MERC Consultants
environmental and conservation services

Supporting Information for Screening for Appropriate Assessment Report (SISAA)

Uisce Éireann - Rosie Hackett Bridge - Liffey Siphon Project

Proposed Maritime Site Investigations (SI)

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1. Introduction

Uisce Éireann wishes to develop the Rosie Hackett Bridge - Liffey Siphon Project in Dublin City. The existing single-barrel inverted wastewater siphon beneath the River Liffey was constructed circa 1900 and represents a critical single point of failure in the wastewater network. The proposed permanent development would provide a new twin-barrel siphon between Eden Quay and Burgh Quay, together with shafts, connecting gravity pipelines, headworks and associated infrastructure.

The proposed development is a network upgrade of the critical infrastructure known as the "Liffey Siphon," (hereafter referred to as the “existing siphon”) crossing beneath the River Liffey at Rosie Hackett Bridge in Dublin City Centre. The existing siphon was constructed as a single-barrel inverted siphon circa 1900 as part of the original Dublin City Drainage Scheme, which was aimed at removing untreated wastewater discharges from the River Liffey. The existing siphon is 64 m long, comprising a brick-lined cast-iron pipe with a diameter of 910 mm. Located beneath the Rosie Hackett Bridge at a depth of circa 13 m below ground level (mbgl), it conveys flows from the city centre’s North catchment area, serving an estimated 117,000 population equivalent (PE) to the 8ft-Hawkins sewer on the South side of the River Liffey, and ultimately to the Ringsend Wastewater Treatment Plant (WwTP). This asset has exceeded its designed operational lifespan, resulting in it being a critical single point of failure within the wastewater network. Currently, there is no system resilience, and a failure could result in an estimated discharge of 30,000 m^3 of untreated wastewater into the River Liffey in a 24-hour period, having significant environmental consequences.

The main objective of the proposed development is to provide network resilience in case of asset failure or operational failure. To achieve the project objective, it is proposed that a new twin barrel siphon is constructed under the River Liffey in close proximity to the existing siphon. The proposed scope of work includes (i) constructing drive and reception shafts on Eden Quay and Burgh Quay respectively which will be converted into the ascending and descending legs for the proposed siphon. The descending leg in Eden Quay will also become the headworks for the siphon; (ii) constructing a new twin-barrel siphon beneath the Liffey River adjacent to the existing siphon, linking the two shafts; (iii) constructing a gravity sewer line on Eden Quay to intercept flows from the existing siphon and direct them to the new siphon, with another gravity sewer conveying flows from the new siphon to the existing 8ft sewer on Hawkins Street. Additionally, the project will involve (iv) decommissioning the existing siphon once the new infrastructure is operational.

Key Benefits of Proposed Development

The benefits of the Rosie Hackett Bridge–Liffey Siphon Project can be summarised as follows:

- **Improved Infrastructure Reliability:** Construction of a modern twin-barrel pipeline introduces resilience to the wastewater system, addressing the current single point of failure and enhancing long-term operational reliability.
- **Enhanced Maintainability through Headworks:** The inclusion of Headworks containing the MEICA equipment enables active maintenance of the system, reducing the risk of blockages and ensuring sustained network performance.
- **Future-Proofed Infrastructure:** Provision of a second barrel allows for increased flow capacity in the future, should the downstream network have sufficient capacity, ensuring the system can accommodate growth and future demands.

Temporary marine site investigations (SI) are required to characterise subsurface, riverbed and environmental conditions and to inform detailed design of the proposed siphon crossing. The Marine Usage Licence (MUL) scope comprises a geophysical survey, two marine boreholes, benthic/ecological sampling, an archaeological survey, and ancillary water/CTD observations (Figure 1). This Supporting Information for Screening for Appropriate Assessment (SISAA) addresses only temporary site-investigation (SI) activities, not construction of the permanent siphon or associated land-based works.

This document constitutes SISAA to assist the Competent Authority in undertaking Screening for Appropriate Assessment (AA). The screening will assess, in view of the best scientific knowledge, if the proposed project, individually or in combination with other plans or projects, is likely to significantly affect any European site(s), considering their conservation objectives. Where likely significant effects cannot be excluded on the basis of objective information, the relevant European site(s)are screened in for Appropriate Assessment.

Under Article 6(3) of the EU Habitats Directive, an Appropriate Assessment must be undertaken for any plan or programme that is likely to have a significant effect on the conservation objectives of a Natura 2000 site. The Habitats Directive sets out the decision-making test which must be applied to plans or projects that may impact on a Natura 2000 site.

Appropriate Assessment is a four-stage process as detailed below:

Stage One: Screening — the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;
Stage Two: Appropriate Assessment — the consideration of the impact on the integrity of the Natura 2000 site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts;
Stage Three: Assessment of alternative solutions — the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site;
Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain — an assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

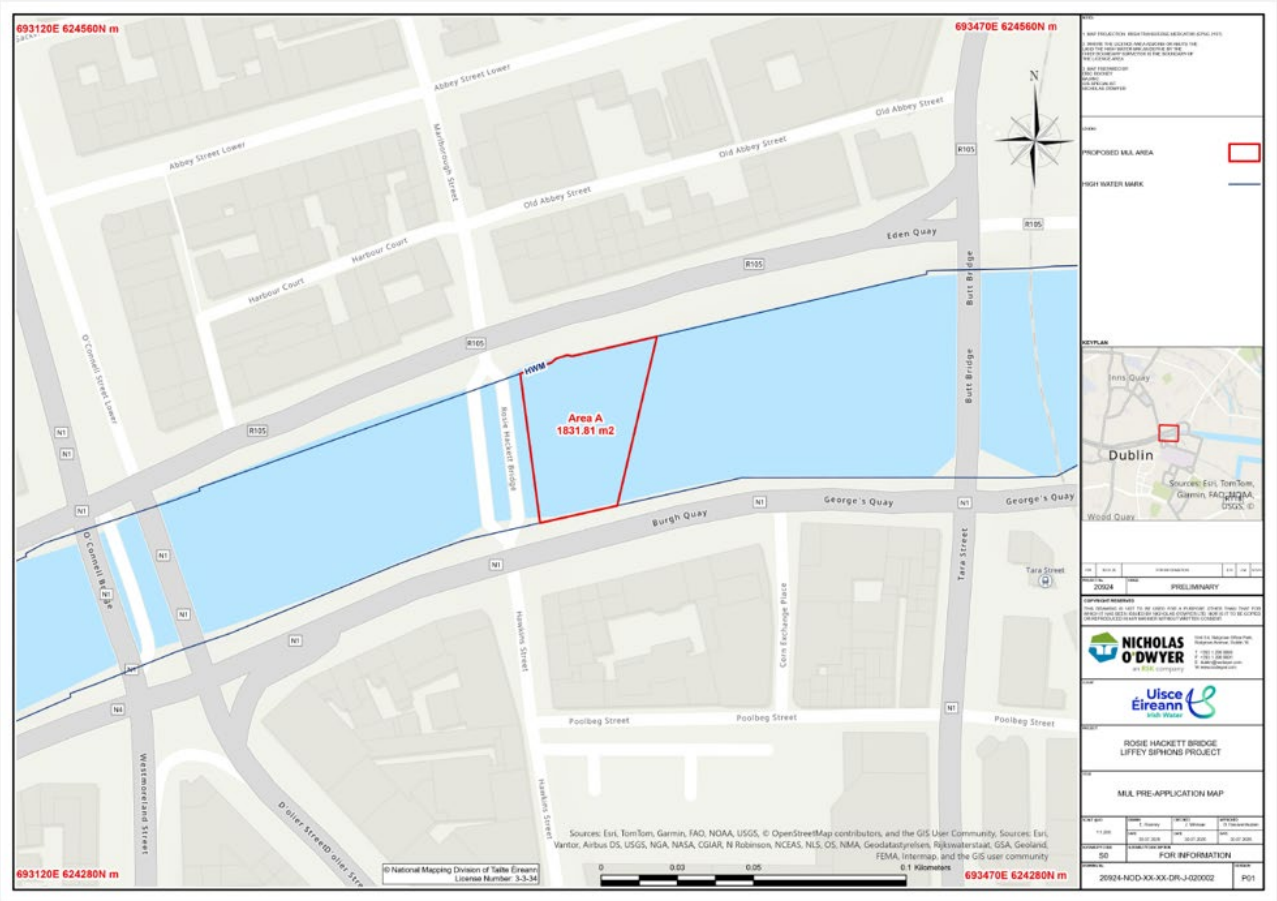


Figure 1. Proposed MUL project site with Tailte Eireann HWM.

2. Statement of authority

This report was prepared by Ronan Browne and reviewed by Louise Scally of MERC Consultants. MERC are a specialist marine ecological survey and consultancy firm. Core staff have more than 60 years of combined experience and specialist knowledge in relation to Irish aquatic habitats and species in addition to the assessment and management of conservation interests. MERC were responsible for preparing the NPWS national monitoring of marine Annex I habitats for compliance under Article 17 of the EU Habitats Directive in the period 2015-2019 and 2022-2025. In this context MERC were responsible for the assessment and reporting of marine Annex I habitats in Ireland and the preparation of Article 17 reports and overarching site monitoring reports.

In addition to their scientific expertise, MERC has an in-depth knowledge of Irish and European Environmental legislation and policy. In 2011, MERC prepared the text describing Activities Requiring Consent (ARCs) for inclusion in a handbook detailing the regulatory framework for all developments within designated sites in Ireland on behalf of the National Parks and Wildlife Service. They have also produced numerous Conservation Management Plans for the same department. To date, MERC has conducted in excess of 200 ecological reports in support of Appropriate Assessment under Article 6(3) of the EU Habitats Directive.

Louise Scally MCIEEM is a professional marine ecologist with a wide range of experience in the field of conservation biology, marine habitat mapping and ecology. She completed a M.Sc. in ecology and taxonomy at Trinity College Dublin in 1989 and a Ph.D. in taxonomy also at Trinity College Dublin in 2001. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). For the last 20 years she has specialised in the ecology of marine ecosystems. She has specialised in the assessment of benthic

habitats with a focus on intertidal and subtidal reef habitats and sensitive seabed species and habitats. Over the last 15 years she has conducted extensive marine monitoring surveys and assessments of EU Habitats Directive marine Annex I habitats and their associated species within European sites in Ireland to assist Ireland in complying with monitoring obligations under the EU Habitats Directive.

Ronan Browne is a marine and environmental scientist with extensive experience in coastal ecology, WFD water-quality monitoring, and the assessment of intertidal and subtidal habitats. He holds qualifications in aquatic biology, shellfish biology, and fisheries (MSc, Bangor), and in lobster fisheries science (PhD, University of Galway). He has worked across national marine monitoring programmes and applied research with organisations including BIM, the Marine Institute, CLS and MERC.

3. Assessment Methods

3.1 Guidelines and legislation

This report has been prepared with reference to the following European Directives, national legislation and guidance on the appropriate assessment of projects and plans with regard to the implementation of the provisions of Article 6(3) and (4) of the EU Habitats Directive 92/43/EEC.

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna. Official Journal of the European Communities.
- Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (codified version).
- European Communities (Birds and Natural Habitats) Regulations 2011. SI No. 477 of 2011.
- Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Commission 2018. 7621 final. Office for Official Publications of the European Communities, Luxembourg.
- Assessment of plans and projects in relation to Natura 2000 sites-Methodological Guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC 2021/C 437/01-Publication office of the EU (europa.eu).
- Appropriate Assessment Screening for Development Management. OPR Practice Note PN01. Office of the Planning Regulator. March 2021.
- Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters. Department of Arts, Heritage and the Gaeltacht, 2014.
- Relevant case law.
- Maritime Area Planning Act 2021, as amended.
- MARA (July 2026), Guidance Note for Applicants applying for a Maritime Usage Licence, and current Technical Mapping Guidance Notes.
- NPWS site-specific conservation objectives, supporting documents, site synopses and spatial data for the European sites considered.

3.2 Description of the proposed project and its associated scope of works

A description of the proposed project was compiled and is set out in section 4. The description details all works required to carry out the proposed project.

To fully understand the receiving environment with respect to project-related effects, the literature consulted included the available National Parks and Wildlife Service (NPWS) data sources for all European sites within the Zone of Influence (ZoI) of the proposed project (see section 3.3 for methods used to determine the ZoI). This included the conservation objectives and GIS layers (habitats and species) for the relevant European sites. Further data was obtained from the following sources (non-exhaustive):

- Irish Whale and Dolphin Group live sightings.
- ObSERVE Aerial Surveys
- NPWS European-site conservation objectives, site synopses and spatial data.
- EPA Water Framework Directive information for the Liffey Estuary Upper transitional waterbody.
- Biodiversity Data Centre species maps.
- Tailte Éireann: High Water Mark and Low Water Mark.

3.3 Impact Assessment approach

The Zone of Influence (ZoI) is the area over which the proposed activities could generate a credible ecological change capable of affecting a European-site Qualifying Interest (QI) or Special Conservation Interest (SCI). For this inner-Liffey project the ZoI is pathway-led: direct riverbed effects are confined to the MUL footprint; suspended sediment/water-quality pathways follow tidal connectivity downstream; underwater-sound pathways reflect the defined SBP and marine-refraction source envelope and local propagation; and mobile-species pathways are based on plausible use and functional linkage. Distance is supporting evidence rather than a stand-alone screening threshold.

To define the ZoI of a project, the potential for project-related effects on sensitive receptors must first be established. For this purpose, a **Source-Path-Receptor (SPR)** model was applied. The SPR model is a well-established model frequently applied to the analysis of project-related impacts on ecosystems and is the one which has been applied to the assessment of the proposed project.

Source - The origin of a hazard, e.g. underwater noise from survey equipment.

Pathway - The route by which a hazard can reach a receptor (e.g. through water or seabed), noting that a pathway must exist for an effect to occur.

Receptor - The ecological feature that may be affected (e.g. Annex I habitat, marine mammal, fish, bird).

Consequence - The resulting effect (e.g. temporary disturbance/displacement, injury risk, habitat disturbance, or change in supporting processes).

Using this approach all elements of the proposed project were reviewed to assess potential pathways and receptors which might be affected so that a ZoI could be established. This process involved the following steps:

- The identification of sources of potential impacts and their pathways from the proposed project site to European sites.
- Consideration of sensitive receptors and their dependent ecosystems within the aforementioned European sites.
- Identifying and characterising project-related impacts and their likely effects, direct, indirect and cumulative on the identified sensitive receptors.

Once the ZoI was established, the following steps were taken to assess the potential for likely significant effects on sensitive receptors:

1. The scale and scope of the project was examined.
2. A desk review of the available literature describing the habitats and species known to occur at the proposed project sites and surrounding area was undertaken.
3. Any project-related activities likely to affect migratory or highly mobile species were considered.
4. Any use of the proposed project sites by mobile species that make regular movements to, from, or across the site was assessed.
5. An assessment was carried out of the key ecological processes and species activity periods including seasonal variations in distribution, abundance and activity.

European sites here are not selected solely by application of a fixed-radius buffer. Hydrological connectivity, acoustic propagation, direct footprint, disturbance range and functional linkage of mobile species are considered separately. For the inner Liffey, the acoustic ZoI is based on the actual equipment, operating frequencies, source levels, duty cycles, durations and local propagation conditions.

3.4 Review of European sites

Once the ZoI of the proposed project was determined, European sites within this ZoI were documented and an analysis of the sensitivity of ecological receptors therein was conducted. In determining the sensitivity of ecological receptors consideration was given to the scale, scope and location of the proposed project relative to the aforementioned receptors.

4. Proposed site-investigation work

The proposed maritime usage is in the tidal River Liffey in Dublin City, between Rosie Hackett Bridge and Butt Bridge, extending between Eden Quay on the northern bank and Burgh Quay on the southern bank. The proposed MUL area (Area A) is 1,831.81 m² (0.183 ha) and is shown in Figure 1 in relation to the Tailte Éireann High Water Mark.

The site investigations are intended to determine physical, geotechnical, archaeological and environmental conditions required to design and assess the new siphon crossing. The current controlled scope comprises MBES bathymetry, sub-bottom profiling, marine refraction seismic, marine electrical resistivity tomography (ERT), two marine boreholes, benthic ecology sampling, archaeological inspection, and ancillary water/CTD observations.

The modular jack-up barge for borehole drilling is indicatively 12 m wide x 14 m long. It is proposed to be craned into/out of the River Liffey from Eden Quay or Burgh Quay and manoeuvred to the two indicative borehole locations using a supporting vessel. Small survey vessels may access the MUL area from downstream.

Table 1 summarises the proposed site investigation activities.

Table 1. Proposed Site Investigations (SI)

Activity	Purpose
Bathymetric survey (MBES)	Teledyne SeaBat T20-P multibeam survey of the proposed MUL area; indicative line spacing 5-20 m.
Marine refraction seismic	Controlled seismic source with HYD-360/08 (50 m) 8-element streamer hydrophone array (passive receiver); three 65 m lines; up to one day.
Sub-bottom profiling	Parametric SBP and/or AA301 boomer to map shallow stratigraphy and buried interfaces; up to one day.

Activity	Purpose
Marine electrical resistivity tomography (ERT)	MAPPEM S Geophysics electromagnetic/resistivity survey along seabed/towed lines; survey extent up to approximately 300 m maximum total traverse length, aligned with the tunnelled marine extent and traverse direction; up to one daylight day.
Geotechnical boreholes	Two boreholes from a four-legged jack-up barge to a maximum 20 m below bed level; roto-sonic drilling with continuous casing through riverbed sediment/overburden and rotary coring in rock.
Benthic ecology sampling	Up to 30 locations within the MUL area, with up to four grab samples per location; drop-down video may precede sampling.
Ancillary water / CTD observations	Water samples and temperature/conductivity/salinity/depth observations may be collected using a small overboard CTD.
Archaeological survey	Non-disturbance dive/quayside inspection, probe and metal-detector survey, with recording of riverbed and quay features.

The proposed MUL duration is one year. The SI works are expected to require approximately 14-21 days in total and are currently programmed for Q1 2027, subject to consent, weather, tide and vessel availability.

Indicative activity durations are: MBES/SBP up to two days in total; marine refraction seismic up to one day; ERT up to one day; and drilling at two boreholes up to 14 days. Mobilisation/demobilisation is included within the overall 14–21-day programme.

Working hours are proposed to be up to 12 hours/day, seven days/week and predominantly during daylight. Jack-up mobilisation/demobilisation may occur at night, indicatively over up to four nights; 24-hour drilling is not proposed in the current MUL inputs.

The permanent siphon, permanent shafts and headworks, gravity pipelines, utility diversions, over-pumping, decommissioning of the existing siphon and permanent construction activities are outside the project assessed in this SISAA. Land-based utility, structural and geotechnical investigations are also outside the MUL.

4.1 Survey and site-investigation equipment

The proposed site-investigation equipment and indicative operating parameters are summarised in Table 1 and detailed below. Equipment-associated sound levels are provided in Table 2. Final contractor-specific plant and equipment may vary, but the assessment uses the maximum SI activity envelope.

- Indicative modular jack-up barge: approximately 12 m x 14 m; four legs; two borehole positions.
- Each jack-up leg has an indicative footprint of <1 m²; eight leg placements are anticipated across the two borehole locations.

- Boreholes: maximum 20 m below bed level; 200 mm diameter in overburden and 100 mm in rock; roto-sonic drilling with continuous casing through riverbed sediment/overburden and rotary coring in bedrock.
- Acoustic equipment parameters are provided in Table 2; final contractor settings will not exceed the assessed envelope.
- Programme: approximately 14-21 days overall; up to 12 hours/day; predominantly daylight, with night-time barge mobilisation/demobilisation possible.
- The assessed drilling method comprises roto-sonic drilling with continuous casing through riverbed sediment/overburden, with rotary coring used to advance through bedrock. Continuous casing will assist borehole stability and controlled recovery of drilled material. Minor, localised suspension of fine sediments may occur during penetration of soft riverbed material or tool insertion/removal; such disturbance is expected to be extremely limited in both extent and duration. The appointed survey contractor will provide site- and activity-specific Method Statements for the marine operations within its scope.
- Lighting is relevant principally to night-time mobilisation/demobilisation and must be considered for birds, otters and bats.
- Benthic sampling: up to 30 locations and up to four grabs per location; 0.1 m² per sample.
- Small survey vessels will approach from downstream. Navigation between Rosie Hackett Bridge and Butt Bridge is currently very limited due to bridge-height restrictions. Uisce Éireann is arranging a meeting with Dublin Port to establish its requirements for the proposed works. The appointed Contractor will liaise with the Harbour Master throughout the works, and marine operators and the public will be informed in advance of potential disruptions where works affect the navigational channel. The appointed survey contractors shall comply with the following as a minimum: Quality and Environmental Management Systems based on ISO9001:2015 and ISO14001; provision of site- and activity-specific Method Statements for all marine operations within their scope; provision of Quality Management Plans for all marine operations. All vessels will be fit for purpose, certified and capable of safely undertaking all required survey work. Marine vessels will be governed by the provisions of the Sea Pollution Act 1991, as amended. In addition, all vessels will adhere to published guidelines and best working practices such as the National Maritime Oil/HNS Spill Contingency Plan (NMOSCP), Marine Pollution Contingency Plan (MPCP), Chemicals Act 2008 (No. 13 of 2008), Chemicals (Amendment) Act 2010 (No. 32 of 2010) and associated regulations. Vessels shall have a Health, Safety and Environmental Management system which should conform to the requirements of the latest International Maritime Organisation (IMO), Safety of Life at Sea (SOLAS) and environmental requirements for their classification and with any national requirement of the territorial or continental / EEZ waters to be operated in. The SI works will be undertaken from vessels in accordance with the relevant guidelines required to manage the risk to marine mammals from man-made sound sources in Irish waters (DAHG, 2014).
- Small survey/support vessels will approach the MUL area from downstream; vessel dimensions and navigation/safety-zone arrangements will be finalised with the appointed contractor and relevant navigation authority but must remain within the assessed activity envelope.

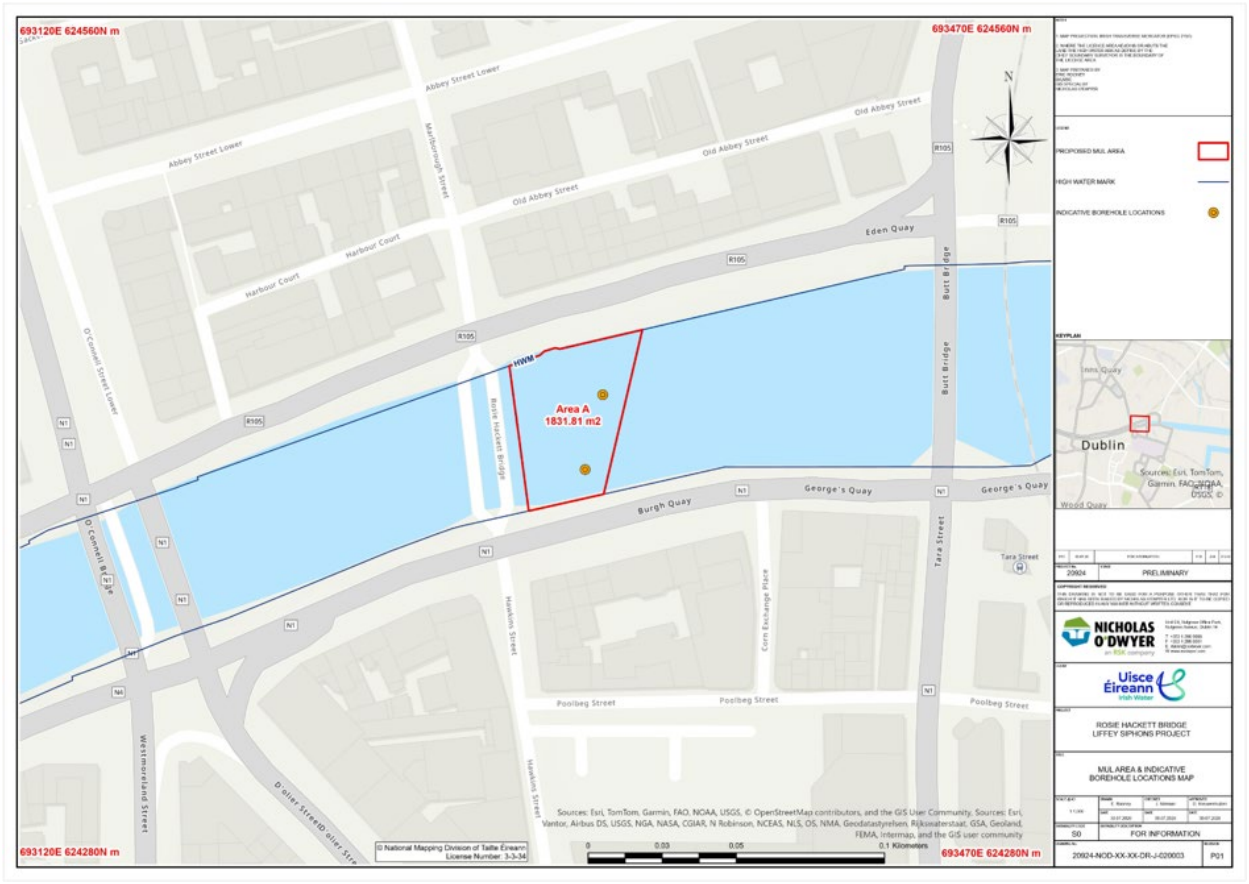


Figure 2. MUL Area A and indicative borehole locations.

Table 2. Equipment specification and sound pressure levels*

Equipment	Model	Deployment	Company	Sound Pressure Level / Source Level (dB re 1 µPa)
MBES	Teledyne SeaBat	Vessel-mounted / towed survey platform	Teledyne	190-420 kHz; proposed operation at 420 kHz. Source level estimated at 225 dB re 1 µPa at 1 m (peak)
Parametric SBP	Innomar "standard" (indicative)	Towed	Innomar	Primary 85-115 kHz; secondary 2-22 kHz; up to 232 dB re 1 µPa @ 1 m, typically <200 dB.
Boomer SBP	Applied Acoustics AA301	Surface-towed catamaran	Applied Acoustics	0.5-5 kHz; 205-211 dB re 1 µPa @ 1 m.
Marine refraction seismic	Small airgun (type TBC by contractor)	Towed	TBC	Low-frequency airgun impulse energy; peak frequencies 5-90 Hz; source level 186-220 dB re 1 µPa @ 1 m; three 65 m lines (195 m total), daylight, up to 1 day. Source active only for testing/line acquisition
Marine ERT	MAPPEM S Geophysics	Towed/fixed electromagnetic array	S Geophysics	Non-seismic; no significant underwater acoustic source identified. Survey extent up to approx. 300 m maximum total traverse length, aligned with the tunnelled marine extent and traverse direction, within one working day.
Geotechnical drilling	Roto-sonic drilling with continuous casing / rotary coring in rock	Four-legged jack-up barge	GI Contractor (TBC)	Rotary drilling: 0.001-0.120 kHz; approximately 145 dB re 1 µPa @ 1 m (MUL input). Roto-sonic drilling is assessed as local mechanical/vibratory noise.
Survey vessel/ support vessel	TBC	River surface	TBC	Vessel/mechanical noise.

4.1.1 Jack-up barge

The works will use a modular jack-up barge. Indicatively 12 m wide x 14 m long, assembled in the River Liffey and manoeuvred to the borehole positions by a support vessel. Four legs will penetrate the riverbed for stability. Final contractor vessel/barge details and navigation arrangements remain subject to appointment.

Table 3. Jack-up barge

Item	MUL input	Assessment
Working platform	Modular jack-up barge, indicatively 12 m wide x 14 m long.	Supports the two marine boreholes within the MUL area.
Riverbed contact	Four legs; each leg typically <1 m² footprint. Eight leg placements across the two borehole positions.	Temporary, localised physical disturbance to the riverbed.
Mobilisation	Craned into/out of the River Liffey from Eden Quay or Burgh Quay and manoeuvred by a support vessel.	Mobilisation/demobilisation may occur at night, indicatively over up to four nights.
Working period	Drilling up to 14 days; overall SI programme approximately 14-21 days; up to 12 hours/day, predominantly daylight.	Defines duration of disturbance and temporary channel occupation.
Support vessels	Small survey/support vessels may access from downstream; final contractor vessel details are not yet fixed. The appointed survey contractors shall comply with the following as a minimum: Quality and Environmental Management Systems based on ISO9001:2015 and ISO14001 Provision of site and activity specific Method Statements for all the marine operations within their scope Provision of Quality Management Plans for all the marine operations.	Vessel noise is secondary to active geophysical sources for AA screening; final navigation arrangements are contractor dependent.

4.1.2 Bathymetric survey

A Teledyne SeaBat T20-P MBES is proposed. It operates within 190-420 kHz and is intended to run at 420 kHz for high-resolution bathymetry. Indicative line spacing is 5-20 m. The activity is expected to be completed within daylight over up to one day.

4.1.3 Marine refraction seismic

Marine refraction surveys use controlled seismic sources to generate seismic waves through sediment and rock. A small airgun, as typically used on similar marine SI projects, is the reference source; the specialist geophysical supplier will make the final source selection based on site conditions, with a weight-drop/impact source remaining open for consideration. Refracted signals will be recorded using a HYD-360/08 (50 m) eight-element fluid-filled streamer hydrophone array (50 m tow leader; 4.5 m array tube; 360 mm element spacing; array sensitivity -169 dB re 1 V/µPa; frequency response 300 Hz-4 kHz (-3 dB)). The hydrophone array is a passive receiver. Three 65 m survey lines (195 m total) are assessed within the MUL area and can be completed in up to one day.

4.1.4 Marine electrical resistivity tomography (ERT)

A MAPPEM S Geophysics marine ERT/electromagnetic array is proposed to map subsurface resistivity contrasts. It is a non-seismic technique and is not expected to generate significant underwater acoustic emissions. This SISAA assesses a maximum total ERT traverse length of approximately 300 m, undertaken within one working day.

4.1.5 Geotechnical boreholes

Two marine boreholes are proposed at the indicative locations shown in Figure 2. Boreholes may extend to a maximum of 20 m below bed level, with 200 mm diameter through overburden and 100 mm in rock. Roto-sonic drilling with continuous casing through riverbed sediment/overburden, with rotary coring used to advance through bedrock. Continuous casing will assist borehole stability and controlled recovery of drilled material. Minor, localised suspension of fine sediments may occur during penetration of soft riverbed material or tool insertion/removal; such disturbance is expected to be extremely limited in both extent and duration.

4.1.6 Benthic ecology sampling

Up to 30 benthic sampling locations are proposed within the MUL area, with up to four grab samples at each location. Drop-down video may be undertaken before sampling. A Day grab will be employed for soft-sediment sampling; 0.1 m² per sample.

4.1.6 Ancillary water and CTD sampling

Ancillary observations may include water sampling and temperature, conductivity/salinity and depth measurements using a small overboard CTD.

4.1.7 Archaeological survey

The archaeological scope comprises non-disturbance dive inspection and quayside assessment, including probe and metal-detector survey and recording of bridge structures, culverts, masonry remains, riverbed topography and existing riverside conditions.

4.1.8 Vessel/platform presence and positioning

The main SI works are expected to operate up to 12 hours/day, seven days/week and predominantly in daylight. Jack-up mobilisation/demobilisation may take place at night over up to four nights. The overall works period is approximately 14-21 days.

5. Receiving environment

5.1 Overview

The investigation area lies within the modified, tidal inner River Liffey. The channel is bounded by engineered quay walls and is subject to tidal exchange, freshwater inflow, urban runoff, navigation, bridge structures and extensive existing infrastructure. Water and suspended material are transported downstream towards Dublin Port and Dublin Bay.

The proposed works at the Rosie Hackett Bridge fall within the Liffey Estuary Upper transitional waterbody (Water Framework Directive waterbody code IE_EA_090_0400), which forms part of the Liffey and Dublin Bay hydrological system. The EPA characterises this waterbody as meso- or polyhaline, strongly mesotidal and sheltered, and records it as a modified transitional waterbody.

The River Liffey provides a direct hydrological link between the proposed works area and downstream estuarine and coastal waters. This pathway is relevant to the Appropriate Assessment screening process, particularly in assessing whether sediment disturbance, increased suspended solids, accidental pollution or other water-quality effects associated with the proposed works could reach downstream European sites and their qualifying interests.

5.2 Sediments

The bed of the River Liffey in the vicinity of Rosie Hackett Bridge is comprised of a heterogeneous mixture of fine and coarse sediments. Soft silt and mud predominate along the channel margins and at the base of the quay walls, while the more strongly scoured central channel is characterised primarily by coarse gravel, pebbles and cobbles, with variable sand and silt content. Localised compact silt–clay, exposed bedrock and artificial hard substrates also occur (Archaeological Diving Company Ltd (2008).

5.3 Fish

The tidal River Liffey functions as both an estuarine fish habitat and as a migration corridor between Dublin Bay and the freshwater Liffey catchment. IFI Water Framework Directive surveys have demonstrated a diverse fish assemblage in the Upper and Lower Liffey estuaries. In 2022, six species were recorded from the Upper Liffey Estuary and ten from the Lower Liffey Estuary, with 14 species recorded across the combined Liffey–Tolka complex. Lesser sand eel was the dominant species recorded from the Lower Liffey Estuary and sand goby from the Upper Liffey Estuary. (IFI, 2022).

Of relevance to the proposed investigations are diadromous Annex II fish using the tidal Liffey as a migration route, including Atlantic salmon (*Salmo salar*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*). Atlantic salmon have been recorded directly during Liffey estuary fish surveys, while IFI and Dublin City Council data demonstrate the importance of the wider Liffey system for migratory salmonids and lamprey. (IFI, 2008; Delanty et al., 2022; Dublin City Council, 2021).

5.4. Birds

A number of seabird species are recorded for the River Liffey within Dublin City Centre, as far upstream as the proposed project site, including Cormorant, Black-headed Gull, Herring Gull, Lesser Black-backed Gull and Light-bellied Brent Goose.

Common Tern, Arctic Tern and, more recently, Roseate Tern (BirdWatch Ireland, 2026) breed within Dublin Port and forage within the lower River Liffey. However, there are no confirmed records of any of these three species foraging as far upstream as the proposed project site.

5.5. Mammals

Although otter use of the River Liffey within Dublin City Centre has been recorded, no significant use of the proposed project site or adjoining area has been identified. The nearest reported evidence comprises an inactive holt at North Wall Quay recorded during the 2019 Dublin City Otter Survey (Macklin *et al*., 2019) and sightings at Grand Canal Street Upper in 2020 and 2021 (Scott Cawley, 2023). The Dublin City otter survey notes the lack of accessible areas of bankside available to otters within the River Liffey as it progresses through the city centre with the exception of a small number of quayside steps between St James Gate and Customs Quay.

Harbour Porpoise is associated principally with the lower estuary and Dublin Bay, and no records of this species using the canalised waters at or adjacent to the proposed project site were identified. A Common Dolphin was recorded near Custom House Quay in November 2018, downstream of the proposed project site, demonstrating that cetaceans may occasionally enter the inner Liffey. However, such occurrences are unusual, and no records of Bottlenose Dolphin using this canalised reach were identified.

No records of bats using the proposed project site or its immediate surroundings were identified. Common Pipistrelle, Soprano Pipistrelle and Leisler's Bat are recorded within the wider Dublin urban area. Occasional commuting or foraging at Rosie Hackett Bridge cannot be excluded, but the highly illuminated and extensively urbanised surroundings of the area adjacent to the proposed project site are likely to limit its importance for bats.

Both Grey Seal (*Halichoerus grypus*) and Harbour Seal (*Phoca vitulina*) have occasionally been recorded in the Canalised section of the River Liffey as far upstream as the proposed project site at Rosie Hackett Bridge.

6. Zone of Influence

The first step in screening for appropriate assessment is to identify which European sites are likely to be within the ZoI of the proposed project and thereby have the potential to be affected by project-related impacts. This was carried out by applying the SPR model.

The hydrological ZoI follows upstream and downstream tidal connectivity through the lower Liffey towards Dublin Bay.

The assessment therefore considers: (i) direct bed footprint; (ii) suspended sediment and contaminant transport; (iii) underwater sound and vibration; (iv) above-water disturbance and lighting; (v) temporary channel occupation; (vi) accidental releases where a realistic exposure mechanism exists; and (vii) mobile-species linkage. Distance is used as supporting evidence, not as the sole screening test.

Potential project-related impacts have been identified and assessed in the context of a SPR matrix, as given in Table 4.

Table 4. Source-Path-Receptor matrix

Pressure	**Source**	**Pathway**	**Potential receptor**	**Area of impact (ZoI) (See section 8 for rationale)**
Underwater sound and vibration	Acoustic survey equipment, drilling, vessel/platform activity	Water column/riverbed	Fish; marine mammals; indirectly prey-dependent SCI birds	1 km
Sediment mobilisation/turbidity	Boreholes, jack-up legs, sampling and platform activity	Tidal transport downstream	Fish; mudflat habitat; supporting benthos	500 m

Pressure	Source	Pathway	Potential receptor	Area of impact (ZoI) (See section 8 for rationale)
Physical riverbed disturbance	Leg placement, boreholes, cores/grabs	Direct footprint	benthic invertebrates	10 m
Accidental pollution	Fuel, lubricants, drilling fluids, arisings	Surface water and tidal transport	SAC habitats; SPA supporting habitat; fish and mammals	500 m
Above-water noise/activity	Vessels, crane, drilling and personnel	Air/visual disturbance	Birds, otter and bats	50 m
Artificial lighting	Night mobilisation or 24-hour work	Light spill	Bats, birds and otter	50 m
Temporary channel obstruction	Jack-up platform and safety zone	Channel occupation	Migratory fish, otter, navigation	Barrier to migration
Invasive species	Vessel/platform/equipment transfer	Biofouling or contaminated equipment	Aquatic habitats and communities	Negligible

7. Assessment of Likely Significant Effects

This section identifies and considers potential impacts, direct and indirect, on the conservation status of the QIs and SCIs for all sites within the ZoI by reference to their defined attributes, measures and targets as set out by NPWS in the relevant site-specific Conservation objectives for each site.

No direct overlap is identified between the proposed MUL investigation footprint and any designated European site.

This screening assessment applies the maximum activity envelope defined in Section 4, including ERT traverse(s) totalling up to approximately 300 m, the two-borehole footprint and material estimate, and the conservative marine-refraction acoustic envelope. Exposure and sensitivity are considered for each QI/SCI using pressure-specific pathways. Short duration and small footprint inform the magnitude of effect.

The principal potential sources of impact are underwater sound and vibration, localised riverbed disturbance and sediment mobilisation, water-quality change, vessel or platform presence, lighting, temporary channel occupation, accidental events and invasive-species transfer. Table 5 identifies potential pressures relative to European sites within the ZoI.

7.1 Vessel and jack-up barge disturbance and noise

Disturbance due to the presence of the jack up barge and associated vessels would not significantly contribute to the overall vessel traffic/temporary infrastructure in this area. Temporary disturbance to seabirds, should they be foraging in the area at the same time as the proposed survey, may occur. However, given the highly

limited value of the available foraging habitat, the magnitude of the disturbance would not have the potential to impact their fitness and therefore does not have the potential to lead to any population-level effects at the SPAs or other adjacent colonies within the ZoI.

7.2 Acoustic surveys

7.2.1 Pinnipeds and cetaceans

Underwater noise from the combined geophysical survey equipment would be dominated by the impulsive airgun and boomer sources and could be detected by marine mammals, including Harbour Seal and Grey Seal, Harbour Porpoise and Bottlenose Dolphin. However, Harbour Porpoise and Bottlenose Dolphin are considered unlikely to enter the canalised city-centre reach, whereas seals are known to enter the River Liffey to travel and forage

In the absence of site-specific acoustic modelling, a precautionary 1 km distance has been adopted for potential behavioural effects from the seismic source, which is considered a conservative estimate. Noise could potentially propagate through the canalised River Liffey for up to approximately 3 km upstream and downstream of the survey area. The potential for auditory injury (PTS) would principally be confined to within 100 metres of the operating source, while temporary behavioural disturbance, avoidance or displacement is considered most likely within approximately 1 km. While noise may be detectable up to 3 km distant, this would occur at progressively lower levels, and detection alone would not constitute a significant ecological effect.

While LSE on Harbour porpoise and Bottlenose Dolphin are considered negligible, there remain uncertainty with regard to the potential for LSE effects on Grey seal and Harbour seal due to their recorded use of the section of the River Liffey in the vicinity of the proposed project site. Therefore, with due consideration to the precautionary principle, and in the absence of the measures recommended in the Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters (NPWS, 2014), LSE on European sites, within the ZoI of the proposed project, designated for relevant marine-mammal qualifying interests cannot be excluded.

The potential for LSEs on the conservation objectives of Grey Seal [1364] and Harbour Seal [1365] within Lambay Island SAC and, out of an abundance of caution, Harbour Porpoise within Lambay Island SAC and Rockabill to Dalkey Island SAC, which are within the ZoI of the proposed project, are considered possible.

7.2.2 Otter (Lutra lutra)

Otter hearing is not adapted to water. Voight *et al* 2019 reported that their hearing range in air is within the range of 200 Hz to 32 kHz, with lowest thresholds around 4 kHz. Stepien (2020) reported behaviour changes in *lutra lutra* underwater at frequencies of both 1Khz and 14KHz at received levels of 105–145 dB re 1 µPa rms, with changes in diving and food retrieval behaviour. Therefore, while temporary behavioural disturbance is possible, hearing injury cannot be determined.

There are no European sites designated for otter within the ZoI of the proposed project. Therefore, LSE on the conservation objectives of Otter within any European site are not possible.

7.2.3 Fish

Underwater noise from the combined geophysical survey equipment would be dominated by the impulsive airgun and boomer sources and could be detected by fish, including migratory salmon and lamprey species potentially using the River Liffey. Noise could potentially travel throughout the canalised river, including up to approximately 3 km upstream and 3 km downstream of the survey area. However, the potential for physical or auditory injury would principally be confined to within tens of metres of an operating source, while temporary behavioural disturbance, avoidance or disruption of migration is considered most likely within approximately 500m. While noise detectable up to 3 km upstream or downstream would occur at progressively lower levels, and detection alone would not constitute a significant ecological effect.

There are no European sites designated for Atlantic salmon or Lamprey species within the ZoI of the proposed project. Therefore, Likely Significant Effects on the conservation objectives of Atlantic salmon and/or Lamprey Species associated with any European site are not considered possible.

7.2.4 Seabirds

Common Tern and Arctic Tern breed within Dublin Port and forage within the lower River Liffey. Both species are Special Conservation Interests of SPAs within the wider Dublin Bay and Irish Sea area. Roseate Tern may also occur occasionally, although it is considerably less numerous. While terns may potentially travel upstream towards the city centre, regular foraging as far upstream as the proposed project site at Rosie Hackett Bridge has not been confirmed. Gull species and occasionally Cormorant have been recorded in the area of the proposed project site. The impacts of underwater noise on diving seabirds is poorly understood, however, there is potential for disturbance to Cormorant should they be foraging in the vicinity of the proposed project site during the operation of the air gun. However, as few seabirds would be present, impacts on their fitness to breed would be highly unlikely to lead to any population-level effects at the SPAs or other adjacent colonies.

Therefore, impacts on the conservation objectives of birds which form a SCI for any European site are not considered possible.

7.3 Sediment disturbance

Boreholes, jack-up legs and benthic grabs will cause small, discrete riverbed disturbance. Benthic grabs are limited to 0.1 m^2 per sample at up to 30 locations and a maximum of four samples per location; jack-up leg contact is limited to eight placements, each typically <1 m^2.

7.3.1 Benthic habitats

Physical riverbed disturbance is confined to the two boreholes, eight jack-up leg placements, ERT traverse(s) totalling up to approximately 300 m and localised benthic grabs/drop-down video. No designated European-site habitat overlaps the MUL footprint. The magnitude of impact of the proposed boreholes and jack-up barge placement is considered too localised for any significant sediment mobilisation.

Therefore, direct effects on benthic habitat qualifying interests of European sites are screened out.

7.4 Water column activities

Potential water-column pathways include temporary suspended sediment, contaminants associated with disturbed sediment, drilling returns or fluids, accidental releases, underwater sound and the physical

presence of vessels or equipment. Exposure must be assessed against the relevant designated habitat, species or supporting ecological process.

Water-column activity will arise from small survey/support vessels, geophysical line running, deployment/recovery of ERT and sampling equipment, jack-up positioning and drilling. Potential pathways are temporary underwater sound, localised turbidity/returns, vessel/platform presence and accidental water-quality deterioration. Roto-sonic drilling with continuous casing is specified to minimise disturbance and sediment mobilisation. Minor, localised suspension of fine sediments may occur during penetration of soft riverbed materials or during tool insertion/removal; such disturbance is expected to be extremely limited in both extent and duration.

The proposed activities are temporary and spatially limited, with disturbance confined to a small investigation envelope within the inner Liffey. **Any increase in suspended sediment or associated water-column disturbance would be localised and short-lived and is not considered capable of causing a change in scale, extent, or duration that could significantly affect the conservation objectives of a downstream European site.**

7.5 Lighting and above-water noise

Above-water noise, vessel/platform presence and artificial lighting may cause temporary disturbance or displacement of fauna using the inner-Liffey corridor. Night-time activity is associated principally with jack-up mobilisation/demobilisation, which may occur over up to four nights.

The site-investigation programme is temporary, extending over approximately 14–21 days, with activities predominantly undertaken during daylight hours. Night-time lighting and associated above-water activity would be principally associated with mobilisation and demobilisation of the jack-up barge and would therefore be intermittent and of limited duration.

Given the highly urbanised environment of the inner Liffey, the temporary nature and limited spatial extent of the works and lack of records of any use of the proposed project site by bats or otters, **likely significant effects on the conservation objectives of these two species associated with any European site are not considered possible.**

7.6 Invasive species

The mobilisation of vessels, platforms and equipment creates a potential pathway for the introduction or spread of aquatic invasive species.

The principal jack-up barge will be transported to the site by land and assembled/deployed within the River Liffey, substantially limiting the potential for transfer of marine fouling organisms from other coastal or offshore waters. Suitable small survey/support vessels would generally not be of a size required to carry ballast water, although this will be confirmed following contractor appointment. Dublin Port Authority prohibits ballast-water discharge within the port basins and approach waters. However, vessels arriving from the UK or another operating area could transfer invasive species through hull fouling or contaminated equipment to suitable substrate within the location of the proposed project.

The majority of hull-fouling species require hard substrates for settlement and establishment. Their potential to establish within the predominantly soft-sediment qualifying habitats of adjacent SACs is therefore

considered limited, particularly where suitable attachment surfaces are absent. However, shells, gravel and biogenic structures may provide settlement surfaces within sedimentary habitats.

As the vessels and their operating histories have not yet been confirmed, sufficient certainty is not available to exclude the introduction of non-native invasive species. **Therefore, LSEs on the Mudflats and sandflats not covered by seawater at low tide [1140] habitat within South Dublin Bay SAC and North Dublin Bay SAC cannot be excluded.**

8. European sites

Direct riverbed impacts would be confined to the investigation footprint. The maximum pressure-specific ZoI identified in Table 4 is 1 km for fish and marine mammals; however, mobile qualifying-interest species may provide functional connectivity with European sites located at greater distances.

The ZoI is defined with reference to the full MUL scope, including survey corridors and transits. Species and habitats with no plausible linkage, or credible pathway, to the marine environment, including coastal habitats with mapped areas above mean high-water spring tides, and no reliance on marine habitats are therefore outside of the ZoI.

Table 5 provides a list of all SACs and their Qualifying Interests within the ZoI of the proposed project where source-pathway-receptor links have been identified. Table 6 provides a list of all SPAs and their Special Conservation Interests where source-pathway-receptor links have been identified.

Table 5. SACs considered in the European-site screening review.

NPWS Site code	Site name	Qualifying interests considered	Distance to MUL area	Screened in/out	Screening rationale
000210	South Dublin Bay SAC	Mudflats and sandflats [1140]	~3.3 km straight-line; ~4.7–5 km downstream/hydrological route.	**Screened in**	Indirect hydrological source-pathway-receptor link; no habitat overlap. Site screened in based on the precautionary principle re the potential introduction of invasive species.
		Annual vegetation of drift lines [1210]		Screened out	Coastal habitat outside of ZoI.
		Salicornia and other annuals colonising mud and sand [1310]		Screened out	Coastal habitat outside of ZoI.
		Embryonic shifting dunes [2110]		Screened out	Coastal habitat outside of ZoI.
000206	North Dublin Bay SAC	Mudflats/sandflats [1140]	~5.3 km straight-line; ~6.7 km downstream.	**Screened in**	Indirect hydrological source-pathway-receptor link; no designated habitat overlap. Site screened in based on the precautionary principle re the potential introduction of invasive species.
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]		Screened out	Coastal habitat outside of ZoI.
		Annual vegetation of drift lines [1210]		Screened out	Coastal habitat outside of ZoI.
		Salicornia and other annuals colonising mud and sand [1310]		Screened out	Coastal habitat outside of ZoI.
		Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]		Screened out	Coastal habitat outside of ZoI.
		Mediterranean salt meadows (Juncetalia maritimi) [1410]		Screened out	Coastal habitat outside of ZoI.
		Embryonic shifting dunes [2110]		Screened out	Coastal habitat outside of ZoI.

NPWS Site code	Site name	Qualifying interests considered	Distance to MUL area	Screened in/out	Screening rationale
		Shifting dunes along the shoreline with *Ammophila arenaria* (White dunes) [2120]		Screened out	Coastal habitat outside of ZoI.
		Humid dune slacks [2190]		Screened out	Coastal habitat outside of ZoI.
		Petalophyllum ralfsii (Petalwort) [1395]		Screened out	Coastal species outside of ZoI.
000204	Lambay Island SAC	Reefs [1170]	~22 km straight-line; ~27 km by marine route.	Screened out	No habitat overlap; SPR link too weak.
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]		Screened out	No habitat overlap; SPR link too weak.
		Phocoena phocoena (Harbour Porpoise) [1351]		**Screened In**	Mobile species within the ZoI of the proposed project.
		Halichoerus grypus (Grey Seal) [1364]		**Screened In**	Mobile species within the ZoI of the proposed project.
		Phoca vitulina (Harbour Seal) [1365]		**Screened In**	Mobile species within the ZoI of the proposed project.
003000	Rockabill to Dalkey Island SAC	Reefs [1170];	~12 km straight-line; 16.55 km marine/hydrological route.	Screened out	No habitat overlap; SPR link too weak.
		Phocoena phocoena (Harbour Porpoise) [1351]		Screened In	Mobile species within the ZoI of the proposed project.

Table 6. SPAs considered in the screening review.

NPWS Site code	Site name	SCIs considered	Distance to MUL area (as crow flies)	Screened in/out	Screening rationale
004236	North-west Irish Sea SPA	Red-throated Diver (*Gavia stellata*) [A001]	~7 km	Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Great Northern Diver (*Gavia immer*) [A003]			
		Fulmar (*Fulmarus glacialis*) [A009]			
		Manx Shearwater (*Puffinus puffinus*) [A013]			
		Shag (*Phalacrocorax aristotelis*) [A018]			
		Common Scoter (*Melanitta nigra*) [A065]			
		Kittiwake (*Rissa tridactyla*) [A188]			
		Guillemot (*Uria aalge*) [A199]			
		Razorbill (*Alca torda*) [A200]			
		Puffin (*Fratercula arctica*) [A204]			
		Little Gull (*Hydrocoloeus minutus*) [A862]			
		Common Gull (*Larus canus*) [A182]			
		Little Tern (*Sternula albifrons*) [A885]		Screened out	Outside foraging range
		Roseate Tern (*Sterna dougallii*) [A192]			Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Common Tern (*Sterna hirundo*) [A193]			
		Arctic Tern (*Sterna paradisaea*) [A194]			
		Cormorant (*Phalacrocorax carbo*) [A017]		Screened out	Occasional use of proposed project site but not at a scale with potential to impact fitness to breed within SPA
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]		Screened out	Occasional use of proposed project site but non-diving seabirds.
		Lesser Black-backed Gull (*Larus fuscus*) [A183]			
		Herring Gull (*Larus argentatus*) [A184]			
		Great Black-backed Gull (*Larus marinus*) [A187]			
004024	South Dublin Bay and River Tolka Estuary SPA	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	~2.9 km	Screened out	Wading water bird. No suitable foraging habitat
		Oystercatcher (*Haematopus ostralegus*) [A130]			
		Ringed Plover (*Charadrius hiaticula*) [A137]			

		Grey Plover (*Pluvialis squatarola*) [A141]			
		Knot (*Calidris canutus*) [A143]			
		Sanderling (*Calidris alba*) [A144]			
		Dunlin (*Calidris alpina*) [A149]			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]			
		Redshank (*Tringa totanus*) [A162]			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]		Screened out	Occasional use of proposed project site but non-diving sea bird.
		Roseate Tern (*Sterna dougallii*) [A192]		Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Common Tern (*Sterna hirundo*) [A193]			
		Arctic Tern (*Sterna paradisaea*) [A194]			
		Wetland and Waterbirds [A999]		Screened out	Habitat outside ZoI
004006	North Bull Island SPA	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	~5.3 km	Screened out	Wading water bird. No suitable foraging habitat
		Shelduck (*Tadorna tadorna*) [A048]			
		Teal (*Anas crecca*) [A052]			
		Pintail (*Anas acuta*) [A054]			
		Oystercatcher (*Haematopus ostralegus*) [A130]			
		Golden Plover (*Pluvialis apricaria*) [A140]			
		Grey Plover (*Pluvialis squatarola*) [A141]			
		Knot (*Calidris canutus*) [A143]			
		Sanderling (*Calidris alba*) [A144]			
		Dunlin (*Calidris alpina*) [A149]			
		Black-tailed Godwit (*Limosa limosa*) [A156]			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]			
		Curlew (*Numenius arquata*) [A160]			
		Redshank (*Tringa totanus*) [A162]			
		Turnstone (*Arenaria interpres*) [A169]			
		Shoveler (*Spatula clypeata*) [A857]			
		Black-headed Gull (*Chroicocephalus ridibundus*) [A179]		Screened out	Occasional use of proposed project site but non-diving sea bird.
		Wetland and Waterbirds [A999]		Screened out	Habitat outside ZoI

004113	Howth Head Coast SPA	Kittiwake (*Rissa tridactyla*) [A188]	~13.5 km	Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
004117	Ireland's Eye SPA	**Cormorant (*Phalacrocorax carbo*) [A017]**	~13 km	Screened out	Occasional use of proposed project site but not at a scale with potential to impact fitness to breed within SPA
		Herring Gull (*Larus argentatus*) [A184]		Screened out	Occasional use of proposed project site but non-diving sea bird.
		Kittiwake (*Rissa tridactyla*) [A188]		Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Guillemot (*Uria aalge*) [A199]			
		Razorbill (*Alca torda*) [A200]			
004016	Baldoyle Bay SPA	Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	~9 km	Screened out	Wading water bird. No suitable foraging habitat
		Shelduck (*Tadorna tadorna*) [A048]			
		Ringed Plover (*Charadrius hiaticula*) [A137]			
		Golden Plover (*Pluvialis apricaria*) [A140]			
		Grey Plover (*Pluvialis squatarola*) [A141]			
		Bar-tailed Godwit (*Limosa lapponica*) [A157]			
004172	Dalkey Islands SPA	**Roseate Tern (*Sterna dougallii*) [A192]**	~13 km	Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Common Tern (*Sterna hirundo*) [A193]			
		Arctic Tern (*Sterna paradisaea*) [A194]			
004069	Lambay Island SPA	Fulmar (*Fulmarus glacialis*) [A009]	~22.8 km	Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated
		Shag (*Phalacrocorax aristotelis*) [A018]			
		Greylag Goose (*Anser anser*) [A043]			
		Kittiwake (*Rissa tridactyla*) [A188]			
		Guillemot (*Uria aalge*) [A199]			
		Razorbill (*Alca torda)* [A200]			

		Puffin (*Fratercula arctica*) [A204]			
		Cormorant (*Phalacrocorax carbo*) [A017]		Screened out	Occasional use of proposed project site but not at a scale with potential to impact fitness to breed within SPA
		Lesser Black-backed Gull (*Larus fuscus*) [A183]		Screened out	Occasional use of proposed project site but not at a scale with potential to impact fitness to breed within SPA
		Herring Gull (*Larus argentatus*) [A184]			
004014	Rockabill SPA	Purple Sandpiper (*Calidris maritima*) [A148]	~32.4 km	Screened out	Wading water bird. No suitable foraging habitat
		Roseate Tern (*Sterna dougallii*) [A192]		Screened out	Species not recorded at proposed project site. Mobility alone does not establish project-specific functional linkage. Foraging habitat not optimal for species. Disturbance pathway at a scale likely to affect the SPA is not demonstrated.
		Common Tern (*Sterna hirundo*) [A193]			
		Arctic Tern (*Sterna paradisaea*) [A194]			

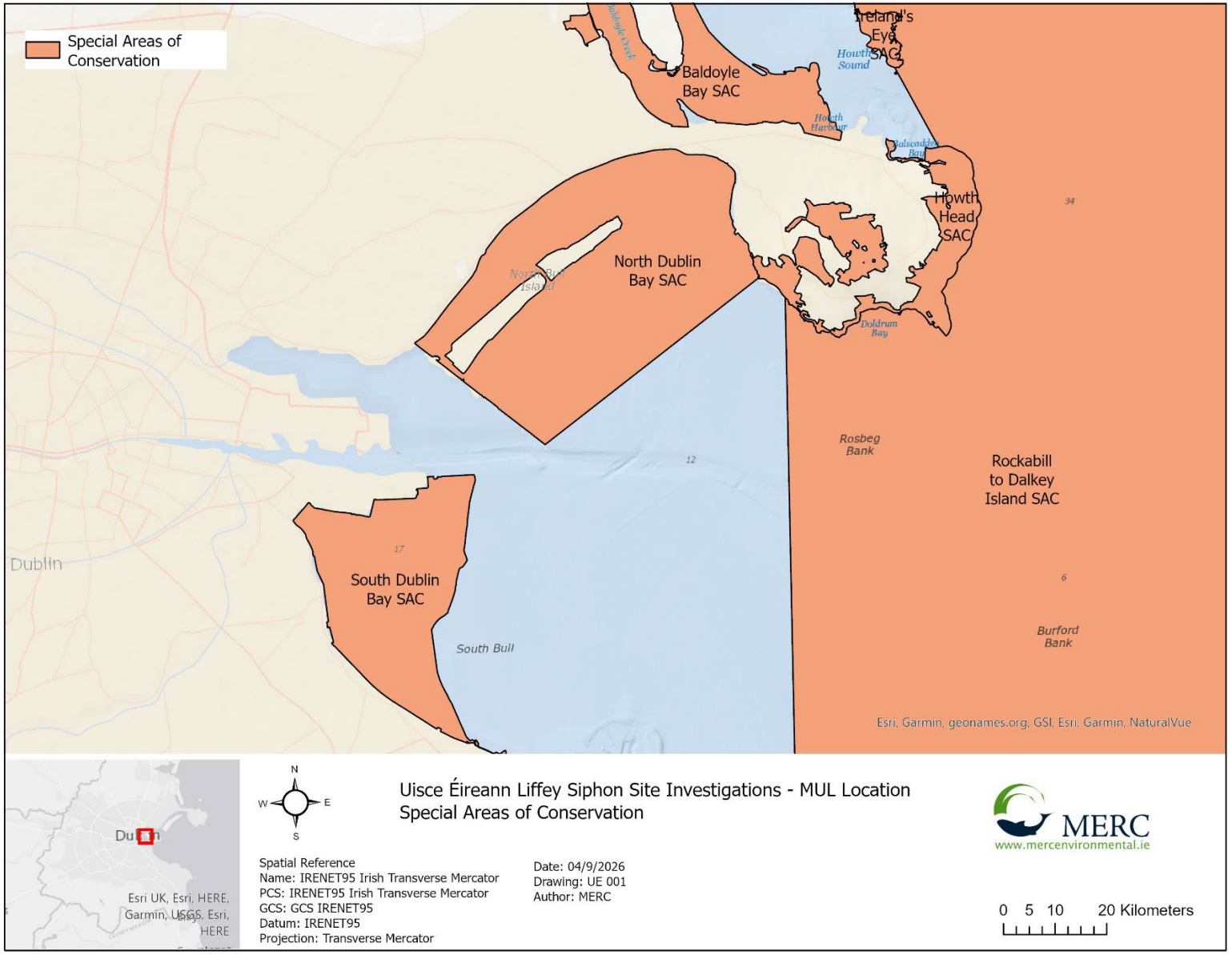


Figure 3. Relevant SACs within the ZoI**3**

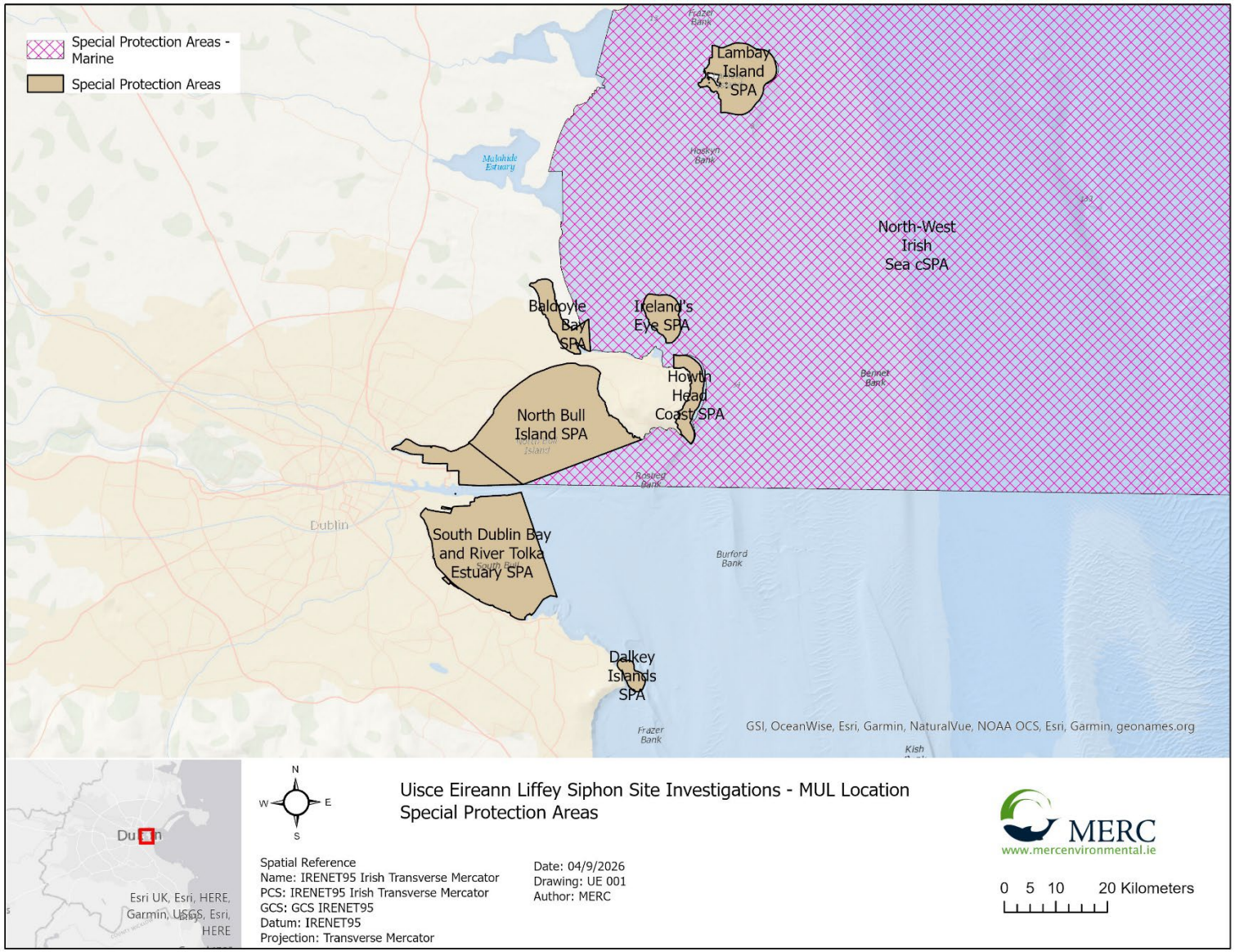


Figure 4. Relevant SPAs within the ZoI

9. In-combination impacts

While a single project or plan may not, in itself, lead to a significant effect on the conservation objectives of a site, a combination of projects within a localised area may have a significant effect on a site. Therefore, the cumulative impacts must be taken into consideration when assessing the possible impacts of a project.

Approach to identification of in-combination effects

Potential project-related impacts were identified in Sections 6 to 8 of this SISAA and include pressures associated with vessel presence and acoustic surveys. Additional projects identified as having potential to act in combination with the proposed project are considered to be those projects most likely to contribute to these pressures and generate additional underwater noise, vessel disturbance and impacts on benthic habitats.

MARA has developed a stepwise approach for identifying in-combination plans and projects. As such, using professional and scientific judgement, the key steps for assessing cumulative effects employed were as follows:

- Defining the Cumulative Effects Spatial Scope (CESS)
- Defining the Cumulative Effects Temporal Scope (CETS)
- Impact identification
- Pathway identification
- Prediction
- Identification of Plans or Projects that could act in combination
- Screening Stage Cumulative Effects Assessment conclusion
- Managing cumulative impacts identified - to be carried out as part of Stage 2 AA process

This SISAA, among other things, focuses on lower-Liffey/Dublin Bay projects capable of contributing to underwater noise, sediment disturbance, water-quality effects, navigation/channel occupation or disturbance of the same ecological receptors.

For the project-level in-combination search, the Cumulative Effects Spatial Scope (CESS) is defined as a 2 km area around the proposed MUL site. The Cumulative Effects Temporal Scope (CETS) is one year, corresponding to the proposed MUL duration. Projects (Table 7) within or intersecting this spatial scope were reviewed where their programme could overlap the CETS and a shared ecological pathway is present.

Table 7. Relevant projects and consents retained for in-combination assessment using the 2 km CESS.

Reference	Status/ authority	Location/ activity	Potential shared pathway	Source
LIC230007	Determined 25 June 2025 / MARA	Point & Tom Clarke Bridge SI – Lower River Liffey environmental/geotechnical site investigations.	Underwater noise, drilling/bed disturbance, vessels/navigation and shared mobile receptors.	MARA LIC230007
MUL260055	Application received 31 July 2026 / MARA	MetroLink River Liffey SI – River Liffey between Rosie Hackett Bridge and Butt Bridge; three geotechnical boreholes from a jack-up barge with associated sampling/testing.	Direct spatial overlap; underwater and above-water noise/vibration, drilling/bed disturbance, sediment/water quality, vessel/platform activity, navigation, lighting and shared mobile receptors.	MARA MUL260055 application and supporting documentation.
LIC230007MA	Applied 15 December 2025 / MARA; not yet determined in the supplied review	Point/Tom Clarke SI licence amendment – Lower Liffey / River Dodder; additional marine boreholes.	Drilling, underwater noise, sediment/water quality, vessels/navigation and shared mobile receptors where the consent area intersects the CESS.	MARA LIC230007MA
MAC240014	Determined 5 June 2026 / MARA	Point/Tom Clarke Bridge permanent works – lower River Liffey.	Potential piling/construction noise, riverbed disturbance, navigation and water-quality pathways if programmes overlap.	MARA MAC240014
MAC240013	Determined 23 April 2026 / MARA	North Wall–Poolbeg electricity cable – lower Liffey / North Wall–Poolbeg.	Sub-river construction noise/vibration, vessel/navigation activity and water-quality pathways where works intersect the CESS.	MARA MAC240013 assessment and consent consent
MAC240028	Determined 14 July 2025 / MARA	Sir John Rogerson's Quay scour protection – lower Liffey.	Local bed disturbance, suspended sediment and water-quality pathway.	MARA MAC240028
ABP-314724-22	Granted 30 September 2025; operative since 12 January 2026	MetroLink Railway Order – city-centre alignment crossing beneath the River Liffey.	Potential construction noise/vibration, lighting, groundwater/dewatering and disturbance where works overlap spatially and temporally.	An Coimisiún Pleanála MetroLink Railway Order case file
FS007132	Foreshore consent determined 12 August 2022; campaigns permitted through 2029	Dublin Port maintenance dredging 2022–2029 – inner Liffey navigation channel, basins and berths.	Suspended sediment/turbidity, water quality, vessel/navigation and underwater-noise pathways where dredging occurs within the CESS and overlaps temporally.	Government of Ireland FS007132 record

MUL260055, Transport Infrastructure Ireland's proposed MetroLink River Liffey site-investigation programme, directly overlaps the Rosie Hackett Bridge–Butt Bridge reach. It includes geotechnical boreholes from a jack-up barge and therefore has potential shared pathways for underwater/above-water noise, riverbed disturbance, sediment/water quality, vessel/platform activity, navigation, lighting and mobile ecological receptors if the programmes overlap.

Table 8 summarises the national and sectoral plans reviewed for potential in-combination interactions. Plan-level policies are considered only where they could give rise to a specific project/activity pathway overlapping the Rosie Hackett investigations; the project-level cases in Table 7 provide the more relevant cumulative screening evidence.

Table 8. Policy and Strategic Plans Considered for In-Combination Assessment

	Plans		
1	**Climate Action Plan 2023**	These plans promote sustainable development in the maritime environment, particularly in line with Ireland's Climate Action Plan's renewable electricity target of 80% of energy generated from renewable sources by 2030.	No specific plan-level activity is identified that changes the project-specific Stage 1 screening conclusion. Any consented/foreseeable project arising under the plan is assessed through the project-level in-combination review where a shared pathway exists.
2	**Water Action Plan 2024/ River Basin Management Plans (RBMP) 2022-2027**		
3	**Designated Maritime Area Plans (DMAPs)**		

9.1 Assessment of In-Combination Effects

The project and consent search within the 2 km CESS identifies activities with potential shared underwater-noise, sediment/water-quality, vessel/navigation, lighting or mobile-receptor pathways. Temporal overlap is considered over the one-year CETS and should be confirmed as individual programmes are refined.

Current MARA and planning information supplied for the review was screened against the 2 km CESS and one-year CETS. Table 7 summarises the projects retained. MUL260055 is particularly relevant because it directly overlaps the Rosie Hackett Bridge–Butt Bridge reach and includes geotechnical drilling from a jack-up barge. Temporal overlap is not yet confirmed; if the programmes overlap, in-combination underwater-noise and mobile-receptor effects may lead to in-combination effects.

Therefore, the potential for LSEs on the conservation objectives of Grey Seal [1364] and Harbour Seal [1365] within Lambay Island SAC and, out of an abundance of caution, Harbour Porpoise within Lambay Island SAC and Rockabill to Dalkey Island SAC, which are within the ZoI of the proposed project, are considered possible.

10. Transboundary effect

Transboundary effects refer to significant effects that a proposed development in one country may have on the environment of another. The United Nations Economic Commission for Europe (UNECE) Convention on Environmental Impact Assessment in a Transboundary Context, (referred to as the 'Espoo Convention') adopted in 1991 documents the requirement to consider transboundary impacts. The Espoo Convention requires that assessments be extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary impacts.

The proposed site investigations are localised to the inner River Liffey. No credible pathway has been identified by which the temporary investigations could give rise to likely significant effects on European sites in another EU Member State. No transboundary European-site effect is therefore identified at screening stage.

Since 1 January 2021, nature conservation areas in the UK (including Northern Ireland) are no longer part of the Natura 2000 network. On this basis, the nearest European sites outside Ireland's jurisdiction are located in mainland Europe. Given the localised and temporary nature of the proposed works, together with the absence of a credible transboundary impact pathway, no potential for likely significant effects on European sites associated with other EU Member States was identified.

11. Conclusion

This report provides information to support Screening for Appropriate Assessment of the proposed project and has been prepared having regard to the European Commission guidance, Assessment of plans and projects in relation to Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.

The assessment concludes that the proposed project may give rise to significant effects on the conservation objectives of a number of European sites without mitigation. Accordingly, it is concluded that Appropriate Assessment of the proposed project is required.

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Appendix 1

Foraging ranges for breeding seabirds. After Woodward et al. (2019).

Species		Mean Max (km)	SD (km)	MM + 1SD (km)
Manx shearwater	*Puffinus puffinus*	**1346.8**	**1018.7**	**2365.5**
Leach's storm petrel	*Hydrobates leucorhous*	**657**		
Northern fulmar	*Fulmarus glacialis*	**542.3**	**657.9**	**1200.2**
Great skua	*Stercorarius skua*	**443.3**	**487.9**	**931.2**
European storm petrel	*Hydrobates pelagicus*	**336**		
Northern gannet	*Morus bassanus*	**315.2**	**194.2**	**509.4**
Black-legged kittiwake	*Rissa tridactyla*	**156.1**	**144.5**	**300.6**
Atlantic puffin	*Fratercula arctica*	**137.1**	**128.3**	**265.4**
Lesser black-backed gull	*Larus fuscus*	**127**	**109**	**236**
Razorbill	*Alca torda*	**88.7**	**75.9**	**164.6**
Common guillemot	*Uria aalge*	**73.2**	**80.5**	**153.7**
Great black-backed gull	*Larus marinus*	**73**		
Herring gull	*Larus argentatus*	**58.8**	**26.8**	**85.6**
Common gull	*Larus canus*	**50**		
Sandwich tern	*Thalasseus sandvicensis*	**34.3**	**23.2**	**57.5**
Arctic tern	*Sterna paradisaea*	**25.7**	**14.8**	**40.5**
Cormorant	*Phalacrocorax carbo*	**25.6**	**8.3**	**33.9**
Common eider	*Somateria mollissima*	**21.5**		
Mediterranean gull	*Ichthyaetus melanocephalus*	**20**		
Black-headed gull	*Chroicocephalus ridibundus*	**18.5**		
Common tern	*Sterna hirundo*	**18**	**8.9**	**26.9**
European shag	*Gulosus aristotelis*	**13.2**	**10.5**	**23.7**
Roseate tern	*Sterna dougallii*	**12.6**	**10.6**	**23.2**
Red-throated diver	*Gavia stellata*	**9**		
Little tern	*Sternula albifrons*	**5**		
Black guillemot	*Cepphus grylle*	**4.8**	**4.3**	**9.1**