ASSESSMENT OF IMPACTS ON THE MARITIME USAGE (AIMU)

GREATER DUBLIN DRAINAGE PROJECT

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1 INTRODUCTION

1.1 Overview

The Greater Dublin Drainage (GDD) project is the development of a new regional wastewater treatment facility and associated infrastructure to serve the population of Dublin and parts of Kildare and Meath.

The proposed scheme involves a new 14.6km orbital sewer running from Blanchardstown to a proposed new wastewater treatment plant (WwTP) in Clonshagh located to the east of Dublin Airport. From the WwTP, a further 5.4km length of outfall pipeline connects to a 6km long marine outfall to transport the treated wastewater offshore.

Core elements of the GDD project, indicated in **Figure 1-1** below, comprise the following:

- **1km Orbital Sewer** – Gravity Main 1 from Blanchardstown to Abbotstown Pumping Station (PS);
- **Abbotstown PS** – to be located in the grounds of the Sport Ireland Campus;
- **5.3km Orbital Sewer** – Rising Main from the PS to Dubber Odour Control Facility;
- **9.3km Orbital Sewer** – Gravity Main 2 from Dubber to WWTP;
- **500,000 PE Wastewater Treatment Plant (WwTP)** and **Sludge Hub Centre (SHC)** to be located at Clonshagh;
- **5km Land-Based Outfall Pipeline** linking the proposed Regional WwTP to the marine outfall;
- **6km Marine Outfall** pipeline to a discharge point located approx. 1km north-east of Ireland's Eye; and,
- **North Fringe Sewer (NFS) Diversion** – diversion of an existing trunk sewer to the WwTP site.

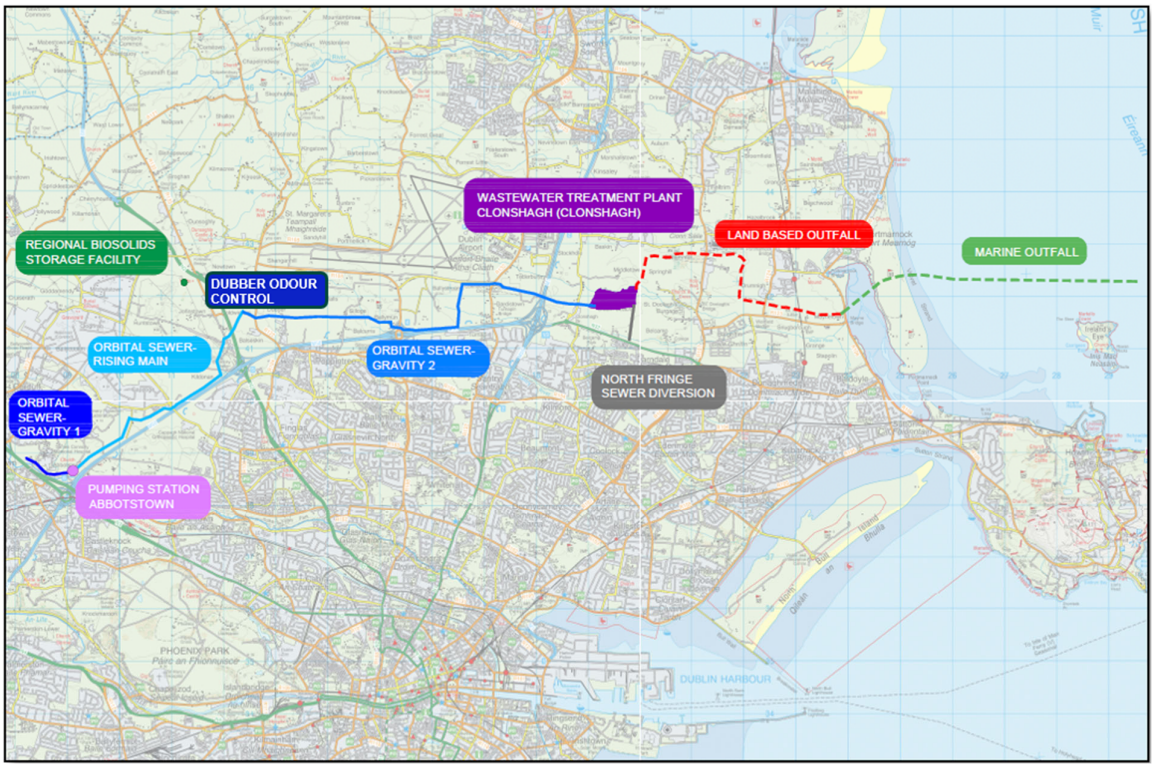

Figure 1-1 Core elements of GDD project.

Construction methods for the GDD project pipeline consist of a combination of both tunnelled and open cut for terrestrial sections of pipeline and tunnelled and dredged methods for marine based sections of pipeline.

This Maritime Usage Licence Application (MULA) is required to undertake site investigations (hereafter referred to as the SI works), within Baldoyle Bay and the Irish Sea. These SI works, which are discussed in more detail in Section 2 below, are required to inform construction stage, the detailed engineering design of the marine elements of the GDD project and to provide baseline data for any preconstruction and monitoring assessments. Information collected by the SI works will support the overall GDD project in its aim to upgrade and provide additional wastewater infrastructure for the Greater Dublin Area.

1.2 Accompanying Reports

The MULA consists of the following documents and reports:

- Maritime Usage Licence Application Form;
- 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; and
- Natura Impact Statement (NIS)

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

1.3 Purpose of the Report

This report has been prepared by MMRPS, on behalf of Uisce Éireann, to provide information on the SI Works proposed to be undertaken for the GDD project in support of the MULA to MARA. This document provides a description of the proposed surveys and investigations that are proposed to be undertaken. The project description includes details of the methods, equipment and quantities for proposed activities. Information collected by the SI works will be used to inform the construction stage and detailed engineering design for the proposed marine outfall and will also provide baseline data for any preconstruction and monitoring assessments.

1.4 Statement of authority

The technical competence of the authors is outlined below:

[redacted] is 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. [redacted] 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.

[redacted] 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. [redacted] holds an honours degree in Environmental Science from Trinity College Dublin and a Master's in Marine Environmental Protection from Bangor University, Wales. [redacted] 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.

[redacted] 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.

[redacted] is a Graduate Scientist in the Environmental Services Business Unit in RPS. She holds an honours degree in Zoology (B.Sc.) and Master's degree in Marine Biology, both from University College Cork. She has a years' experience as a Project Manager at Cork Nature Network, responsible for marine and river surveys, and is currently involved in marine licensing and flood relief projects within RPS.

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.

The MUL Area comprises two areas, one within Baldoyle Bay (Area A) and the other (Area B) extending east from Portmarnock Beach into the Irish Sea. The total combined MUL Area encompasses an area of 748.6 ha. Area A is within Baldoyle Bay between the high water mark (HWM) running adjacent to the R106 on the west of Baldoyle Bay and the HWM on the east of Baldoyle Bay adjacent to the Portmarnock Golf Club. This encompasses an area of 35 ha. Area B extends east into the Irish Sea from the HWM at Portmarnock Beach. This encompasses an area of 713.6ha. Drawings illustrating the MUL Area and the proposed locations of the SI works are included in Section 2 of the MULA Project Description.

The activities proposed to be carried out within the MUL Area are summarised in **Table 5-1** and **Table 5-2** below.

Table 2-1 Proposed SI works Activities

Survey Type	Survey Elements (indicative equipment)	MUL Area Applicable to Survey Type	
		Baldoyle Bay	Irish Sea
Land-based Geophysical Surveys	Seismic Refraction, GPR or Electrical Resistivity Tomography (ERT)	Yes	N/A
(below HWM, undertaken at Baldoyle Bay at low tide)	Topographical land surveying techniques.	Yes	N/A
Marine Bathymetric surveys (undertaken from survey vessel)	Multi Beam Echosounder (MBES)	Yes	Yes
	Side Scan Sonar (SSS)	Yes	Yes
	Vessel Positioning System: Ultra short baseline (UBSL)	Yes	Yes
Marine Geophysical Surveys	Ultra-High Resolution Seismic (UHRS), boomer or sparker	Yes	N/A
	Sub-bottom profiler (SBP)	Yes	N/A
(undertaken from survey vessel)	Vessel Positioning System: UBSL	Yes	Yes
Marine Geomagnetic Surveys (undertaken from survey vessel, no acoustic signal)	Magnetometer	Yes	Yes
Marine Geotechnical Surveys	Rotary core boreholes	N/A	Yes
(undertaken from survey vessel(s) or jack-up barge; JUB)	Cone penetration testing (CPT) at borehole locations.	N/A	Yes
Land-based Geotechnical Surveys	Rotary core boreholes	Yes	N/A
	Cone penetration testing (CPT) at intertidal borehole locations.	Yes	N/A

Survey Type	Survey Elements (indicative equipment)	MUL Area Applicable to Survey Type	
		Baldoyle Bay	Irish Sea
(below HWM, accessed from land and undertaken using a rig)			
Marine Environmental Surveys (undertaken from survey vessel(s))	Drop-down video (DDV) and/or Remotely Operated Vehicles (ROV) survey.	N/A	Yes
	Grab sampling	N/A	Yes
	Water Quality Samples, including Conductivity, Temperature and Depth (CTD) Measurements.	N/A	Yes

The drawings prepared in support of the MULA are included in the Project Description document. As described in more detail in the Project Description document, the proposed locations shown in the figures and drawings are subject to refinement based on the results of the bathymetric, geophysical and environmental surveys. Similarly, the location may be moved due to the presence of obstructions/ refusals at individual locations, i.e. where a physical object, e.g. a subsurface boulder, prevents the borehole, CPT, etc., from going to its target depth. In such circumstances, the borehole location is moved to another nearby location away from the obstruction and drilled again to the target depth.

Uisce Éireann are seeking a MUL for a period of three years from the date of the granting of any licence. Although the majority of the SI works are expected to take 8 weeks to complete, bathymetric surveys may be repeated yearly to ensure that seabed conditions have not changed prior to construction.

3 NEEDS AND ALTERNATIVES

These SI works are required to inform the construction stage, the detailed engineering design of the marine elements of the GDD project and to provide baseline data for any preconstruction and monitoring assessments. Information collected by the SI works will support the overall GDD project in its aim to upgrade and provide additional wastewater infrastructure for the Greater Dublin Area. Therefore, this MUL represents a critical step towards meeting the current and future wastewater treatment demand within the Greater Dublin Area.

Current wastewater assets in the Greater Dublin Area (GDA) are operating at—or above—design capacity. Without timely investment, wastewater treatment constraints will threaten housing delivery, commercial development, environmental statutory obligations, and our climate resilience commitments.

Some of the key drivers for the GDD project are set out below;

- **Strategic Alignment and Policy Mandate**
    - Inclusion in National Frameworks: GDD is explicitly identified in both the National Planning Framework (NPF) and the National Development Plan (NDP, 2018–2027 and 2021–2030 update) as an essential infrastructure project.
    - Compliance with EU Directives: GDD is critical to fulfilling Ireland's obligations under the Urban Wastewater Treatment Directive (UWwTD) and the Water Framework Directive (WFD), securing high-quality discharges and protecting our rivers, coast, and marine environment.
    - Climate Action and Sustainability: By providing modern, energy-efficient treatment facilities and network resilience, GDD advances national climate adaptation policy and sustainable resource use.
- **Capacity, Resilience, and Growth**
    - Additional Treatment Capacity: The project will deliver 500,000 population-equivalent (PE) treatment capacity at a new Clonshaugh Wastewater Treatment Plant (WwTP), easing pressure on the Ringsend facility, which is forecast to be depleted between 2028-2030
    - Network Resilience: Construction of a 14 km orbital sewer and an 11 km offshore outfall pipeline ensures redundancy and operational flexibility, minimizing the risk of system overload and environmental incidents during extreme weather events.
    - Unlocking Development: Wastewater connection requests are assessed on a case-by-case basis. By 2028 Uisce Éireann will be unable to grant new connections to the wastewater network in major parts of the Greater Dublin Area, stalling critical housing, commercial, and social infrastructure projects.

The Greater Dublin Drainage Project is a strategic enabler of Ireland's national development, environmental stewardship, and climate resilience. We urge your continued support and expedited approvals to ensure the project can progress as soon as practicable. Timely delivery will safeguard our statutory obligations, unlock sustainable growth across the GDA, and secure long-term value for the State and its citizens.

With regards to alternatives considered, there are no alternatives to undertaking site investigations, and environmental surveys and investigations. This information is critical to the construction stage and the engineering design of the GDD project.

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 use methods and equipment which align with the parameters of the standard equipment described in the Project Description 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 Proposed Urban Wastewater Treatment Directive (EC: 27 October 2022) (recast)

The Recast Directive proposes to bring in changes to increase the standard of wastewater treatment required across the EU and supports the transition towards a circular economy and energy neutrality by 2040. The Recast Directive proposes, amongst other matters, to add the objective of nutrient recovery, and tighten phosphorus removal requirements for sewage works.

The GDD Project has the potential to support any additional treatment infrastructure required to meet the requirements of the Recast Directive. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment.

4.2 Uisce Éireann Capital Investment Plan 2020-2024

The Capital Investment Plan 2020-2024 is Uisce Éireann's five-year investment plan for water and wastewater assets and infrastructure to 2024. Uisce Éireann is regulated from an economic perspective by the Commission for Regulation of Utilities (CRU) and from an environmental perspective by the EPA.

Table 2 (Allocation of Funding across Portfolio by Priority) of the Capital Investment Plan 2020-2024 also identifies the GDD Project as a 'Strategic – Significant Project' for which funding is mandated to address the risk of growth constraints in the GDA and Eastern-Midlands region. As of 2025, approximately 85% of the Capital Investment Plan has been allocated to projects where planned works are either complete or in active construction including the GDD project where planning was granted in July 2025. As part of the draft capital Investment Plan 2025-2029, with respect to the GDD project, it will continue under the "critical intergenerational" status. Most of the enabling works will be complete and major civil works will commence.

The GDD Project will provide wastewater services to the GDA and is outlined as a significant strategic project within the Uisce Éireann Capital Investment Plan 2020-2024. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment. The GDD Project will assist in addressing the capacity constraints within the region and is required to facilitate the future sustainable development of the GDA. The GDD Project will be capable of being upgraded in the future, as may be required to comply with the anticipated UWWTD Recast Directive.

4.3 Uisce Éireann Strategic Funding Plan 2025-2029

This Strategic Funding Plan 2025-2029 is underpinned by an ambitious and comprehensive Capital Investment Plan. It lays out the opportunities for Uisce Éireann to make necessary, multi-generational improvements to water and wastewater infrastructure. It is targeted at enhancing the health and quality of life, protecting our environment, benefiting communities and is critical for growth and development across Ireland.

The GDD Project will support the increasing network and treatment capacity required, particularly in the GDA. The GDD Project will provide capacity to treat wastewater for up to half a million people in north county Dublin and parts of Kildare and Meath. As such, the proposed SI works will support the

development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment and support much need development.

4.4 Water Services Policy Statement 2018-2025

National policy for the delivery and development of water and wastewater services is set out in the Water Services Policy Statement 2018-2025, published by the DHLGH. The GDD Project will provide additional wastewater treatment infrastructure to the GDA, which will ensure there is capacity to facilitate the further population and economic growth of the GDA.

The GDD Project has been outlined as an investment priority within capital investment plans, and its implementation will ensure that wastewater services' infrastructure is resilient to the future growth of the region. As such, the proposed SI works will support the development of the GDD Project. It will provide much needed wastewater services infrastructure that will ensure the region is adequately served as it continues to develop in line with growth projections, and particularly in respect of the growth of the GDA as a strategic centre and will limit the environmental risk posed by the lack of existing capacity within existing WwTPs and associated infrastructure. This will ensure capacity deficits are met, and constraints to future development are removed.

4.5 National Development Plan 2021-2030

Project Ireland 2040 – The National Development Plan (NDP) 2021-2030 accompanies Project Ireland 2040 - National Planning Framework in setting out investment priorities that underpin the implementation of the NPF and which aims to balance significant demand for public investment across all sectors and regions of Ireland. As of July 2025, the revised NDP sets out a review of infrastructure strategy which includes a €4.5 billion share to UÉ where €2.5 billion is allocated to large scale water infrastructure projects. GDD is listed as a major capital project for wastewater within the NDP.

The considerable investment in public wastewater infrastructure represented in relation to the implementation of the GDD Project will deliver critical outcomes for customers and communities across the strategic objective themes of Quality, Conservation and Future Proofing, as well as ensuring that the legislative and regulatory requirements such as the UWWTD are met. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment.

4.6 Water Quality and Water Services Infrastructure - Climate Change Sectoral Adaptation Plan

The Water Quality and Water Services Infrastructure Climate Change Sectoral Adaptation Plan was prepared by the Department of Housing, Planning and Local Government (DHPLG) under the NAF.

The GDD Project will comprise a new WwTP which has been located and designed to ensure resilience and adaptation to climate change risks, whilst also ensuring that future wastewater provision for the area is climate-proofed and meets legislated water quality thresholds. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment. A risk assessment was completed to determine the risk of extreme weather events. This assessment determined that this risk category did not present a sufficient combination of risk

and consequence that would lead to significant residual impacts or environmental effects. In addition, the design of the GDD Project will comply with the appropriate building regulations and standards.

4.7 National Marine Planning Framework

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

Ireland's Marine Spatial Plan is called the *National Marine Planning Framework* (NMPF) and was published in 2021. The NMPF, which applies to a maritime area of approximately 495,000 km², outlines a vision for the future development of Ireland's marine planning system up to 2040.

The NMPF lists a total of 14 sectors / activities, and correspondingly, sectoral marine planning policies (SMPPs) are provided for these specific marine activities. The SMPPs that are regarded as being of direct relevance to the proposed SI works, are within Chapter 24: 'Wastewater Treatment and Disposal', which are further outlined below.

Table 4-1 Consistency of the GDD project with the NMPF

Wastewater Treatment and Disposal	
Wastewater Treatment and Disposal Policy 1	The NMPF outlines its support for proposals that will service economic and social development and have regard to environmental issues. The GDD Project is aligned with this statement, as it will provide much needed wastewater services infrastructure that will ensure the region is adequately served as it continues to develop in line with growth projections, and particularly in respect of the growth of the GDA as a strategic centre, and will limit the environmental risk posed by the lack of existing capacity within existing WwTPs and associated infrastructure. This will ensure capacity deficits are met, and constraints to future development are removed. In addition, the proposal contains the provision for energy recovery from sludge waste, which will assist in the transition away from dependency on fossil fuels to a low carbon economy. This MUL is required in order to carry out detailed surveys and investigations to progress the GDD project construction stage and engineering design in support of the above.
Wastewater Treatment and Disposal Policy 2	The GDD Project has also been shown to be aligned with the provisions contained within other relevant plans and associated policies / objectives, as identified in the NMPF 'Wastewater Treatment and Disposal' Policy. The development of the GDD Project will complement the upgrade of the Ringsend WwTP and a number of other WwTPs within the GDA, as the expansion of these existing plants beyond their ultimate capacity is also limited by site constraints and receiving water constraints. This would therefore assist in ensuring that Ireland is increasingly more compliant with Directive

Wastewater Treatment and Disposal	
	2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (hereafter referred to as the Water Framework Directive (WFD)) through the high standard of treatment proposed and subsequent discharge of wastewater in compliance with licencing requirements. This MUL is required in order to carry out detailed surveys and investigations to progress the GDD project construction stage and engineering design in support of the above.

The GDD Project has been shown to be aligned with the provisions contained within other relevant plans and associated policies / objectives, as identified in the NMPF 'Wastewater Treatment and Disposal' Policy. The proposed SI works are therefore consistent with the overall objectives and policies of the NMPF.

4.8 National Maritime Area Planning Act

Maritime Area Planning Act (hereafter referred to as the MAP Act), is the new legislative framework for forward planning, development management and enforcement in Ireland's offshore area was signed into law on 23 December 2021 (and revised in 2022 (updated to 1 October 2022 [Number 50 of 2021])). This legislation underpins the NMPF and puts in place a comprehensive and coherent planning system for the entire Maritime Area.

Uisce Éireann will ensure that it obtains and complies with all necessary authorisations as are required relative to construction within the maritime area. It was determined that a MUL was required to carry out additional SI works which will inform the construction stage and detailed engineering design in support of the GDD Project.

4.9 Draft Water Services Guidelines for Planning Authorities

The Draft Water Services Guidelines for Planning Authorities (DHPLG, 2018) emphasise the importance of Planning Authorities ascertaining the current position with regard to water services when preparing a plan.

The GDD Project will provide additional wastewater services capacity to the GDA, ensuring that capacity deficits are addressed. In turn, this will allow for the social and economic development of the GDA to continue as planned, as it will not be constrained by inadequate wastewater services infrastructure. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment.

4.10 River Basin Management Plan for Ireland 2022-2027

The River Basin Management Plan 2022-2027 is a national plan that aims to protect and restore good water quality in our rivers, lakes, estuaries, groundwater and coastal waters and is produced in the implementation of the WFD.

The GDD Project will directly assist in realising provisions of the River Basin Management Plan, as it will provide additional wastewater services infrastructure and capacity to a rapidly growing region that is currently constrained by inadequate infrastructure. The provision of these improved wastewater services will ensure a wastewater discharge that will be compliant with licence requirements to coastal waters, ensure a high quality of water treatment, ensuring the water quality of the surrounding waters will not be negatively impacted by inadequately treated wastewater discharges. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment.

4.11 Biodiversity Action Plan

The Uisce Éireann Biodiversity Action Plan, sets out a national programme of measures to help conserve, enhance and work with the natural environment and Ireland's biodiversity, as well as the strategic aims and actions which will be undertaken to achieve them.

The GDD Project will ensure that existing environmental and associated biodiversity risk posed by the lack of existing capacity within existing WwTPs and associated infrastructure, will be reduced and improved. As such, the proposed SI works will support the development of the GDD Project, which in turn will contribute to increasing the standard of wastewater treatment.

5 LAND AND SOILS

5.1 Assessment of Impact

The land and soils of the MUL Area are described within this section and include estuarine, beach and seabed sediment. For the purpose of this report, the two MUL Areas (Baldoyle Bay MUL Area and Irish Sea MUL Area) are assessed separately regarding the impacts on land and soils. It should be noted that marine sedimentary habitats are discussed in further detail under the Biodiversity chapter (see **Chapter 7**).

5.1.1 Baldoyle Bay MUL Area (Area A)

The bedrock geology of the terrestrial zones in and around the MUL Area at Baldoyle Bay and Portmarnock Beach are predominantly underlain by Palaeozoic, Carboniferous, Mississippian and Argillaceous dark-grey bioclastic limestone with subsidiary shale. At the mouth of Baldoyle Bay the bedrock geology is Calcareous shale, limestone conglomerate.

In the transition between the terrestrial and marine environments the Quaternary Sediments are expected to include windblown sands and dunes, marine beach sands, estuarine silts and clays, and till derived from limestones. The pre-Quaternary terrestrial bedrock within and adjacent to the MUL Area is Carboniferous bedrock[1].

Data from previous UÉ surveys in Baldoyle Bay determined Fossitt habitat types of predominantly LS4 mud shores in the majority of the estuary, but some lower salt marsh (CM1) on the western bank within the MUL Area and CM1 lower salt marsh/CM2 upper salt marsh on the eastern bank of the MUL Area (Benthic Solutions Ltd., 2023).

The land-based geophysical surveys within Baldoyle Bay have the potential to temporarily disturb land and soils as they will be conducted on the mudflat, sandflat and estuarine sediments within Baldoyle Bay with bog mats used for access/egress from these locations. The land-based geotechnical works within Baldoyle Bay will involve 4no. boreholes, which will remove sediment and have the potential to disturb land and soils through bog mats being used for access.

The areas and the volumes of material likely to be disturbed and/or removed from the Baldoyle Bay MUL Area are summarised in Table 5-1. The total area of sediment to be removed and/or disturbed is 3800 m^2, equating to just over 1% of the total MUL Area A within Baldoyle Bay.

[1] EMODnet Map Viewer accessed July 2025

Table 5-1 Summary of SI Works with Potential to Disturb / Remove Sediment in Baldoyle Bay (Area A)

Activity	Maximum Quantity*	Unit Area m^2	Disturbed Area m^2	% of MUL Area A (0.35 km^2)	Unit Volume Disturbed m^3	Maximum Volume Removed m^3
Geotech Boreholes Baldoyle Bay (102mm dia x 20m deep)	4	0.008	0.033	0.000009%	0.16	0.65
Bog Mat (assume 1m long x 5m wide x 0.1m deep) x 500m track	1	2500	2500	0.71%	0	0
Total	**N/A**	**N/A**	**3800**	**1.09%**	**N/A**	**0.65**

In Baldoyle Bay, 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 access to/from investigation locations. Furthermore, it is anticipated that bog mats will be used by plant and machinery to minimise ground disturbance. Any impacts will be localised to the tracking areas of the machines and investigation locations, e.g. boreholes. Once the equipment and machinery are demobilised, it is anticipated that any negative impacts will be fully reversible. The top layer of sediments will be subject to regular tidal movements within a dynamic marine environment of the estuary and there is anticipated to be a rapid recovery of the sediments over a number of tidal cycles. Saltmarsh habitats will be avoided where possible and the use of bog mats will minimise impacts to soils.

5.1.2 Irish Sea MUL Area (Area B)

In order to understand the marine sediment types likely to be encountered, the boundary of the MUL Area was reviewed against EUSeaMap, a broad-scale predictive seabed map for Europe (EMODnet, 2025). In the Irish Sea portion of the MUL Area, there is a band of moderate energy infralittoral sand (MB52), moderate and high energy shallow circalittoral coarse sediment (MC32) extending from the nearshore to further offshore.

Intrusive surveys in Area B which have the potential to interact with the land and soils (marine sediments) are grab samples and boreholes. The areas and the volumes of material likely to be sampled and/or removed from the Irish Sea MUL Area are summarised in **Table 5-2**.The SI works will be limited to the proposed sampling locations which will target relatively small areas of sediment (0.1 m^2 per grab sample and 0.08 m^2 per borehole). Less than 0.01% of the sediments within MUL Area B will be removed and/or disturbed. The Irish Sea is a dynamic and exposed marine environment, and as such, it is expected that sediments will recover within a small number of tidal cycles.

Impacts due to suspension and re-settling of sediments will be negligible as sediments are expected to settle out of suspension close to sampling locations. Impacts associated with accidental pollution from survey vessels is expected to be negligible as all vessels will adhere to international conventions and national legislation that prevents the pollution of the marine environment by ships from operational or accidental causes, i.e. MARPOL and The Sea Pollution Act (1991).

Table 5-2 Summary of SI works with potential to disturb / remove sediment in the Irish Sea (MUL Area B)

Activity	Maximum Quantity*	Unit Area m^2	Disturbed Area m^2	% of MUL Area B (7.136 k m^2)	Unit Volume Disturbed m^3	Maximum Volume Removed m^3
Marine environ surveys (12 stations with up to 4 grabs @ each station x 0.1m^2)	48	0.1	4.8	0.000067%	0.015	0.7
Geotech Boreholes the Irish Sea (102mm dia x 20m deep @10 locations)	10	0.008	0.08	0.000001%	0.16	1.6
JUB legs (4 legs x max 3m^2 each @ 10 locations)	10	12	120	0.0017%	N/A	N/A
Total	**N/A**	**N/A**	**124.88**	**0.001750%**	**N/A**	**2.35**

5.1.3 Mitigation

- Suitable access tracks to reduce loading i.e. bog mats. These will be used at access/egress areas for the land-based geophysicaand geotechnical surveys within Baldoyle Bay where transversing areas of salt meadow habitat is required.

5.1.4 Conclusion

Taking into consideration the nature, scale and duration of the SI works, and the implementation of the measures specified above, 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 MUL Area 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 MUL Area[2].

Waterbody	Type	EPA Ref	Status
Mayne Estuary	Transitional	IE_EA_080_0100	Moderate
Irish Sea Dublin (HA 09)	Coastal	IE_EA_070_0000	Good

The SI works will have minimal impact on water quality as they will not result in direct discharges to the water column. The proposed SI works involve 14 borehole samples within the MUL Area; four in Baldoyle Bay (MUL Area A) and ten in the Irish Sea (MUL Area B). There will be no grab samples taken within Baldoyle Bay. Intrusive geotechnical boreholes and grab sampling works may give rise to the mobilisation of sediment resulting in localised increased SSC in the water column. 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, impacts associated with the proposed SI works will be very limited in area, i.e. the width of a borehole, and grab sample. The quantity of sediment that enters the water column will not be in large enough quantities to significantly impact water quality or aquatic habitats/species.

The proposed SI works locations are 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.

There is one blue flag beach located within MUL Area at Velvet Strand (Portmarnock Beach)[3]. Velvet Strand was awarded an excellent annual water quality rating in the EPA (2025) report on bathing water quality status at beaches monitored and managed under the Bathing Water Regulations in Ireland. While the proposed MUL Area overlaps Velvet Strand in Portmarnock, no intrusive works will be undertaken on the beach, and activity is likely to be limited to access only. One borehole will be drilled approximately 80 m from shore at Portmarnock (MUL Area B), while the nearest grab sample will be collected within approximately 800 m from shore, there will be no interaction between the geotechnical SI works and Portmarnock Beach therefore no impact on water quality.

All vessels operating in the marine environment must adhere to the International Convention for the Prevention of Pollution from Ships (MARPOL) which is the primary 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

[2] EPA Maps accessed June 2025

[3] Ireland's Marine Atlas accessed June 2025

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.

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

6.1.1 Mitigation

None proposed beyond standard legal and regulatory requirements that apply to all vessels.

6.1.2 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. Overall, the SI works will not lead to the mobilisation of contaminated sediments, there will be no significant quantities of sediment resulting in increased SSC, and vessels must operate in accordance with legislation and regulations preventing marine pollution.

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: 10028814-RPS-MO-XX-RP-E-RP0083), the Supporting Information for Screening for Appropriate Assessment (SISAA) (ref: 10028814-RPS-MO-XX-RP-E-RP0082) and the Subsea Noise Technical Report (ref: 10028814-RPS-MO-XX-RP-E-RP0085).

7.1.1 Habitats

The MUL Area spans a total area of 748.6 ha and is split between Baldoyle Bay and the area of the Irish Sea where the GDD marine outfall will be located. The MUL Area intersects with the following SACs designated for Annex I habitats: Baldoyle Bay SAC, Rockabill to Dalkey Island SAC and Irelands Eye SAC. As a result, the SI works have the potential to interact with habitats that are the Qualifying Interests (QI) of these SACs.

Significant effects due to the introduction of marine 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.

7.1.1.1 Baldoyle Bay MUL Area (Area A)

Annex I habitats identified within and adjacent to Area A of the MUL Area are Mudflats and sandflats not covered by seawater at low tide (1140), *Salicornia* and other annuals colonising mud and sand (1310), Atlantic Salt Meadows (*Glauco-Puccinellietalia maritimae*) (1330) and Mediterranean salt meadows (*Juncetalia maritimi*) (1410), as illustrated in the NPWS Baldoyle Bay Conservation Objectives Series Report[4]. There was no data available for the Baldoyle Bay benthic sediment on the EUSeaMap, however, data from previous surveys of the estuary determined Fossitt habitat types of predominantly LS4 mud shores in the majority of Baldoyle Bay, but some lower salt marsh (CM1) on the western bank within the MUL Area and CM1 lower salt marsh/CM2 upper salt marsh on the eastern bank of the MUL Area (Benthic Solutions Ltd., 2023).

[4] Baldoyle Bay SAC Conservation Objectives Series Report accessed July 2025

Boreholes and land-based geophysical surveys within Baldoyle Bay SAC have the potential to interact with the habitats identified above. Geotechnical boreholes are intrusive and have the potential to remove and/or disturb sedimentary habitats within Baldoyle Bay. Four boreholes will be excavated within Baldoyle Bay. Intrusive surveys (boreholes) within Baldoyle Bay have the potential to directly remove, alter or fragment the habitats, including Annex I habitat QIs at Baldoyle Bay SAC. Land-based geophysical surveys will require access/egress within Baldoyle bay which may involve crossing Annex I habitats listed above on foot. Therefore, there is potential for habitat loss, fragmentation and/or alteration due to the geotechnical and land based SI works within Baldoyle Bay. The accompanying SISAA report assesses the potential for likely significant effects to European sites. The proposed SI works will take place within the QI mudflats and sandflats not covered by seawater at low tide of Baldoyle Bay SAC and adjacent to Mediterranean and Atlantic salt meadow habitat at each access area to the west and east of Baldoyle Bay. The boat-based bathymetric and geophysical surveys will involve a small nearshore vessel within the Bay utilising techniques that do not physically interact with habitats. .

7.1.1.2 Irish Sea MUL Area (Area B)

The MUL Area B does not overlap with Irelands Eye SAC, which is less than 1 km south of the MUL Area. Annex I habitats within this SAC include perennial vegetation of stony banks (1220) and vegetated sea cliffs of the Atlantic and Baltic coasts (1230) (NPWS, 2011a). As all the proposed SI works within the Irish Sea will be conducted below the HWM and just under 1 km away, there will be no interaction with the QIs perennial vegetation of stony banks and vegetated sea cliffs of the Atlantic and Baltic coasts and the proposed SI works.

The boundary of MUL Area B was reviewed against EUSeaMap, a broad-scale predictive seabed habitat map for Europe[5]. Parallel to Portmarnock Beach there is a band of moderate energy infralittoral sand (MB52), moderate and high energy shallow circalittoral coarse sediment (MC32). Annex I habitats identified within and adjacent to Area B of the MUL Area are Reefs (1170). This QI is illustrated in the NPWS Rockabill to Dalkey Island SAC Conservation Objectives Series Report[6].

The following survey activities which will take place within the Irish Sea MUL Area and have the potential to interact with Annex I Reefs, leading to habitat loss or damage: geotechnical surveys (boreholes) and marine environmental surveys (grab samples). These investigations are intrusive and have the potential to remove and/or disturb sedimentary habitats within the Irish Sea. Ten boreholes will be completed in the Irish Sea MUL Area, while a maximum of 48 grab samples will be collected within the Irish Sea, which includes four grabs collected at each location: three for faunal analysis and one for sediment analysis. Although intrusive surveys within Area B have the potential to directly remove, alter or fragment the habitats, including Annex I habitat QIs at Rockabill to Dalkey Island SAC, based on NPWS mapping and previous benthic survey results carried out in support of the GDD Project Planning Application, it is not anticipated that Annex I reef habitats will overlap with MUL Area B. As a precautionary measure, Annex I reef habitats as mapped by the NPWS will be avoided by implementing a 100m exclusion zone. As an additional precautionary measure, prior to deployment of grabs or borehole equipment, on-board sonar and echosounders will be used to provide backscatter data which will allow marine surveyors to identify seabed conditions (i.e. sediment/reef) to ensure suitability for proposed activities. The potential for adverse effects to these habitats will be considered in more detail in the Natura Impact Statement (NIS).

[5] EMODnet Map Viewer accessed June 2025

[6] Rockabill to Dalkey Island SAC Conservation Objectives Series Report accessed July 2025

There is also potential for the increased SSC and subsequent smothering of sensitive habitats such as Annex I Reefs, although given the high energy marine environment of the Irish Sea, it is likely that the small amounts of sediments disturbed by each sample will settle out of suspension quickly. Therefore, smothering of sensitive habitats is unlikely. 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.

MUL Area B overlaps a small section of reef habitat to the northwest of Irelands Eye, however the proposed SI works will not interact with this habitat type, due to mitigation as described above. Any SSC arising from the SI works will be insignificant in terms of the existing dynamic marine conditions and will rapidly disperse.

7.1.1.3 Habitats Conclusion

Any SSC arising from the SI works will be insignificant in terms of the existing dynamic estuarine and marine conditions and will rapidly disperse. Therefore, smothering of the QI is unlikely to result in negative impacts. Intrusive investigations (geotechnical boreholes and land-based geophysical surveys) in Baldoyle Bay MUL Area have the potential to impact Mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, Atlantic salt meadows and Mediterranean salt meadows by intrusive survey techniques and via access on bog mats at each borehole location. However it is anticipated that these salt meadow habitats will quickly recover and will return to their natural state once bog mats and equipment are removed. 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.

7.1.2 Otter

A desk-based study utilising records from NBDC (2025)[7] indicated that otter (*Lutra lutra*) has been sighted in the last 10 years adjacent to the MUL Area. Two live otter sightings were recorded in 2022, approximately 90 m from MUL Area A, while a dead otter was recorded on the western bank of the estuary in 2017. It is therefore reasonable to conclude that otters may be present in the vicinity of the MUL Area. There are 45 SACs designated for otter in Ireland, but none of these are located within 20 km of the MUL Area (considered as a precautionary coastal range for otter). The Wicklow Mountains SAC (IE002122) is located 21 km to the southwest of the MUL Area, however there is no pathway for connectivity as otter from this SAC would have to cross Dublin City to be present in the MUL Area during the proposed SI works. Given the distance between the SAC and the MUL Area, and the availability of more suitable habitat in closer proximity to the SAC. There is no pathway for connectivity between otters of this SAC and the proposed SI works.

7.1.2.1 Baldoyle Bay MUL Area (Area A)

Intrusive sampling works within Baldoyle Bay will not interact with otter holts or couches as these are not likely to be within estuaries 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.

As otter are typically most active at night, it is considered unlikely that otter will be present during surveys which will take place during daylight hours. The geotechnical surveys (boreholes) within Baldoyle Bay

[7] Biodiversity Maps Otter accessed June 2025

have the potential to emit above-water noise and vibration beyond baseline levels on land. However, given the limited number of samples to be retrieved (four boreholes within the Bay) any disturbance caused is likely to be temporary and limited in nature.

Vessels emitting underwater noise during geophysical and bathymetric surveys will be within the seaward foraging range of otters (80 m from shore) during surveys in MUL Area A. The Subsea Noise Technical Report concluded, on a highly precautionary basis that auditory injury to otters could occur within <10 m of the sound source for all proposed SI activities. However, in the 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. Impacts to otters due to the proposed SI works will be negligible.

7.1.2.2 Irish Sea MUL Area (Area B)

The geotechnical investigations to be conducted within the Irish Sea will be at least 80 m from shore. As otter tend to forage within 80 m of the shoreline (NPWS, 2009[8]), there is potential for disturbance to foraging otter due to underwater noise and vibration from the nearshore borehole within the Irish Sea, as well as underwater noise generated during the bathymetric surveys. The Subsea Noise Technical Report concluded that, in the absence of mitigation, the bathymetric and geotechnical surveys within MUL Area B have the potential to cause auditory injury to otters within <10 m of the sound source.

It is unlikely that survey vessels emitting underwater noise will be within overlap with foraging otters off Portmarnock Beach, however in the 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. Therefore, impacts to otters due to the proposed SI works will be negligible.

7.1.2.3 Otter Conclusion

Given the distance between the MUL Area and the closest SAC with otter as a designated QI, it is unlikely that there is a pathway of connectivity between otters of that SAC and the proposed SI works. In the unlikely event that otter is present, auditory injury risk ranges will be limited to within <10 m of the sound source for all survey activities. The presence of the vessel is expected to act as a visual deterrent to otter, and therefore, impacts to otters due to the proposed SI works will be negligible.

7.1.3 Marine Mammals

The Irish Sea supports a great diversity and abundance of marine mammals, including the following species listed on Annex II of the Habitats Directive and which are therefore QI of certain SACs: harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*). More detailed desk studies of marine mammal abundance and distribution in the waters surrounding the MUL Area are provided in the Risk Assessment for Annex IV Species report (ref: 10028814-RPS-MO-XX-E-RP0083) and the SISAA (ref: 10028814-RPS-MO-XX-E-RP0082).

[8] *Lutra lutra* conservation status assessment report (NPWS) accessed July 2025

7.1.3.1 Baldoyle Bay MUL Area (Area A)

It is considered highly unlikely that marine mammals utilise Baldoyle Bay. There have been no live sightings of marine mammals recorded further inland than the mouth of the estuary[9]. Given more suitable habitat and prey opportunities within the Irish Sea, it is unlikely the proposed SI works within Baldoyle Bay would overlap with important habitats or foraging areas for marine mammal species.

However, as there is the potential for underwater noise generated during the geophysical, bathymetricand geotechnical surveys within Baldoyle Bay, underwater noise modelling was carried out to understand the risks of 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 within Baldoyle Bay when the SBP and UHRS are active, in the absence of mitigation, bottlenose dolphins and seals could experience auditory injury within <10 m of the sound source and TTS could occur within 190 m and 400 m respectively. For harbour porpoise, auditory injury could occur within 270 m of the sound source while TTS could occur within 1.1 km.

For geotechnical survey within Baldoyle Bay, in the absence of mitigation, bottlenose dolphin and seals could experience auditory injury within <10 m of the sound source and TTS could occur within 24 m and 240 m respectively. For harbour porpoise auditory injury could occur within 10 m and TTS could occur within 600 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 1.3 km for the geophysical surveys within Baldoyle Bay where SBP and UHRS are active,

In summary, without mitigation applied, auditory injury could in theory occur out to 270 m from the sound source for harbour porpoise while for all other species injury could occur <10 m. As stated, it is considered highly unlikely that marine mammals use Baldoyle Bay, however, as a precaution a pre-activity search will be conducted by a marine mammal observer (MMO) to establish the 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 minimised to the lowest level possible 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).

7.1.3.2 Irish Sea MUL Area (Area B)

Grey and harbour seals utilise adjacent areas of the Irish Sea MUL Area as haul-out sites, these include: Irelands Eye and Howth Head (NBDC, 2025[10]), while the closest SAC for both grey seals and harbour seals is Lambay Island SAC (IE000204), 7 km north of the MUL Area. Both seal species remain in favourable conservation status in Ireland (NPWS, 2019). There will be no direct habitat loss, alteration and/or fragmentation to seal haul out sites as the SI works do not spatially overlap any European site designated for harbour or grey seals. The proposed SI works overlap Rockabill to Dalkey Island SAC

[9] Biodiversity Maps Baldoyle Bay marine mammal records accessed July 2025

[10] Biodiversity Maps grey and harbour seal accessed July 2025

(designated for harbour porpoise), therefore there is potential for interaction between the proposed SI works and supporting habitats for harbour porpoise.

There is potential for benthic habitat loss due to intrusive sampling methodologies (grab sampling and boreholes) and water quality deterioration from survey activities or survey vessels, leading to impacts on marine mammals or smothering of benthic and pelagic prey species due to increased SSC. MUL Area B is in an exposed location within the Irish Sea, and benthic habitats in the area are generally high energy (see Section 5.1.2), therefore it can be expected that habitats will recover quickly from relatively limited sediment extraction, suspension and settling of sediment. As such, it is reasonable to assume 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 limited (maximum of 48 grab samples and 10 boreholes within the Irish Sea section of the MUL Area), therefore there will be an abundance of alternative foraging habitat and prey sources available for temporarily displaced foraging marine mammals. While the precise sampling locations are not known, they will be within the MUL Area B, and regardless of the location of sampling, the conclusion remains the same.

There is the potential for underwater noise generated during the geophysical, bathymetric 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 within the Irish Sea, in the absence of mitigation, bottlenose dolphins and seals could experience auditory injury within <10 m of the sound source and TTS could occur within 180 m and 1.3 km respectively. For harbour porpoise auditory injury could occur within 150 m of the sound source while TTS could occur within 11 km, in the absence of mitigation.

For geotechnical survey within the Irish Sea for a large vessel, in the absence of mitigation, bottlenose dolphin and seals could experience auditory injury within 10 m of the sound source and TTS could occur within 270 m and 10 km respectively. For harbour porpoise auditory injury could occur within 10 m and TTS could occur within 13 km in the absence of mitigation.

When applying criterion for behavioural disturbance strictly (i.e. unweighted for the hearing abilities of different marine mammals), behavioural disturbance ranges could occur to 20 km or more (for all Irish Sea surveys). As this is unweighted for the hearing groups and as such, is considered to be highly precautionary, as low frequency drilling noise is likely to be below the hearing range of seals, dolphins and harbour porpoise. 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.

In summary, without mitigation applied, auditory injury ranges for all Irish Sea surveys could occur out to <10 m of the sound source. TTS risk ranges can exceed 10 km for the geotechnical (large vessel) survey for harbour porpoise with vessel noise driving this range. Depending on the actual vessel speed and use of thrusters this range will likely be reduced, the 24-hour potential active survey durations used in the modelling contribute to the large TTS range, which allows received levels of TTS to build up over time and therefore exceed the TTS thresholds. Therefore, the TTS risk ranges are highly precautionary and most likely an over-estimation.

A pre-activity search will be conducted by a marine mammal observer (MMO) to establish the 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).

One vessel will be operating within the Irish Sea MUL Area for a maximum of 4 to 6 weeks (for the bathymetric and geotechnical surveys and 2 to 3 days for the marine environmental surveys). For the bathymetric surveys, the vessel will be travelling in a predefined trajectory. It is considered that this will allow animals to predict the movement of the vessel and therefore avoid collisions. It is likely that the other survey vessels (i.e. benthic survey vessels and geotechnical survey vessel) will be stationary for extended periods throughout their operations which will reduce the potential for collision with these vessels. As stated in Section 12 the area supports reasonably high levels of baseline marine traffic, with fishing boats and pleasure craft traversing the MUL Area to access various ports and harbours in the region (i.e., Howth Harbour or Malahide Marina). 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 MUL Area. There is therefore a very low risk of a collision occurring.

7.1.3.3 Marine Mammals Conclusion

Taking into consideration the nature of the SI works, there could be potential impacts on marine mammals as a result. While there is no potential for habitat loss or alterations to prey species populations, there is the potential for underwater noise generated during the geophysical, bathymetric and geotechnical surveys to result in injury and/or disturbance to marine mammals within the MUL Area. Given the current level of fishing and passenger vessel traffic in the MUL Area, it is probable that marine mammals present in the MUL Area are habituated to marine traffic and will therefore avoid collisions with vessels.

7.1.4 Migratory Fish

The proposed SI works do not overlap with European sites designated for relevant Annex II diadromous fish species (which migrate between the sea and fresh water), including river lamprey (*Lampetra fluviatilis*), brook lamprey (*Lampetra planeri*), sea lamprey (*Petromyzon marinus*), twaite shad (*Alosa fallax fallax*) and Atlantic salmon (*Salmo salar*). For the above species, the potential to occur within (pass through) the MUL Area during certain times in their life cycle may occur only during upstream or downstream migrations to and from spawning grounds. Atlantic salmon and river lamprey are protected under EU legislation via Annex II of the Habitats Directive. SACs on the eastern coast and rivers of Ireland which are designated for these fish species include the River Boyne and River Blackwater SAC (002299) (NPWS, 2014a) is the only SAC on the east coast of Ireland which is designated for migratory fish species such as river lamprey and salmon. The next nearest SAC designated for migratory fish species is the Slaney River Valley SAC (000781) which is located to the southeast of Ireland over 100 km away and it is not considered likely that fish from such a distant site would migrate through the MUL Area.

There is no risk of direct habitat loss to spawning habitats of the above migratory fish species as the MUL Area does not overlap sites designated for these species. There is also no risk of potential interaction with increased SSC in the water column as a result of intrusive SI works (grab sampling and borehole drilling). 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 dynamic 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 River Boyne and River Blackwater SAC was screened in due to the potential impact of underwater noise from the bathymetric and geotechnical surveys within MUL Area B. As no European sites designated for migratory fish overlap with the MUL Area, the risk is that fish could experience adverse effects as they migrate to/from their natal rivers and transit through the MUL Area. A detailed analysis of potential underwater noise impacts can be found in the SISAA report and subsequent Subsea Technical Noise Report. In summary, the underwater noise assessment found that no impact would occur beyond 10 m of the sound source for both auditory injury and TTS. Therefore, given the distance between the SAC for which migratory fish are designated (37 km), the risk ranges for both auditory injury and TTS being <10 m for all survey scenarios and the scale and duration of the proposed SI works within the Irish Sea, it is considered unlikely that there will be interaction between the underwater noise sources and river lamprey and salmon migrating to/from the River Boyne and River Blackwater SAC.

It can therefore be concluded that migratory fish from the River Boyne and River Blackwater SAC transiting through the MUL Area are unlikely to experience significant effects as a result of the underwater noise generated during the geophysical, bathymetric 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 (2025)[11] there are numerous recordings of bat species along the east coast and in the MUL Area. The proposed SI works 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 SI locations 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 vessel or machinery 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.

7.1.6 Birds

Aerial surveys undertaken from 2021 to 2023 under Phase II of the ObSERVE Programme recorded 20 species or species groups of seabirds. The inshore/coastal waters of the Irish sea were noted as an area of importance in both summer and winter and had the greatest overall density of seabirds nationally. Records were dominated by auk, gull and tern species, northern gannets (*Morus bassanus*), northern fulmars (*Fulmarus glacialis*), kittiwakes (*Rissa tridactyla*) and Manx shearwaters (*Puffinus puffinus*) (Giralt Paradell et al., 2024). Some species such as shearwaters, terns, storm petrels (*Hydrobates pelagicus*), were mainly recorded during the summer surveys. Coastal waters for seabirds were noted as particularly important throughout the year and the survey highlighted hotspots during the summer in the Irish Sea with a decreasing gradient of density from north to south, with the northern part of the Irish Sea remaining an area of high density in the winter (Giralt Paradell et al., 2024).

The MUL Area directly overlaps the boundaries of the following SPAs, designated for wintering waterbirds and seabird QIs:

[11] Biodiversity Maps bat species accessed June 2025

- Baldoyle Bay SPA (IE004016) (wintering waterbirds);
- Irelands Eye SPA (IE004117) (wintering waterbirds); and
- North-west Irish Sea SPA (IE004236) (seabird species).

7.1.6.1 Baldoyle Bay MUL Area (Area A)

The SI works have the potential to interact with overwintering bird species at the intertidal zone within Baldoyle Bay. The MUL Area within Baldoyle Bay overlaps the I-WeBS subsite D.Maynetown (0U403) for wintering water birds[12]. There is the possibility that foraging birds from more distant SPAs may be present during the overwintering period. If these activities are undertaken in the overwintering period (usually October to March), likely significant effects due to disturbance cannot be excluded in the absence of mitigation. 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 geotechnical works in MUL Area A have the potential to cause habitat loss, alteration and/or fragmentation on wetland habitat associated with SPAs which overlap the MUL Area within Baldoyle Bay. Geotechnical boreholes are intrusive and have the potential to remove or alter SPA wetland habitats within Baldoyle Bay SPA. Four boreholes will be drilled within the MUL Area in Baldoyle Bay including access/egress using bog mats at these locations. Intrusive and extractive geotechnical surveys within Baldoyle Bay have the potential to directly remove, alter or fragment the wetland habitat of Baldoyle Bay SPA.

7.1.6.2 Irish Sea MUL Area (Area B)

The operation of vessels and equipment within the MUL Area in the Irish Sea have the potential to disturb nesting/ breeding birds within coastal SPAs within or close to the MUL Area, if the timing of the proposed surveys was to overlap with breeding periods.

In the Irish Sea, 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.

Seabirds which utilise the marine SPA which overlaps the Irish Sea MUL Area, i.e. North-west Irish Sea SPA and other neighbouring SPAs may be impacted due to the potential increased SSC and associated smothering on benthic or pelagic prey species. However, as the MUL Area is located off the east coast of Ireland, these benthic habitats are generally dynamic and high energy which 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

[12] I-WeBS Coverage accessed July 2025

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.

7.1.6.3 Birds Conclusion

In summary, there is potential for likely significant effects on wintering birds using the intertidal area within Baldoyle Bay and seabirds nesting in coastal areas and foraging within MUL Area B in the Irish Sea due to disturbance, and therefore a detailed assessment of relevant SPAs will be undertaken in the NIS.

7.1.7 Other marine megafauna

Between 2015 and 2025, 63 observations of leatherback turtle (*Dermochelys coriacea*) were recorded in Irish waters (NBDC, 2025[13]). There were six leatherback turtle sightings recorded along the east coast between 2015 and 2025, with one of these recorded to the south of Portmarnock beach in 2024. The most recent sighting of Kemp's Ridley turtle (*Lepidochelys kempii*) was in 2024[14] when the animal washed up stranded on Malin Beg in Co. Donegal and the most recent recording of a hawksbill turtle (*Eretmochelys imbricata*) was in 1983 at Cork Harbour[15]. Loggerhead turtle (*Caretta caretta*) was recently recorded in 2021 where one animal was found stranded at Rush Beach in Co. Dublin[16]. It can, therefore, be concluded that sightings of turtles within the MUL Area 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 MUL Area, 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 not been recorded within the MUL Area in the last ten years. The most recent sighting was in Dublin Port in 2022 NBDC (2025)[17]. Basking shark sightings are not as frequent along the east coast in comparison to the west and northwest of the country. This indicates that while basking shark may occur on occasion within the area, it is likely of a more transitory nature. 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 MUL Area 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.

[13] Biodiversity Maps leatherback turtle accessed August 2025

[14] Biodiversity Maps Kemp's Ridley turtle accessed August 2025

[15] Biodiversity Maps hawksbill turtle accessed August 2025

[16] Biodiversity Maps loggerhead turtle accessed August 2025

[17] Biodiversity Maps basking shark accessed June 2025

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 geotechnical surveys and grab samples, Annex I reef habitats as mapped by NPWS will be reviewed and these locations will be avoided for intrusive surveys.
- A suitably qualified and experienced MMO will be onboard for the duration of the geophysical, bathymetric 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 4-15 in the Subsea Noise Technical Report).
- Bog mats will be used to access areas within Baldoyle Bay for land-based geophysical and geotechnical surveys. These investigations will take place outside of the over-wintering period (October to March, inclusive) to minimise disturbance to over wintering birds in the SPA.

Note that following assessment of likely significant effects in the accompanying SISAA report, disturbance impacts to wintering birds with the MUL Area and nesting seabirds have been screened in for detailed assessment in the NIS. If required, appropriate mitigation for birds will be established following assessment in the NIS.

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 and bathymetric SI works and or the presence of an additional vessel), 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

Drawings illustrating the fisheries areas are submitted separately as part of the MULA.

8.1 Assessment of Impact

The SI works will be conducted wholly within the MUL Area outlined in the drawings included with the MUL Application Form. The MUL Area covers a total area of 748.6 ha and includes the tidal estuarine area of Baldoyle Bay and an area within the Irish Sea extending east beyond Portmarnock beach.

There are no ports located within the MUL Area. The closest port is Howth Harbour located approximately 2 km to the south/southeast of the MUL Area. Howth Harbour is a sheltered artificial harbour used primarily for fishing and yachting, being one of the major small craft and yachting centres in Ireland. Located on the northern side of the Howth Peninsula, this man-made port is protected from the elements of the Irish Sea by Ireland's Eye, allowing for safe access in most conditions and anchoring outside of the harbour walls in good weather conditions[18].

Other ports of note include Malahide Marina which is a shallow protected marina located approximately 3 km north of the MUL Area and is used primarily for sailing and leisure boating. Further north is Skerries Harbour, approximately 18 km from the northern boundary of the MUL Area. Skerries Harbour is primarily a fishing port[19]. Busy ports and harbours located beyond the MUL Area include Dún Laoghaire Harbour, which is a fishing and commercial port situated on the south side of Dublin Bay (approximately 12 km from the MUL Area), which is the main hub for yachting in Ireland[20]. Dublin Port (approximately 9 km from MUL Area) is the principal commercial and industrial port in Ireland and deals with large freight containers as well as passenger ferries.

There are no aquaculture sites within or adjacent to the MUL Area. The nearest licenced aquaculture sites are located in Carlingford Lough in Co. Louth, approximately 65 km from the northern boundary of the MUL Area and at Clogga Bay off the coast of Wicklow, 95km south of the MUL Area (Marine Atlas, 2025). Given the distances between the SI works areas and the aquaculture sites there will be no interaction with aquaculture.

There are five known nursery grounds for commercially important fish species that overlap the MUL Area including: cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), whiting (*Menticirrhus americanus*), mackerel (*Scomber scombrus*) and horse mackerel (*Trachurus trachurus*). One known spawning ground for cod overlaps the MUL Area. A haddock spawning ground is located approximately 2 km east of the MUL Area and there is a herring nursery ground approximately 10 north of the MUL Area.

Inshore fishing activity that occurs within the MUL Area is dredge fishing for razor clams, which extends from the southwest of the Howth peninsula to the coast of Dunany Point in Louth. Net fishing for mixed demersal species occurs within and north of the MUL Area, extending from Howth Peninsula to Carlingford, Louth during March to September. Pot fishing occurs in inshore waters all along the east

[18] Howth Harbour eOceanic accessed June 2025

[19] Malahide Marina eOceanic accessed June 2025

[20] Dún Laoghaire Harbour eOceanic accessed June 2025

coast of Ireland and overlaps directly with the MUL Area for mixed demersal species during March to September (Irelands Marine Atlas, 2025).

Offshore fishing effort by all vessels between 2019 and 2023[21] (Gerritsen, 2024) show that there is some fishing activity present within the MUL Area and further offshore including dredging and pelagic trawling. Dredge fishing effort is recorded within the MUL Area with areas of low to high intensity noted to the north of Howth off Portmarnock Beach and to the south of Lambay Island. Pelagic trawl fishing effort was recorded as low to the north of Irelands Eye on the approaches to Lambay Island, with an area of higher intensity further offshore beyond the MUL Area. No other offshore fishing effort was recorded within the MUL Area according to (Gerritsen, 2024).

In addition to the spawning/nursery species mentioned above, there is potential for other fish species including elasmobranchs to be found within the MUL Area. Based on modelled studies carried out by Dedman et al. (2015 and 2017) it was predicted that suitable habitat is available in the Irish sea for species such as thornback ray (*Raja clavate*), blonde Ray (*Raja brachyura*) and spotted ray (*Aetobatus narinari).* According to NBDC (2025)[22] thornback ray egg purses are commonly recorded within and around the MUL Area, indicating presence of breeding rays in the area. Six blonde ray purses have been recorded since 2015 along the east coast of Ireland, with the most recent in 2021 at Cahore South Beach in Co. Wexford. Spotted ray cases are common along the east coast with 31 having been recorded in 2015, the most recent in 2024 at Rosslare Harbour Beach in Co. Wexford. Therefore, it is possible that these species utilise the waters within and adjacent to the MUL Area.

In summary, the MUL Area is a relatively 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 interact with fishing activities if not managed appropriately.

8.2 Mitigation

As there is no overlap between the proposed SI works and any Aquaculture sites direct impacts can be ruled out for aquaculture. The potential effects on Fisheries 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. Uisce Éireann will inform all sea users prior to activities commencing via a marine notice.

8.3 Conclusion

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

[21] Atlas of Commercial Fisheries around Ireland, Fourth Edition 2024 (marine.ie) Accessed July 2025

[22] Biodiversity Maps rays accessed July 2025

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 MUL Area is located within the immediate vicinity of EPA Zone A which is classified as 'Dublin'. Air quality in this zone is consistently classed as 'good' as measured by the EPA monitoring network[23]. 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 in the immediate footprint of the SI works and, otherwise, out to sea. Therefore, there will be an imperceptible impact from the emissions arising from the SI works on air quality.

[23] Home | AirQuality.ie accessed July 2025

10 NOISE AND VIBRATION

No impacts from Vibration are considered likely due to the methodology for the proposed SI works within the Irish Sea MUL Area and are therefore not considered further in this assessment.

A separate Subsea Noise Technical report (ref: 10028814-RPS-MO-XX-RP-E-RP0085) 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.

10.1 Assessment of Impact

The proposed SI works will introduce the underwater noise from vessel and equipment operations. 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 MUL Area ranges from 0m to 25m with fine sediment within Baldoyle Bay to coarser sediment within the Irish Sea. 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), and Ultra Short Base-Line positioning system (USBL), 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.

The accompanying Subsea Noise Technical Report contains a robust assessment of marine mammals and fish and the potential for the geophysical, bathymetric and geotechnical SI works within MUL Area A and B to impacts to these species are discussed in Section 7.

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, bathymetric 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 4-15 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 MUL Area 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

In terms of the seascape, marine bathymetric, geotechnical and environmental surveys will be conducted in the Irish Sea. While separate vessels may operate for the above surveys, it is anticipated that only one survey vessel will operate at any one time. Given the relatively busy nature of the Irish Sea, this slight and temporary increase in vessel activity from the SI works will have no appreciable impact on the seascape.

The geophysical, bathymetric and geotechnical works within Baldoyle Bay are the most likely to have a temporary visual impact. The geophysical and bathymetric surveys will be undertaken by land-based means via personnel or from a small landing craft to access the intertidal areas of the Bay. The geotechnical works will be conducted by a small, tracked CPT rig or Sonic rig deployed from land within Baldoyle Bay and it is anticipated that minimal personnel and equipment will be used to conduct these surveys therefore the SI works will have no appreciable impact on the landscape. As stated above, the SI works are anticipated to last approximately 8 weeks in total (weather dependant), therefore the visual and landscape impact within Baldoyle Bay 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 within Baldoyle Bay which will be removed once all SI works vessels and equipment have been removed.

12 TRAFFIC AND TRANSPORT (INCL. SHIPPING AND NAVIGATION)

12.1 Assessment of 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, workers, plant and machinery will arrive to locations using existing road 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 the MUL Area. 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 no ports located within the MUL Area. The closest port is Howth Harbour located 2 km to the south of the MUL Area, used primarily for fishing and yachting, being one of the major small craft and yachting centres in Ireland. Other ports of note to the south of the MUL Area are Dun Laoghaire Harbour, a fishing and commercial port situated to the southern end of Dublin Bay (approximately 12km from the MUL Area) and Dublin Port (approximately 9 km from the MUL Area), the principal commercial and industrial port in Ireland that deals primarily with large freight containers as well as passenger ferries. To the north of the MUL Area is Skerries Harbour, 18km from the northern boundary of the MUL Area and used primarily as a fishing port and Malahide Marina located 3 km north of the MUL Area and is used mainly for sailing and leisure boating.

There are no anchorage areas within the MUL Area.

The total annual density of vessel routes within the MUL Area is five routes per km^2 close to shore, which increases to over 170 routes per km^2 further offshore at the eastern boundary of MUL Area. Although nearby Dublin Port sees over 6,000 cargo vessel routes annually, only two of these cargo routes per km^2 pass within the MUL Area. The routes in the MUL Area are primarily used by fishing and passenger vessels, both less frequently closer to the shore. The total annual number of passenger vessel routes per km^2 within the MUL Area is up to 60, mostly coming from Malahide and Howth Harbour. Total annual fishing vessel routes per km^2 within the MUL Area is 4 to 20 vessel routes, contrasting with the higher density of routes outside of the MUL Area in nearby Howth Harbour (1300 vessel routes).

Inshore fishing activity that occurs within the MUL Area is primarily comprised of dredge fishing for razor clams, and net and pot fishing for mixed demersal species (both from March to September) (Irelands Marine Atlas, 2025).

Offshore fishing effort by all vessels between 2019 to 2023[24] (Gerritsen, 2024) show that there is some fishing activity present within the MUL Area and further offshore including dredge, and pelagic trawl. Dredge fishing effort is recorded within the MUL Area with areas of low to high intensity noted to the north of Howth off Portmarnock Beach and to the south of Lambay Island. Pelagic trawl fishing effort was recorded as low to the north of Irelands Eye on the approaches to Lambay Island, with an area of higher intensity further offshore beyond the MUL Area. No other offshore fishing effort was recorded within the MUL Area.

[24] Atlas of Commercial Fisheries around Ireland, Fourth Edition 2024 accessed July 2025

Due to the existing levels of background shipping activity near the MUL Area, the proposed SI works will not have significant impacts on other shipping activities within the MUL Area.

There are no Royal National Lifeboat Institution (RNLI) Lifeboat stations located in the vicinity of the MUL Area (RNLI, 2024)[25].

There are no navigation buoys within the MUL Area.

The addition of the extra vessel associated with the SI works will not contribute significantly to the shipping and navigation activity already within and adjacent to the MUL Area. There is, however, the possibility that inshore fishing vessels may be temporarily impacted by vessels either transiting through, e.g. bathymetric survey or stationary at investigation locations.

12.2 Mitigation

The potential effects on Traffic and Transport (including Shipping and Navigation) during the SI works will be reduced by ensuring that all sea users are informed prior to activities commencing via a marine notice.

12.3 Conclusion

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

[25] Royal National Lifeboat Institution - Saving Lives at Sea accessed July 2025

13 CULTURAL HERITAGE (INCLUDING UNDERWATER ARCHAEOLOGY)

13.1 Assessment of Impact

Marine cultural heritage includes archaeological heritage, built heritage and intangible cultural heritage (e.g., submerged prehistory, shipwrecks, aviation archaeology and intertidal sites, monuments and architectural heritage assets).

There are recorded archaeological assets in immediate proximity and around the MUL Area off Velvet Strand in Portmarnock Co. Dublin. A number of recorded archaeological assets were identified within the MUL Area and a buffer of 2 km from the MUL Area) (W00830, W00841, W00842, W00856, W00857, W00858, W00859, W00860, W00861, W00864, W00954, W00966, W00967, W09505, W09587, W10089, W10407, W11141, W11168, W11473, W11540, W18548, W18576)[26] which are all wreck remains. Archaeological assets within the MUL Area are recorded as follows by the DHLGH (2023): shipwrecks W11141, W18576 and W18548. Given these have already been reported within the MUL Area, there is little potential for the discovery of unrecorded marine archaeology and cultural heritage.

There are no known archaeological or cultural heritage assets in immediate proximity to the SI works area within Baldoyle Bay. Therefore, the potential for unrecorded archaeological or cultural heritage assets at this location is considered to be low.

13.2 Mitigation

The potential effects on Cultural Heritage 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 Cultural Heritage comprises:

- 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 geotechnical investigation within the Irish Sea the following will be completed to avoid impacts on unknown/ unrecorded cultural heritage features:

- Desktop research
- Marine geophysical and bathymetric surveys
- Marine geotechnical investigations

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

[26] National Monuments Service: Wreck Viewer accessed June 2025

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 MUL Area.

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, one vessel 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, as the maximum duration of these types of surveys will be limited to six weeks (weather dependent) (geophysical, bathymetric and geotechnical surveys), there will be no population and human health level impacts.

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 or 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 14 Upper Tier and 12 Lower Tier Seveso sites in Dublin (hsa.ie)[27].

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 MUL Area. There are no Seveso sites within the MUL Area 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 primary 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 marine geotechnical SI works to come into contact with subsea cables or pipelines however, this is unlikely as the geophysical and bathymetric surveys will be conducted prior to any intrusive SI works. See Section 18 for more information on subsea cables within the MUL Area.

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 inadvertently interacting with subsea cables/ pipelines, the desk-top research completed to-date will be reviewed and updated prior to undertaking the geophysical and bathymetric surveys within Baldoyle Bay and the Irish Sea. Subsequently, the marine geophysical and bathymetric surveys will be undertaken in advance of any geotechnical SI works to enable the locations of sub-sea cables/ pipelines (if present) to be accurately mapped. This will include the operation of a marine magnetometer in order to identify the exact location of sub marine cables that may be present in the MUL Area B. The marine environmental grab sample locations in the Irish Sea MUL Area B will be sited a

[27] List of Establishments - Health and Safety Authority accessed July 2025

minimum of 100 m away from these cables to ensure a sufficient exclusion zone to prevent interaction with the cables during SI works. Third party asset owners will be informed of planned SI work prior to the works commencing.

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 58.82 million tonnes of carbon dioxide equivalent (Mt CO_2eq) in 2023 (EPA, 2024), which is 6.1% lower (or 3.79 Mt CO_2eq) than emissions in 2022 (62.26 Mt CO2eq) and follows a 3.0% decrease in emissions reported for 2022. Transport accounted for 21.5% of the overall total and showed an increase of 0.3%[28].

The SI works will result in GHG emissions from one vessel undertaking the SI works and machinery within Baldoyle Bay. Given the baseline level of fishing and shipping activity in the MUL Area, 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

[28] Latest emissions data | Environmental Protection Agency (epa.ie) accessed July 2025

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 primary 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 MUL Area including Howth Harbour, Malahide, Dublin Port, Dún Laoghaire Harbour, and Skerries Harbour. Therefore, relative to the background levels of shipping traffic within the MUL Area, the increase in vessel traffic due to the SI works is considered negligible.

The EXA Atlantic cable runs through the south of Baldoyle Bay (does not intersect MUL Area A) and passes through a portion of MUL Area B in the Irish Sea to the northwest. There are also two subsea cables that come within 5 km from the MUL Area: one subsea cable “Emerald Bridge Fibres” which makes landfall at Clonshaugh approximately 5 km to the north of the MUL Area within the Irish Sea and another “Sirius South” subsea telecommunications cable which makes landfall in Dublin City and which is 1 km to the south of the MUL Area B. Subsea cables that have the potential to be affected by proposed SI works are listed in **Table 18-1**.

Table 18-1: Telecommunications Pipelines and Cables [29]

Name	Distance from MUL Area	Owner	Infrastructure Type	Landing Points
EXA Atlantic	Overlaps	EXA Infrastructure	Telecommunications subsea Cables.	Baldoyle Bay
Emerald Bridge Fibres	5	ESB Telecoms, Zayo	Telecommunications subsea Cables.	Clonshaugh
Siruis South	1	Virgin Media Business	Telecommunications subsea Cables.	Dublin City

There is the potential for an interaction between survey vessel 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 and bathymetric 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.

18.1.1 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 SI works within Baldoyle Bay and the Irish Sea. Additionally, the marine geophysical and bathymetric surveys will be undertaken in advance of any geotechnical SI works to enable the locations of sub-sea cables/ pipelines (if present) to be

[29] TeleGeography submarine cable map accessed June 2025

accurately mapped. This will include the operation of a marine magnetometer in order to identify the exact location of sub marine cables that may be present in the MUL Area B. The marine environmental grab sample locations in the Irish Sea MUL Area B will be sited a minimum of 100 m away from these cables to ensure a sufficient exclusion zone to prevent interaction with the cables during SI works. Third party asset owners will be informed of planned SI work prior to the works commencing.

18.1.2 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 **Table 19-1**.

Table 19-1: Potential Interactions between Impacts

Topic	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. Marine mammals: 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.

Topic	Conclusion	Interaction
		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. 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.
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.
Major accidents and disasters	No impact.	As there will be no impact from Major accidents and disasters there will be no interaction.
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

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 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 MUL Area, based on the JNCC's guidance document for assessing noise disturbance for harbour porpoise SACs (JNCC, 2020). For geophysical and bathymetric 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.

20.2 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.

20.3 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.

20.4 Assessment of Impacts

No DaS licences overlap or are within the MUL Area, only one licence occurs within the CESS (S0031-01) at Malahide Marina for dredged material with a permit end date of 31/01/2025. Therefore, there is no spatial or temporal overlap with the SI works and no potential for cumulative impacts.

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

- Microsoft Ireland Ltd. was granted a MUL (LIC230018) to undertake geophysical and bathymetric and SI investigations for a subsea fibre optic cable which has a landfall in Portmarnock transversing the Irish Sea. This licence has a period of two years from the commencement date (03/07/2024), with surveys anticipated to take less than 6 weeks in total and will be completed over a 6-month period. It is not known whether SI works have been completed to date, therefore there is potential for spatial and temporal overlap with the proposed SI works.
- Microsoft Ireland Ltd. was granted a MUL (LIC230016) to undertake geophysical, bathymetric and SI investigations for a subsea fibre optic cable which has a landfall at Dublin Port transferring Dublin Bay across the Irish Sea. This licence has a period of two years from the commencement date (28/06/2024), with surveys anticipated to take less than 3 weeks in total and will be completed over a 2-month period. It is not known whether SI works have been completed to date, therefore there is potential for spatial and temporal overlap with the proposed SI works.
- Mares Connect was granted a foreshore licence (FS007635) for marine SI works for the MaresConnect Ltd (MCL) Interconnector from the mean high-water mark to the 12 nm limit which landfalls at Portmarnock Co. Dublin. This licence was for a period of five years from the commencement date (04/07/2024), therefore temporal overlap with the proposed SI works is possible. Geophysical and bathymetric works commenced on the 28th of March 2025 and lasted for 13 days[30]. Geotechnical works were completed between the 21st to the 26th of May 2025[31]. Although surveys have been undertaken, as the licence is still valid, spatial and temporal overlap with future surveys with the proposed SI works is possible. Note that Mares Connect was also granted a MUL (MUL240008) to conduct SI works from the 12 nm limit to the EEZ for a period of five years from the commencement date (30/06/2025), however, as this survey area is >25 km from the MUL Area, and therefore beyond the CESS, this MUL is not considered here.
- RWE Renewables was granted a foreshore licence (FS007188) to undertake geotechnical, bathymetric and geophysical site investigations and ecological, wind, wave and current monitoring to provide further data to refine wind farm design, cable routing, landfall design and associated installation methodologies for the proposed Dublin Array offshore wind farm. This licence was for a period of five years from the commencement date (13/01/2023), and survey works took place in summer 2024[32], however, as the licence is still valid, temporal overlap with the proposed SI works is possible.
- Broadmeadow Way Greenway was granted a foreshore licence (FS006909) to develop a new greenway (shared footpath and cycleway) between Malahide Demesne and Newbridge Demesne via

[30] Mars Connect Cable Route Geophysical Surveys Accessed July 2025

[31] MN_31_of_2025_Mares_Connect_Cable_Route_Geotechnical_Survey.pdf Accessed July 2025

[32] Dublin Array 2024 Offshore Survey Works Campaign accessed July 2025

the railway causeway across the Malahide Estuary. This licence was for a period of five years from the commencement date (02/05/2024). There is no spatial overlap with the proposed SI works and given the location of the Greenway (located within the Malahide Estuary) and the nature of the works which will be limited within the marine environment, no cumulative impacts are predicted.

There is one MUL application which has not yet been determined which overlaps with the CESS, for the introduction of native oysters into nearshore sites along with eco-engineered habitat units and appropriate substrate at Sutton, Rogerstown, Irelands Eye, Tolka Estuary and Malahide Marina and Estuary (MUL230032). This MUL application will be considered further as there is potential for overlap temporally as well as spatially with the proposed SI works when/if licences are granted.

A foreshore licence application (FS006843) was submitted in 2020 by Irish Water (now Uisce Éireann) for the GDD marine outfall pipe, which is out-of-date and no longer live as it has been superseded by the current GDD Project, which has been granted planning approval by An Coimisiún Pleanála on 10 July 2025. Therefore, this foreshore licence application can be disregarded.

Uisce Éireann are in the processes of submitting a MUL application for the East/North-East Strategic Modelling Study, which involved a strategic modelling study of water currents along the Irish coast from Carlingford Lough in Co. Louth to Kilcoole in Co. Wicklow. The proposed works which overlap the MUL Area include deployment of ADCPs, vessel mounted ADCPs, tide gauges, bathymetric surveys and water quality sampling from the shoreline and a vessel. As the proposed surveys are yet to be granted a licence, commencement of works is unknown at this time. However, a licence period of five years is being sought therefore there is potential for temporal overlap.

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 MUL Area. In order to ensure that significant cumulative effects do not occur, mitigation measures have been proposed, as below.

20.5 Mitigation

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

- There will be no spatial overlap between the SI geophysical/bathymetric activities and geophysical or bathymetric activities by other licence holders;
- The Applicant will consult with other licence holders and to seek to limit any temporal overlap between the SI geophysical and bathymetric activities and the geophysical and bathymetric activities by other licence holders as far as reasonably practicable.

20.6 Conclusion

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

21 SUMMARY OF MITIGATIONS

The following table 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

Topic	Mitigation
Land and Soils	Bog mats will be used at access areas for the land-based geophysical and geotechnical surveys within Baldoyle Bay.
Water	None proposed.
Biodiversity	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 geotechnical surveys and grab samples, mapped Annex I Reef will be reviewed and these locations avoided for intrusive surveys by implementing a 100 m exclusion zone around all identified reef. As a further precautionary measure, prior to deployment of grabs or borehole equipment, on-board sonar and echosounders will be used to provide backscatter data which will allow marine surveyors to identify seabed conditions (i.e. sediment/reef) to ensure suitability for proposed activities. 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 4-15 in the Subsea Noise Technical Report). A suitably qualified and experienced MMO will be onboard for the duration of the geophysical, bathymetric 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). Bog mats will be used to access areas within Baldoyle Bay for land-based geophysical and geotechnical surveys. These investigations will take place outside of the over wintering period (October to March, inclusive) to minimise disturbance to over wintering birds in the SPA. Note that following assessment of likely significant effects in the accompanying SISAA report, disturbance impacts to wintering birds within the MUL Area and nesting seabirds have been screened in for detailed assessment in the NIS. If required, appropriate mitigation for birds will be established following assessment in the NIS.
Fisheries and Aquaculture	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. Uisce Éireann will inform all sea users prior to activities commencing via a marine notice.
Air Quality	None proposed.
Noise and Vibration	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.

Topic	Mitigation
	A suitably qualified and experienced MMO will be onboard for the duration of the geophysical, bathymetric 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 4-15 in the Subsea Noise Technical Report).
Landscape and Seascape	None proposed.
Traffic and Transportation (including Shipping and Navigation)	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. Uisce Éireann will inform all sea users prior to activities commencing via a marine notice
Cultural Heritage	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 geotechnical investigation within the Irish Sea the following will be completed to avoid impacts on unknown/ unrecorded cultural heritage features: • Desktop research • Marine geophysical and bathymetric surveys • Marine geotechnical investigations Any necessary licences will be obtained from the Underwater Archaeology Unit (UAU) within the NMS.
Population and human health	None proposed.
Major Accidents and Disasters	In order to avoid risks of encountering subsea cables/ pipelines and UXO, the geophysical and bathymetric surveys will be undertaken in advance of any geotechnical investigations within the Irish Sea 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. 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.
Material Assets	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 geophysical and bathymetric surveys within Baldoyle Bay and the Irish Sea. Subsequently, the geophysical and bathymetric surveys will be undertaken in advance of any geotechnical SI works within the Irish Sea to enable the locations of sub-sea cables/ pipelines (if present) to be accurately mapped, including the use of a magnetometer. The geotechnical SI works

Topic	Mitigation
	and marine environmental grab sample locations, will then be sited 100 m away from these cables to ensure no interaction with the cables and/or pipelines.
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, Uisce Éireann will coordinate with other licence holders to ensure that: • There will be no spatial overlap between the SI works geophysical/bathymetric activities and geophysical/bathymetric activities by other licence holders; • The Applicant will consult with other licence holders and to seek to limit any temporal overlap between the SI geophysical and bathymetric activities and the geophysical and bathymetric activities by other licence holders as far as reasonably practicable. •

22 CONSIDERATIONS 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 (ref: 10028814-RPS-MO-XX-RP-E-RP0082) and the Natura Impact Statement (10028814-RPS-MO-XX-RP-E-RP0084).

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.

23 REFERENCES

Benthic Solutions Ltd. (2023). Greater Dublin Drainage Project Addendum: Marien Habitat Assessment Survey Report. Available at: Appendix A9.1 Marine Habitat Assessment Survey Report

DAHG (2014). Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht.

Dedman, S. et al. (2015). Modelling abundance hotspots for data-poor Irish Sea rays. Ecological Modelling, 312, pp.77–90. [Online]. Available at: doi:10.1016/j.ecolmodel.2015.05.010 [Accessed March 2023].

Dedman, S. et al. (2017). Advanced Spatial Modelling to Inform Management of Data-Poor Juvenile and Adult Female Rays. Fishes, 2, p.12. [Online]. Available at: doi:10.3390/fishes2030012.

Department of Housing, Local Government and Heritage (2023). National Monuments Service/ Shipwreck Inventory. [ONLINE] Available at: https://www.archaeology.ie/. [Accessed 2023].

EMODnet (2025). EUSeaMap available at: EMODnet Map Viewer [accessed July 2025].

EPA (2025). Bathing Water Quality in Ireland – A report for the year 2024. Environmental Protection Agency, Ireland. Available at: Bathing Water Quality in Ireland , accessed July 2025.

Gerritsen, Hans. (2024) Atlas of Commercial Fisheries around Ireland, Fourth Edition 2024. Marine Institute. doi: 10/mfb7

Giralt Paradell, O., Cañadas, A., Bennison, A., Todd, N., Jessopp, M. & Rogan, E. (2024). Aerial surveys of cetaceans and seabirds in Irish waters: Occurrence, distribution and abundance in 2021-2023. Department of the Environment, Climate & Communications and Department of Housing, Local Government & Heritage, Ireland. 260pp

Irelands Marine Atlas (2025) accessed 30/06/2025 here: Ireland's Marine Atlas

JNCC (2020). Joint Cetacean Data Programme (Phase one – final report), Department for Environment Food and Rural Affairs.

NOAA (2024). Finneran James J. Marine mammal auditory weighting functions and exposure functions for US Navy Phase 4 acoustic effects analyses [Report]

NOAA 2018 – no reference in PUOSC

NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.

Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., Ellison, W. T., Gentry, R. L., Halvorsen, M. B., Løkkebog, S., Rogers, P. H., Southall, B. L., Zeddies, D. G., & Tavolga, W. N. (2014). Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI

Ruppell, C.D., Weber, T.C., Staaterman, E.R., Labak, S.J. & Hart, P.E., (2022). Categorizing Active Marine Acoustic Sources Based on Their Potential to Affect Marine Animals. J. Mar. Sci. Eng. 10, 1278. https://doi.org/10.3390/ jmse10091278

Southall, B., Bowles, A., Ellison, W., Finneran, J.J., Gentry, R.L., Green, C.R., Kastak, C.R., Ketten, D., Miller, J., Nachtigall, P., Richardson, W., Thomas, J. & Tyack, P. (2007). Marine mammal noise exposure criteria. Aquat. Mamm. 33. 10.1121/AT.2021.17.2.52.

Southall, B.L., Finneran, J.J., Reichmuth, C., Nachtigall, P.E., Ketten, D.R., Bowles, A.E., Ellison, W.T., Nowacek, D.P. & Tyack, P.L. (2019). 'Marine mammal noise exposure criteria: updated scientific recommendations for residual hearing effects', Aquatic Mammals, vol. 45, no. 2, pp. 125-232. https://doi.org/10.1578/AM.45.2.2019.125

Appendix A List of Projects for Cumulative Assessment

Table A.1 List of projects identified following a search of the relevant databases undertaken on the 01/07/2025

No.	Application reference no.	Project	Approximate Distance from MUL Area	Project Status	Cumulative Effect
1	FS007635	MaresConnect Electricity Interconnector Site Investigation	Overlaps	Permit end date 04/07/2029	Spatial overlap with MUL Area at Portmarnock Beach for benthic SI works extending 50 m from HWM, which end in 2029. Within the Cumulative Effects Spatial Scope (CESS). Possible temporal overlap.
2	FS006843	Irish Water Greater Dublin Drainage Outfall	Overlaps	Applied	No overlap as this foreshore application is no longer relevant. Project has Planning Approval from ACP as of 10 July 2025.
3	FS007188	RWE Renewables Ireland, Site Investigations for the proposed Dublin Array Offshore Wind Farm	Overlaps	Permit end date 13/01/2028	Spatial overlap with MUL Area. Within the CESS. Possible temporal overlap.
4	Unknown	Uisce Éireann, survey to support a strategic modelling study of water currents along the Irish coast from Carlingford Lough to Kilcoole.	Overlaps	Pending submission	Spatial overlap with MUL Area, Within CESS. Possible temporal overlap
5	LIC230018	Microsoft Ireland Operations Ltd – geophysical and bathymetric SI works for fibre optic cable.	1 km	Permit end date 03/07/2026	No spatial overlap with MUL Area. Within CESS. Possible temporal overlap.
6	LIC230016	Microsoft Ireland Operations Ltd- geophysical and bathymetric SI works for fibre optic cable.	3 km	Permit end date 28/06/2026	No spatial overlap with MUL Area. Within CESS. Possible temporal overlap.
7	MUL230032	UCD – Introduction of Native Oysters into nearshore sites along with eco-engineered habitat units and appropriate substrate.	4 km	Received	No spatial overlap with MUL Area. Within CESS. Possible temporal overlap.
8	FS006909	Broadmeadow Way Greenway	5 km	Permit end date 02/05/2029	No spatial overlap with MUL Area. Within the CESS. Possible temporal overlap, however, due to limited scale of marine works, no interaction predicted.

9	S0031-01	Malahide Marina	5 km	Permit end date 31/01/2025	No Spatial overlap with MUL Area. Within CESS. No temporal overlap as DaS licence expired.