and spatial extent of the impacts on cultural heritage is not considered significant.
Transboundary nature of the Impact	There will be no transboundary impacts caused by the proposed SI works.
Intensity and complexity of the Impact	The intensity and complexity of impacts on Cultural Heritage arising from the SI works are typical to that of similar types of marine surveys that utilise standard SI techniques, with no novel or complex methodologies.
Probability of the Impact	There is a very low probability of impact as the geophysical survey and other archaeological surveys will be completed in advance of any intrusive geotechnical investigations at each location, and therefore sensitive features can be avoided or buffer areas created around them to prevent any unintended damage. However, in the absence of these measures, it is possible that there may be an impact on unrecorded Cultural Heritage features. An Archaeology Management Plan (AMP) will be prepared to facilitate the recording and reporting of any archaeological material discovered during marine geophysical survey which will be used during the geotechnical investigations to ensure no recorded features are disturbed. The AMP will address protocols for the archaeological review and assessment of target features. The AMP is to ensure that archaeological sites and features that might become known in the course of the SI works are recorded fully and secured from impact. The AMP will form the basis for the archaeological licensing process that will be required in the course of the project lifetime, to facilitate active survey and monitoring. For archaeological investigations, (including the coastal and marine geophysical surveys) the following licences from the NMS are required: Detection Device, to cover the suite of remotesensing equipment to be deployed, and Dive Survey, because such survey is operating under the High-Water Mark. It is noted that the National Monuments Act 1930–2004 will be superseded in due course by the Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023, which was signed into law on 13 October 2023 but which at the time of writing has yet to formally commence and as such the licensing system will change in
Fire entrol is a set	accordance with the new Act.
Expected onset and duration, frequency, and reversibility of the Impact	undertaking of geotechnical investigations. Damage caused to these features by the geotechnical investigations would likely be irreversible.

#### 13.2 Mitigation

#### Factored-in measures:

 Principal of Avoidance, facilitated by the implementation of Archaeological Exclusion Zones (AEZs), which will prohibit intrusive SI works within the AEZs of known/ recorded cultural heritage assets. The extent of these will vary depending upon the location and size of the archaeological record relative to the location of the SI works and will be agreed in consultation with the NMS.

Prior to undertaking the coastal and marine geotechnical investigation the following will be completed to avoid impacts on unknown/ unrecorded cultural heritage features:

- Desktop research
- AMP
- Marine geophysical survey
- Marine geotechnical investigations
- Intertidal archaeology survey
- Wade survey (where required)
- Dive survey (where required)
- Archaeological Toolbox Talks will be presented by the archaeologist to the marine works crew/s in advance of marine geotechnical investigations commencing

Any necessary licences will be obtained from the Underwater Archaeology Unit (UAU) within the NMS.

#### 13.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, there is unlikely to be any impacts on Cultural Heritage (including Underwater Archaeology) from the SI works. This assessment takes into account that indicative sampling locations could be located anywhere within the AoI.



Figure 13.1 Project Area with potential palaeocoastlines and known shipwreck sites overlaid (Source ADCO)

## **14 Population and Human Health**

#### 14.1 Assessment of Impact

The SI works will have no appreciable impact on population demographics. Throughout the proposed SI works, a variety of vessels and associated machinery will be used on-site, which may give rise to slight negative and temporary impacts on some human receptors from noise and light. The noise associated with the SI works has the potential to impact on neighbouring properties for the duration of the works. Similarly, lights from vessels associated with the SI works may be visible from onshore receptors. However, given that the SI works will be limited to the intertidal and subtidal areas at the landfall zones there will be no population and human health level impacts.

Similarly, there are local business, e.g. surf schools, and other recreational users who may be briefly to temporarily impacted by works in the intertidal area and the investigations on the approaches to the potential landfall zones along the offshore transmission cable corridors. EirGrid have a communications team and FLO engaged on the project who will provide information to local communities in advance of the works taking place.

There is potential for a slight positive and temporary economic impact within the region and wider environs, associated with a temporary increase in the use of ancillary support services at a local and regional level in the supply of services and technical professions.

There will be no transboundary effects to population and human health due to the proposed SI works.

#### 14.2 Mitigation

None proposed.

#### 14.3 Conclusion

The SI works will not have an impact on population.

The SI works will not have an impact on human health.

### **15** Major Accidents and Disasters

#### 15.1 Assessment of Impact

Seveso sites are industrial sites regulated under the Seveso III Directive (2012/18/EU), (Seveso Directive). In Ireland, the Chemicals Act (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015 (S.I. No. 209 of 2015) (the "COMAH Regulations"), transpose the Seveso Directive. Seveso sites are categorised as Lower, or Upper, by the type and quantity of hazardous substances stored at the site. The Health and Safety Authority (HSA) maintain a list of active Seveso sites within Ireland.

There are 21 Upper Tier and 11 Lower Tier Seveso sites across the Wexford, Waterford, Cork City and Cork County areas with eight of the Upper Tier Sites located in Cork City.

The following major hazards have been identified:

- Release of dangerous substances with potential for adverse environmental effects;
- Fire; and
- Fire and explosion.

The SI works will be wholly within the AoI. There are no Seveso sites within the AoI and therefore there are no potential impacts.

All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Sea Pollution Act, 1991 ratified MARPOL in Ireland. In addition, all substances handled and/or used whilst undertaking the works are required to be handled, used, stored, and documented in accordance with assessments and the Chemicals Act 2008 (No. 13 of 2008) and Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated Regulations. Therefore, there will be no impact from pollution events.

There is the potential for coastal and marine geotechnical SI works to damage or destroy subsea cables or pipelines which could result in a major accident or disaster. Similarly, unexploded ordnance (UXO) would pose a risk if it is encountered during intrusive investigations or the deployment and recovery of metocean devices (especially moorings).

There will be no transboundary effects relevant to major accidents and disasters due to the proposed SI works.

#### 15.2 Mitigation

In order to avoid risks of encountering subsea cables/ pipelines and UXO, the coastal and marine geophysical surveys will be undertaken in advance of any coastal and marine geotechnical investigations to enable the locations of sub-sea cables/ pipelines and UXO (if present) to be accurately mapped with an appropriate exclusion zone. The geotechnical borehole and environmental grab sample locations will then be sited away from these cables outside the appropriate exclusion zone, while also taking account of other mitigation measures for other topics, e.g. measures to avoid Reef habitat as described in the Biodiversity section. With the implementation of this mitigation measure there will be no impact from the SI works on existing cables/ pipelines and UXO that could result in a major accident or disaster.

#### 15.3 Conclusion

With the implementation of the above mitigation measure there will be no impact from the SI works on existing cables/ pipelines and UXO that could result in a major accident or disaster.

#### 16 Climate

#### 16.1 Assessment of Impact

Ireland's greenhouse gasses (GHG) emissions were reported to be 55.01 million tonnes of carbon dioxide equivalent (Mt CO<sub>2</sub>eq) in 2023 (EPA, 2024), which is 6.8% lower (or 4.00 Mt CO<sub>2</sub>eq) than emissions in 2022 (59.00 Mt CO<sub>2</sub>eq) and follows a 2.0% decrease in emissions reported for 2022. Transport accounted for 11.8 Mt CO<sub>2</sub>eq which is 21.4% of the overall total.<sup>40</sup>.

The SI works will result in GHG emissions from vessels undertaking the SI works. Given the baseline level of fishing and shipping activity in the AoI, emissions the SI works are considered imperceptible and will not cause an impact.

There will also be emissions of GHG associated with onshore transport for the small number of operatives who will be undertaking the SI works at the landfall zones. These emissions are considered imperceptible and will not cause an impact.

There will be no transboundary effects to climate due to the proposed SI works.

#### 16.2 Mitigation

None proposed.

#### 16.3 Conclusion

The SI works will result in an imperceptible impact from GHG emissions.

<sup>&</sup>lt;sup>40</sup> Latest emissions data | Environmental Protection Agency (epa.ie)

## 17 Waste

#### 17.1 Assessment of Impact

The SI works do not involve any demolition or removal of structures, so no demolition waste will be produced.

Wastes associated with vessels will include bilge water, oily residues (sludge), sewage (black water), greywater, plastics, food wastes, domestic wastes, cooking oil, operational wastes, cargo residues, and other non-common waste streams (e.g., ballast water) (EMSA/OP/02/2016). All vessels will be required to manage waste in accordance with the accepted EU and international standards.

All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The Sea Pollution Act, 1991 ratified MARPOL in Ireland. In addition, all substances handled and/or used whilst undertaking the works are required to be handled, used, stored, and documented in accordance with assessments and the Chemicals Act 2008 (No. 13 of 2008) and Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated Regulations. Therefore, there will be no impact from pollution events.

There will be no transboundary effects relevant to waste due to the proposed SI works.

#### 17.2 Mitigation

None proposed.

#### 17.3 Conclusions

There will be no impact from Waste produced as a result of the SI works.

#### **18 Material Assets**

#### **18.1** Assessment of Impact

There are several harbours and marinas in close proximity to the Aol including the Port of Cork, Port of Waterford, Dungarvan Port, Crosshaven Boatyard, Salve Marine, Royal Cork Yacht Club, Cork Harbour Marina, Cove Sailing Club Cork City Marina, and White Bay. Dungarvan sailing club, Helvick Harbour and Cunnigar Harbour are in close proximity to Dungarvan Port. Additional harbours located adjacent to the Aol include Youghal Harbour and Tramore Brownstown Head Harbour. Finally, the Dunmore East Pontoon is in close proximity to the Aol which is within the Waterford Estuary. Therefore, relative to the background levels of shipping traffic within the Aol, the increase in vessel traffic due to the SI works is considered negligible.

Utilities within and in	proximity to the AoI a	are listed in Table 18.1.
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Name	Owner	Infrastructure Type	Landing Points
Amazon MCS	Amazon	Telecommunications subsea Cables.	Cork
EirGrid Celtic Inter-connector	EirGrid/RTE	Telecommunications subsea Cables.	Cork
Ireland Spain Connect (ISC1)	EMFL European Marine Fibre Ltd	Telecommunications subsea Cables.	Cork
EXA Express	EXA Infrastructure	Telecommunications subsea Cables.	Cork
Kinsale Gas Field	PSE Kinsale Energy Ltd.	Offshore Gas Pipelines.	Cork
СОАМ	Undefined	Telecommunications Subsea Cable.	Cork
Solas	Eircom / Vodafone	Telecommunication Subsea Cable.	Wexford

#### Table 18.1 Gas and Telecommunications Pipelines and Cables

There is the potential for an interaction between survey vessels and the SI equipment and subsea infrastructure, particularly from anchors and/or moorings. Desk-top research has been undertaken to inform the design of the SI works and this will have to be reviewed and updated prior to the mobilisation of any offshore vessels to ensure that the sub-sea infrastructure is recorded. However, in the absence of the geophysical surveys to confirm the exact location of subsea cables and pipelines, there is the potential for the geotechnical SI works to have a direct impact on unrecorded and/or poorly mapped subsea cables and pipelines.

There will be no transboundary effects to material assets due to the proposed SI works.

#### 18.2 Mitigation

In order to avoid risks of inadvertently interacting with subsea cables/ pipelines, the desk-top research completed to-date will be reviewed and updated prior to undertaking the coastal and marine geophysical surveys. Subsequently, the coastal and marine geophysical surveys will be undertaken in advance of any coastal and marine geotechnical SI works to enable the locations of sub-sea cables/ pipelines (if present) to be accurately mapped. The marine geotechnical SI works, marine environmental grab sample locations, and metocean devices will then be sited away from these cables to ensure no interaction with the cables and/or pipelines.

#### 18.3 Conclusion

With the inclusion of the above best practice methods and mitigation measures, the SI works will not impact on Material Assets.

#### **19** Interactions

#### 19.1 Assessment of Impact

This section describes the interactions between the effects described in the previous sections. The potential for there to be interactions between certain topics are summarised in .

Tahla 10 1	Potential Interactions	hotwoon	Imnacte
	Potential interactions	Dermeen	impacts

Торіс	Conclusion	Interaction	
Land and soils	Negligible.	Impacts on Lands and Soils will be negligible. There is a potential interaction with other topics from SSC, e.g. Water, Biodiversity, Fisheries, which are discussed under each topic. The overall impact with respect to the interaction between Land and Soils and these topics will be negligible.	
Water	Negligible	Impacts on Water will be negligible. There is a potential interaction with other topics from SSC, e.g. Land and Soils, Biodiversity, Fisheries, which are discussed under each topic. The overall impact with respect to the interaction between Water and these topics will be negligible.	
Biodiversity	Bats: No impact. Birds: Negligible. Cetaceans: As low as reasonably practicable and not significant. Fish: No impact. Otter: No impact. Other megafauna: No impact. Habitats: Negligible.	Impacts on Biodiversity range from no impact to negligible, with underwater noise impacts and above water disturbance reduced to as low as reasonably practicable and therefore not significant. The impacts to Biodiversity receptors are also discussed under other topics, e.g. Land and Soils, Water, Fisheries, and Noise. The overall impact with respect to the interaction between Biodiversity and these topics will be negligible.	
Fisheries and aquaculture	Negligible.	Impacts on Fisheries and Aquaculture will be negligible. The impacts are considered alongside those from the following topics: Land and Soils, Water, Biodiversity, Noise, Traffic & Transportation (including Shipping and Navigation). The overall impact with respect to the interaction between Fisheries and Aquaculture and these topics will be negligible.	
Air quality	Imperceptible	Impacts on Air quality will be imperceptible. Emissions may interact with Traffic & Transportation (including Shipping and Navigation), Population and human health, and Climate. The overall impact with respect to the interaction between Air Quality and these topics will be imperceptible.	
Noise and vibration	Noise: As low as reasonably practicable and not significant. Vibration: No impact.	Impacts from Noise range from negligible (humans) with underwater noise impacts reduced to as low as reasonably practicable and therefore not significant (marine mammals). The impacts from Noise on other topics are discussed under each topic, e.g. Biodiversity, Fisheries, Traffic & Transportation (including Shipping and Navigation), and Population and human health. The overall impact with respect to the interaction between Noise and these topics will be negligible. As there are no impacts from Vibration, there will be interaction impacts.	
Landscape and seascape	Localised, minor, and temporary during the SI works. No impact after completion.	Impacts on Landscape and seascape will be localised, minor and temporary during the SI works, reducing to no impact on completion of the SI works. The overall impact with respect to the interaction between Landscape and seascape and Population and human health will be localised, minor and temporary during the SI works, reducing to no impact on completion of the SI works.	
Transport & Traffic (incl. Shipping & Navigation)	Negligible.	Impacts on Transport & Traffic (incl. Shipping & Navigation) will be negligible. The impacts are considered alongside those from the following topics: Fisheries and Aquaculture, Air Quality, Noise and vibration, Major accidents and disasters and material assets.	
Торіс	Conclusion	Interaction	
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		The overall impact with respect to the interaction between Transport & Traffic (incl. Shipping & Navigation) and these topics will be negligible.	
Cultural heritage	No impact.	As there will be no impact on Cultural heritage there will be no interaction impact.	
Population and human health	Population: No impact. Human health: No impact.	As there will be no impact on Population there will be no interaction impact. As there will be no impact on Human health there will be no interaction impact.	
Major accidents and disasters	No impact.	As there will be no impact from Major accidents and disasters there will be no interaction impact.	
Climate	Imperceptible	Impacts on Climate will be imperceptible. Emissions may interact with Traffic & Transportation (including Shipping and Navigation), Air quality, and Population and human health. The overall impact with respect to the interaction between Climate and these topics will be imperceptible.	
Waste	No impact.	As there will be no impact from Waste there will be no interaction impact.	
Material assets	No impact.	As there will be no impact on Material assets there will be no interaction impact.	

## 19.2 Mitigation

None proposed.

## 19.3 Conclusion

No impacts are predicted as a result of the interactions between the impacts identified under each topic and each other.

## 20 CUMULATIVE IMPACTS

### 20.1 Identification of Projects

Even if projects are unlikely to have significant effects on their own, the effects in-combination (cumulatively) with those of other projects could be significant. The cumulative effects assessment has been carried out to identify other projects that could act cumulatively with the SI works.

Other projects that have the potential to act cumulatively with the proposed SI works are considered to be those that are likely to contribute to the effects identified within each of the preceding sections. On this basis, a range of other projects were considered in terms of their potential to have cumulative effects with the proposed SI works.

MARA's approach for identifying projects was used coupled with professional and scientific judgement to identify relevant projects. The key steps for assessing cumulative effects based on MARA's "stepwise approach" are as follows:

- 1. Defining the Cumulative Effects Spatial Scope (CESS);
- 2. Defining the Cumulative Effects Temporal Scope (CETS);
- 3. Impact identification;
- 4. Pathway identification;
- 5. Prediction;
- 6. Identification of projects that could act in combination;
- 7. Cumulative Effects Assessment conclusion.

#### 20.1.1 Cumulative Effects Spatial Scope (CESS)

The CESS was based on the maximum impact range identified in the accompanying SISAA when considering impacts of the proposed SI works. Beyond this maximum distance, the proposed SI works will have no effect and therefore no potential pathway to cumulative effects with other projects. The CESS was identified as 5km from the boundary of the AoI, based on the JNCC's guidance document for assessing noise disturbance for harbour porpoise SACs (JNCC, 2020). For geophysical surveys, the JNCC recommend that an effective deterrence range is 5 km. For all other proposed survey types, impact ranges are less than 5 km, therefore 5 km is considered to be the furthest distance at which other projects could act cumulatively with the SI works.

#### 20.1.2 Cumulative Effects Temporal Scope (CETS)

The CETS was based on the potential for temporal overlap with the proposed SI works. As the proposed SI will have a five-year licence, projects likely to take place within the next six years were identified as potentially relevant, allowing for a precautionary one-year buffer to allow for the time between submission of this MULA and an MUL being granted.

#### 20.1.3 Identified Projects

A search of foreshore licence and marine licence applications which could interact with the SI works was conducted using the relevant consenting authority websites (DHLGH - foreshore applications, MARA - Maritime Usage Licences (MULs), An Bord Pleanála (ABP) - Strategic Infrastructure Development (SID) - marine developments, Environmental Protection Agency (EPA) – Dumping at Sea (DaS) permits).

A list of relevant projects is provided in Appendix A to this report.

#### 20.2 Assessment of Impacts

A number of DaS licences have been granted to Port of Waterford, Port of Cork and one for Wexford Co. Council (S0012-03, S0030-01, S0013-03/ FS007126) which occur within the CESS. Temporal overlap is possible as DaS permits are valid until 2030 in some cases. There is potential for in-combination effects due to habitat loss/ disturbance, above-water disturbance effects with dredging and associated dumping within the AoI. As stated above in Section 6 Water, Section 7 Biodiversity and Section 8 Fisheries and Aquaculture, the proposed SI works will result in a negligible impact on Water with any mobilised SSC likely to quickly settle out of the water column or disperse under tidal and current influences. Given the negligible impact of the SI works and the distance between the SI works areas and the dredge projects, no cumulative impacts are predicted.

One MUL application and three foreshore licence applications within the CESS have been granted licences, as discussed below.

- DECC was granted an MUL (LIC240006) to undertake geophysical surveys in the SC-DMAP area to inform future ORE development. This licence has a period of one year from the commencement date (04/07/2024), and surveys were due to take place between 6/07/2024 and 20/09/2024 as per the Marine Notice No. 34 of 2024. There is potential for temporal overlap with the proposed SI works, however, it is unlikely given the timelines involved. Therefore, no cumulative impacts are predicted.
- Energia was granted a foreshore licence (FS006982) to conduct SI works to determine design for a
  proposed ORE development off Helvick Head in Co. Waterford. This licence was for a term of five years
  from the commencement date (05/07/2021), therefore temporal overlap with the proposed SI works is
  possible, although unlikely, as geophysical and geotechnical surveys have been completed. Therefore,
  no cumulative impacts are predicted.
- EirGrid's Celtic Interconnector project (FS006916) has been granted a licence of 40 years starting from 20/06/2022 for the installation of a submarine cable between Ireland and France making landfall at Claycastle Beach in Co. Cork. This project overlaps spatially and temporally with the AoI and proposed SI works. Construction of the Celtic Interconnector, including laying of the offshore transmission cable is likely to occur during the lifetime of the SI works MUL. With the implementation of best practice and standard operating procedures for vessel activities in the marine environment, no interaction between the SI works and activities for the Celtic Interconnector project are likely and therefore no cumulative impacts are predicted.
- A licence was granted for the Greenlink Interconnector project (FS007050) for subsea and underground cables between Ireland and the UK, with landfall at Baginbun Beach Co. Wexford. This licence was granted for a period of 40 years from the commencement date in 01/09/2021. Therefore, there is potential for temporal overlap, however, this is considered unlikely as the marine construction works for the project have been completed. Therefore, no cumulative impacts are predicted.

Numerous undetermined foreshore licence applications for marine SI works also overlap with the CESS (FS007471, FS007471, FS007464, FS007488, FS007436, FS007431, FS007575, FS006983, FS006859, FS007139, FS007136, FS007404, FS007138, FS007318, FS007616, FS007621, FS007376). Geotechnical and geophysical survey activities have the potential to act in-combination with the proposed SI works. These applications were at early stages of application when Government policy changed to a plan-led approach for the development of offshore wind projects post Phase One. As a result, it is considered unlikely that any of the undetermined foreshore licences for developer-led SI works will be progressed within the CETS of the proposed SI works. Further details of these developer-led applications are provided in Appendix A. As it is considered unlikely that any of these projects will progress as planned, no cumulative impacts are predicted.

Other MUL applications which overlap with the CESS but have not yet been determined are for dredging at Port of Waterford (LIC230025/FS005701), marine surveys for University College Cork and University College Dublin (MUL240013, MUL240018) and acoustic monitoring for Gas Networks Ireland (MUL240035). There is potential for these projects to overlap temporally as well as spatially with the proposed SI works when/if licences are granted. Given the limited nature and scale of these works and those of the proposed SI works, no cumulative impacts are predicted.

As noted above, there is the potential for there to be some temporal and spatial overlap between the SI works and other licence holders' activities within the AoI. In order to ensure good relations with other licence holders, mitigation measures have been proposed, as below.

### 20.3 Mitigation

Where the SI works are to take place within 5 km of and at the same time as other licenced activities, EirGrid will coordinate with other licence holders to ensure that:

- There will be no temporal and spatial overlap between the SI works marine geophysical activities and marine geophysical activities by other licence holders;
- There will be no spatial overlap between the SI works marine geotechnical, environmental and archaeological activities and overlapping activities by other licence holders. Appropriate separation distances (typically 500 m) will be maintained between vessels.

## 20.4 Conclusion

With the inclusion of the above best practice methods and mitigation measures, no cumulative effects are predicted between the above projects and the SI works.

## 21 Summary of Mitigations

The following Table 21.1 provides a summary of the mitigation measures, beyond standard design features or procedures, presented in each of the preceding sections of this report.

Table 21.1 Summary of Mitigations

Торіс	igation			
Land and Soils •		In advance of undertaking the coastal and marine geotechnical surveys, including the positioning of the jack-up barge (JUB), and the marine environmental surveys (grab samples), drop down video (DDV) of the investigation locations will be undertaken to confirm that there are no sensitive Annex I habitats present which are unlikely to recover i.e. reef. Similarly, walkover environmental surveys will be undertaken in advance of coastal intrusive investigations (i.e. trial pits and intertidal core sampling) and areas that constitute vegetated sea cliffs of the Atlantic and Baltic coasts will be avoided by the intrusive works.		
Water	•	None proposed.		
Biodiversity	•	In advance of undertaking the coastal and marine geotechnical surveys, including the positioning of the jack-up barge (JUB), and the marine environmental surveys (grab samples), drop down video (DDV) of the investigation locations will be undertaken to confirm that there are no sensitive Annex I habitats present which are unlikely to recover, i.e. reef. Similarly, walkover environmental surveys will be undertaken in advance of coastal intrusive investigations (i.e. trial pits and intertidal core sampling) and areas that constitute vegetated sea cliffs of the Atlantic and Baltic coasts will be avoided by the intrusive works.		
	•	Disturbance impacts to overwintering birds at the landfall zones and nesting seabirds has been screened in for detailed assessment in the Natura Impact Statement (NIS). If required, appropriate mitigation for birds will be established following assessment in the NIS.		
	•	A suitably qualified and experienced MMO will be onboard for the duration of the geophysical and geotechnical surveys as appropriate. They will be responsible for advising and ensuring compliance with the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).		
	•	Any equipment used will not exceed the modelled equipment broadband levels (see Table 4-1 in the Subsea Noise Technical Report) or band-wise levels for overall levels (Figure 4-2 to Figure 4-24 in the Subsea Noise Technical Report).		
Fisheries and Aquaculture Aquaculture		EirGrid has appointed a Fisheries Liaison Officer (FLO) and a communications team to consult with local fisheries and the wider community. The FLO will liaise with the seafood/ ORE working group, fishery organisations and associations, RIFFs & NIFFs, and local fishers on a one-to-one basis at pier/site visits. Organised group meetings will be established in fishing communities minimising displacement through early engagement that may be caused by the proposed SI works		
Air Quality	•	None proposed.		
Noise	•	A suitably qualified and experienced MMO will be onboard for the duration of the geophysical and geotechnical surveys as appropriate. They will be responsible for advising and ensuring compliance with the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (DAHG, 2014).		
	•	Any equipment used will not exceed the modelled equipment broadband levels (see Table 4-1 in the Subsea Noise Technical Report) or band-wise levels for overall levels (Figure 4-2 to Figure 4-24 in the Subsea Noise Technical Report).		
Landscape and Seascape	•	None proposed.		
Traffic and Transportation (including Shipping and Navigation)	•	EirGrid has appointed a Fisheries Liaison Officer (FLO) and a communications team to consult with local fisheries and the wider community. The FLO will liaise with the seafood/ ORE working group, fishery organisations and associations, RIFFs & NIFFs, and local fishers on a one-to-one basis at pier/site visits. Organised group meetings will be established in fishing communities minimising displacement through early engagement that may be caused by the proposed SI works		

Торіс	Mitigation				
Cultural Heritage	Factored-in measures:				
	<ul> <li>Principal of Avoidance, facilitated by the implementation of Archaeological Exclusion Zones (AEZs), which will prohibit intrusive SI works within the AEZs of known/ recorded cultural heritage assets. The extent of these will vary depending upon the location and size of the archaeological record relative to the location of the SI works and will be agreed in consultation with the NMS.</li> </ul>				
	Prior to undertaking the coastal and marine geotechnical investigation the following will be completed to avoid impacts on unknown/ unrecorded cultural heritage features:				
	Desktop research				
	• AMP				
	Marine geophysical survey				
	Marine geotechnical investigations				
	Intertidal archaeology survey				
	Wade survey (where required)				
	Dive survey (where required)				
	<ul> <li>Archaeological Toolbox Talks will be presented by the archaeologist to the marine works crew/s in advance of marine geotechnical investigations commencing</li> </ul>				
	<ul> <li>Any necessary licences will be obtained from the Underwater Archaeology Unit (UAU) within the NMS.</li> </ul>				
Population and human health	None proposed.				
Major Accidents and Disasters	In order to avoid risks of encountering subsea cables/ pipelines and UXO, the coastal and marine geophysical surveys will be undertaken in advance of any coastal and marine geotechnical investigations to enable the locations of sub-sea cables/ pipelines and UXO (if present) to be accurately mapped with an appropriate exclusion zone. The geotechnical borehole and environmental grab sample locations will then be sited away from these cables outside the appropriate exclusion zone, while also taking account of other mitigation measures for other topics, e.g. measures to avoid Reef habitat as described in the Biodiversity section. With the implementation of this mitigation measure there will be no impact from the SI works on existing cables/ pipelines and UXO that could result in a major accident or disaster.				
Climate	None proposed.				
Waste	None proposed.				
<ul> <li>In order to avoid risks of inadvertently interacting with subsea cables/ pipelines top research completed to-date will be reviewed and updated prior to undertal coastal and marine geophysical surveys. Subsequently, the coastal and marine geophysical surveys will be undertaken in advance of any coastal and marine geotechnical SI works to enable the locations of sub-sea cables/ pipelines (if pipelines) be accurately mapped. The marine geotechnical SI works, marine environmer sample locations, and metocean devices will then be sited away from these cares and/or pipelines.</li> </ul>					
Interactions	None proposed.				
Cumulative Impacts	• Where the SI works are to take place within 5 km of and at the same time as other licenced activities, EirGrid will coordinate with other licence holders to ensure that:				
	There will be no temporal and spatial overlap between the SI works marine geophysical activities and marine geophysical activities by other licence holders;				
	There will be no spatial overlap between the SI works marine geotechnical, environmental and archaeological activities and overlapping activities by other licence holders. Appropriate separation distances (typically 500 m) will be maintained between vessels.				

## 22 Consideration of Reasoned Conclusion in Relation to EU Directives

#### 22.1 Habitats and Birds Directives

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) provides protection for habitats and species of European importance and the Council Directive 2009/157/EEC (the Birds Directive) aims to protect all of the 500 wild bird species naturally occurring in the EU.

Special Areas of Conservation (SAC) are areas designated for protection under the Habitats Directive and Special Protection Areas (SPA) are areas designated for protection under the Birds Directive. Collectively, SACs and SPAs are known as Natura 2000 sites. Each EU member is required to designate Natura 2000 sites in their jurisdictions. The establishment of the network of Natura 2000 sites under Articles 3 to 9 of the Habitats Directive is the key measure to protect nature and biodiversity in the EU.

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to have a significant effect on or to adversely affect the integrity of Natura 2000 sites and Article 7 of the Habitats Directive extends the scope of articles 6(3) and 6(4) to the Birds Directive.

The Habitats and Birds Directives have been transposed into Irish Legislation under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended.

The impact(s) from the proposed SI works in relation to the Habitats and Birds Directives are assessed in the following enclosed report; Supporting Information for Screening for Appropriate Assessment (document ref: IE001220-RPS-RP-XX-RP-EN-0006).

## 22.2 EIA Directive (not of a class)

The requirement for EIA of certain projects is established by EU Directive 2011/92/EU as amended by Directive 2014/52/EU (the 'EIA Directive').

The EIA Directive was transposed into Irish legislation through a number of statutory provisions including the Planning and Development Act 2000, as amended (hereafter, the PDA), and the Planning and Development Regulations 2001, as amended (hereafter, the PDR).

The classes of development that require mandatory EIA must be considered in relation to the SI Works. Section 176 of the PDA gives the Minister the power to make regulations to specify prescribed classes of development for EIA. These prescribed classes of development are set out in Part 1 and Part 2 of Schedule 5 of the PDR as per Regulation 93 of Part 10 of the PDR. Furthermore, Section 172 of the PDA provides the legislative basis for mandatory EIA where any one of the following requirements are met:

- the proposed development would be of a Class specified in Part 1 of Schedule 5 of the PDR and it either equals or exceeds a relevant quantity, area or other limit specified in that Part.
- the proposed development would be of a Class specified in Part 1 of Schedule 5 of the PDR where no quantity, area or other limit is specified.
- the proposed development would be of a Class specified in Part 2 of Schedule 5 of the PDR and it either equals or exceeds a relevant quantity, area or other limit specified in that Part.
- the proposed development would be of a Class specified in Part 2 of Schedule 5 of the PDR where no quantity, area or other limit is specified.

If the proposed development (i.e. the SI Works) does not meet any one of the four criteria above, further consideration for EIA is required if the proposed development is a class of development specified in Part 2 of Schedule 5 of the PDR but is less than any relevant quantity, area or other limit specified in that Part. This is termed sub-threshold development.

If the proposed development does not meet any of the four criteria above and it is not a class of development specified in Part 2 of Schedule 5 of the PDR then a sub-threshold assessment is not required and an EIA is not required.

#### 22.2.1 Part 1 of Schedule 5 of the PDR

There are no projects listed in Part 1 of Schedule 5 of the PDR that describe the proposed development. Therefore, the proposed development is not of a Class specified in Part 1 of Schedule 5 of the PDR.

#### 22.2.2 Part 2 of Schedule 5 of the PDR

There are no projects listed in Part 2 of Schedule 5 of the PDR that describe the proposed development. Therefore, the proposed development is not of a Class specified in Part 2 of Schedule 5 of the PDR.

#### 22.2.3 Sub-Threshold for Part 2 of Schedule 5 of the PDR

As the proposed development is not of a Class specified in Part 2 of Schedule 5, no sub-threshold assessment is required. Therefore, it is not required to undertake a preliminary examination or a screening for EIA.

#### 22.2.4 Conclusion

As the SI Works are not a class of development include in either Part 1 or Part 2 of Schedule 5 of the PDR, an EIA is not required.

#### 22.3 WFD Directive

The European Parliament and Council Directive 2000/60/EC, Establishing a Framework for Community Action in the Field of Water Policy, 2000, known as the *Water Framework Directive* (WFD), has been the main law for water protection in Europe. It applies to inland, transitional, and coastal waters as well as groundwaters.

An objective of the WFD is to achieve the protection of aquatic ecology and habitats, drinking resources and bathing waters through river basin management planning and monitoring. This objective is summarised as Good Ecological Status (GES) and Good Ecological Potential (GEP) for artificial or heavily modified waster bodies.

With the mitigation measures proposed as part of the works (see **Chapter 21**) and considering the limited nature, scale, size, and duration of the proposed SI works, it is considered that there will not be any deterioration in WFD GES in any water body from the SI Works and the SI Works will not impact on the achievement or maintenance of WFD GES.

#### 22.4 Marine Strategy Framework Directive (MSFD) Directive

The *EU Marine Strategy Framework Directive*, 2008 (MSFD) aims to protect the marine environment and requires the application of an ecosystem-based approach to the management of marine human activities, enabling a sustainable use of marine goods and services. The MSFD aims to ensure clean, healthy, and productive oceans and seas and sustainable use of marine environment for current and future generations.

In order to implement the MSFD each member state is required to:

- Describe what they consider is a clean, healthy, and productive sea i.e., Good Environmental Status;
- Monitor and assess the quality of their seas against Good Environmental Status; and
- Ensure they take appropriate action by 2020 to maintain or achieve Good Environmental Status.

Good Environmental Status is key to compliance with the MSFD. Good Environmental Status is described by 11 Descriptors, namely: biodiversity; non-indigenous species; population of commercial fish/shellfish; elements of marine food webs; eutrophication; sea floor integrity; alteration of hydrographical conditions; contaminants; contaminants in fish and seafood for human consumption; marine litter; and introduction of energy, including underwater noise.

The basic principle of Good Environmental Status is to ensure sustainable use of marine resources. When assessing a project against MSFD requirements, it is assessed on its impact on Good Environmental Status.

A project may not improve a Good Environmental Status, but it should not have a permanent negative impact on any of the Good Environmental Status.

Four of the above descriptors are particularly relevant to the SI works, namely:

- D1 Biodiversity;
- D6 Sea floor integrity;
- D10 Marine litter; and
- D11 Introduction of energy, including underwater noise.

With the mitigation measures proposed as part of the works (see **Chapter 21**) and considering the limited nature, scale, size, and duration of the proposed SI works, it is considered there will not be any deterioration in MSFD Good Environmental Status from the SI Works and the SI Works will not impact on achieving or maintaining MSFD Good Environmental Status.

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## Appendix A List of Projects for Cumulative Assessment

# Table A.1List of projects identified following a search of the relevant databases undertaken onthe 24/10/2024

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
1	S0012-03 (x3 permits)	Port of Waterford Company Dredging Campaigns	0	Permit end date 31/12/2025	Spatial overlap with Aol at the entrance to Waterford Estuary for three dredge permits which end in 2025. Within the Cumulative Effects Spatial Scope (CESS). Possible temporal overlap.
2	S0030-01	Wexford County Council	0	Permit end date 31/05/2027	Spatial overlap with Aol off Bannow Bay (c. 11 km off Kilmore Quay). Within the CESS. Possible temporal overlap.
3	S0013-03	Port of Cork Company	0	Permit end date 31/12/2030	Spatial overlap with Aol at the entrance to Cork Port. Within the CESS. Possible temporal overlap.
4	S0013-03	Port of Cork Company	0	Permit end date 31/12/2030	Spatial overlap with Aol c. 7 km off Powers Head. Within the CESS. Possible temporal overlap.
5	S0012-03 (x3 permits)	Port of Cork Company	0	Permit end date 31/12/2025	No spatial overlap with Aol. Within the CESS. Possible temporal overlap.
6	FS006916	EirGrid Public Limited Company (Celtic Interconnector)	Overlaps	Determination 30/08/2022	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
7	LIC240006	Department of the Environment, Climate & Communications Deployment of the Marine Institute's R.V. to undertake a geophysical survey in the South Coast DMAP to inform future offshore renewable energy development.	Overlaps with AOI	Determined	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
8	FS006982	Energia site investigations for wind farm off Helvick Head	Overlaps with AOI	Determination 28/09/2021	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
9	FS007126	Port of Cork Maintenance Dredging	Overlaps with AOI	Determination 08/09/2023	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
10	FS007050	Greenlink Interconnector Limited	Overlaps with AOI	Determination 03/09/2021	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
11	FS007471	Floating Cork Offshore Wind Ltd Site investigations	Overlaps with AOI	Proposed – Foreshore licence submitted 22/09/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
12	FS007445	Blackwater OWL Offshore Wind Ltd. marine surveys off the Wexford coast	Overlaps with AOI	Proposed – Foreshore licence submitted 09/05/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
13	FS007464	Bore Array Ltd site investigations for wind farm off Co. Wexford	Overlaps with AOI	Proposed – Foreshore licence submitted 08/04/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
14	FS007488	Celtic Offshore Renewable Energy site investigation off the coast of Wexford and Waterford	Overlaps with AOI	Proposed – Foreshore licence submitted 22/04/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
15	FS007436	Voyage Offshore Array Ltd. site investigations off coast of Wexford and Waterford	Overlaps with AOI	Proposed – Foreshore licence submitted 14/02/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
16	FS007431	Tulca Offshore Array Ltd: site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 14/02/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
17	FS007575	Kinsale Offshore Wind Ltd site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 26/08/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
18	FS006983	SSE Renewables Celtic Sea site investigations off County Cork	Overlaps with AOI	Proposed – Foreshore licence submitted 19/03/19	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
19	FS006859	DP Energy Site Investigations at Inis Ealga	Overlaps with AOI	Consultation 21/10/2019	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
20	FS007139	Emerald Offshore Wind Limited Site Investigations for possible Floating Offshore Wind project off Kinsale	Overlaps with AOI	Consultation 22/05/2020	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
21	FS007136	ESB Wind Development Limited Site Investigations off Waterford and Cork Coasts - Helvick Head Offshore Wind	Overlaps with AOI	Consultation 18/12/2020	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
22	FS007404	Inis Ealga Marine Energy Park	Overlaps with AOI	Consultation 30/07/2021	Spatial overlap with Aol. Within the CESS.

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
		(IEMEP) site investigations off County Cork			Possible temporal overlap.
23	FS007138	ESB Celtic Offshore Wind - Site Investigations off Waterford and Cork	Overlaps with AOI	Consultation 20/12/2020	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
24	FS007318	RWE Renewables Ireland East Celtic Ltd site investigations for proposed offshore wind park	Overlaps with AOI	Proposed – Foreshore licence 10/03/2021	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
25	FS007616	Ruby Offshore Energy Site Investigations for Offshore Wind Farm, off the coast of Counties Wexford, Waterford and cork	Overlaps with AOI	Proposed – Foreshore licence 23/02/23	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
26	FS007621	Péarla Offshore Wind Ltd.Site investigations for export cable for proposed offshore wind farm	Overlaps with AOI	Proposed – Foreshore licence 24/10/22	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
27	FS007376	Uisce Éireann ADCP Surveys at Cork Harbour	Overlaps with AOI	Proposed – Foreshore licence	Spatial overlap with Aol. Within the CESS.
28	LIC230025/FS005701	Port of Waterford Company Maintenance dredging of accumulated sediments to maintain the port's navigational trade areas.	Overlaps at Creedan Head	Proposed – Foreshore licence	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
29	MUL240013	University College Cork marine environmental survey for the purpose of scientific research and discovery aims to shed light at the palaeo-channel network of the Celtic Sea and assess potentially important benthic habitats	Overlaps	Proposed – Foreshore licence	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
30	MUL240018	University College Dublin geophysical and sediment sampling survey off	Overlaps	Proposed – Foreshore licence	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.

No.	Application reference no.	Project	Approximate Distance from Aol	Project Status	Cumulative Effect
		the south coast of Ireland to inform environmental and geological studies in relation to Blue Carbon potential of marine sediments.			
31	MUL240035	Gas Networks Ireland, Cork Harbour The surveys require the deployment and retrieval of static acoustic monitoring (SAM) devices and up to two acoustic doppler current profilers (ADCP) within the study area.	300 m	Proposed – Foreshore licence	Spatial overlap with Aol. Within the CESS. Possible temporal overlap.
32	S0013-02	Port of Cork Company	2	Permit end date 01/08/2023	No spatial overlap with Aol. Within the CESS. Possible temporal overlap
33	S0013-03	Port of Cork Company	2	Permit end date 31/12/2034	No spatial overlap with Aol. Within the CESS. Possible temporal overlap.
34	S0013-02	Port of Cork Company	2	Permit end date 01/08/2021	No spatial overlap with Aol. Within the CESS. No temporal overlap.
35	S0013-02	Port of Cork Company	2	Permit end date 01/08/2022	No spatial overlap with Aol. Within the CESS. No temporal overlap.
36	S0013-03	Port of Cork Company	4	Permit end date 31/12/2033	No spatial overlap with Aol. Within the CESS. Possible temporal overlap.
37	S0013-03	Port of Cork Company	5	Permit end date 31/12/2031	No spatial overlap with Aol. Within the CESS. Possible temporal overlap.