TECHNICAL NOTE

Fingal Coastal Way

SUBJECT
Description of Proposed Maritime Usage

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TECHNICAL
NOTE

Attachment 3.1 – Description of Proposed Maritime Usage

1. Introduction

1.1 Background

Fingal County Council (FCC) is applying for a Maritime Usage Licence (MUL) to facilitate Ground Investigation (GI) works associated with Section 2 of the proposed Fingal Coastal Way Scheme at Rogerstown Estuary, County Dublin. The Maritime Usage Licence is required solely for the purpose of undertaking site investigations within the maritime area and associated estuarine environment.

The Fingal Coastal Way is a strategic active travel project being developed by Fingal County Council to provide a continuous coastal walking and cycling route along the Fingal coastline. The overall scheme will extend from Donabate to the County Meath boundary north of Balbriggan and will form part of the Greater Dublin Area Cycle Network Plan (Route FG1/N5) as well as the TII National Cycle Network. The project seeks to improve sustainable transport connectivity, recreation, tourism opportunities and access to the coast while providing a safe and attractive route for pedestrians and cyclists. The proposed maritime usage relates specifically to Section 2 of the scheme, which extends between Donabate and Rush and includes the proposed crossing of Rogerstown Estuary. The site investigations are required to obtain baseline geological, geotechnical, hydrogeological and environmental information that will inform the design, planning and environmental assessment of the proposed infrastructure.

This document describes the proposed maritime usage and outlines the nature, extent and purpose of the Ground Investigation works proposed within the Maritime Usage Licence area.

1.2 Purpose of the Ground Investigation Works

The purpose of the Ground Investigation is to establish ground conditions and engineering parameters required for the design and assessment of the Fingal Coastal Way infrastructure. The investigations will provide information necessary to:

- Establish geological and geotechnical ground conditions.
- Identify the extent and nature of soft ground deposits.
- Determine engineering properties of soils and bedrock.
- Undertake groundwater observations and monitoring.
- Obtain samples for geotechnical, geo-environmental and laboratory testing.
- Inform the design of the proposed bridges, retaining structures and coastal infrastructure.
- Reduce engineering and environmental uncertainty during the design process.

The investigations are temporary in nature, are limited to information gathering purposes and do not constitute construction works.

2. Site Location

The proposed Ground Investigation works are located within Section 2 of the Fingal Coastal Way Scheme. This section extends for approximately 3km and comprises a shared walking and cycling facility together with associated structures required to facilitate the route between Donabate and Rogerstown Park. The proposed infrastructure includes:

- 3m – 4m wide shared pedestrian and cycle facility;
- Two culvert structures;
- Reinforced earth retaining structures;
- A reinforced concrete seawall; and
- Two proposed bridges: one over the Railway Line and one over Rogerstown Estuary.

The route commences at the junction of Beaverstown Road and Kingsland in Donabate and proceeds northwards before crossing the Dublin to Drogheda railway line at Beaverstown Golf Club. The route then follows the railway corridor northwards before crossing Rogerstown Estuary and continuing through Rogerstown Park, terminating adjacent to Baleally Lane in Rush.

2.1 Maritime Usage Licence Area

The proposed Maritime Usage Licence Area is centred on the Rogerstown Estuary crossing and associated coastal infrastructure. The estuary crossing represents one of the key structures on the Section 2 scheme and the Ground Investigation works are required to inform the design of:

- Rogerstown Estuary Bridge;
- Reinforced earth retaining structures;
- Seawall infrastructure;
- Bridge foundations;
- Approach embankments; and
- Associated active travel infrastructure.

The works are located within and adjacent to the Rogerstown Estuary Special Area of Conservation (SAC) and Rogerstown Estuary Special Protection Area (SPA). Environmental sensitivities have therefore been incorporated into the development of the investigation methodology and site access arrangements.

Figure 1 - Proposed Maritime Usage Licence Area



3. Description of Proposed Maritime Usage

3.1 Overview

The proposed maritime usage comprises temporary Ground Investigation works within Rogerstown Estuary and adjacent lands. The works will consist of geophysical surveys, intrusive ground investigations, groundwater observations, environmental sampling and laboratory testing required to establish the engineering properties of the ground underlying the proposed scheme. The proposed activities will be temporary, localised and investigative in nature. No permanent structures will be installed as part of the maritime usage and the information obtained during the investigations will be used to support the detailed design of the Fingal Coastal Way and associated structures, including the proposed estuary bridge crossing.

3.1.1 Geophysical Surveys

Geophysical surveys will be undertaken prior to intrusive investigations to provide information on subsurface conditions and to optimise the final location of boreholes. The surveys will comprise:

- Electrical Resistivity Survey (ER); and
- Seismic Refraction Survey (SR).

Five survey lines are proposed across the estuary crossing area. The objective of the surveys is to assess bedrock profile, identify variations in subsurface conditions, estimate rockhead levels and identify potential areas of weak or variable ground conditions. The survey information will be used to refine exploratory hole locations and provide additional information for future bridge foundation design.

3.1.2 Borehole Investigations

A total of seventeen boreholes are proposed as part of the Ground Investigation for the scheme, however only ten of those are located within the MUL area. The boreholes will comprise a combination of:

- Cable percussive boreholes;
- Cable percussive boreholes with rotary coring follow-on;
- Groundwater observations;
- Sampling for laboratory testing; and
- Environmental sampling at selected locations.

Boreholes are proposed to depths ranging from approximately 10m to 15m below existing ground level depending on local ground conditions encountered.

The investigations will allow the recovery of soil and rock samples, measurement of groundwater levels and the determination of engineering parameters required to support bridge foundation and retaining structure design. Where required, standpipe installations will be provided to facilitate groundwater monitoring.

3.1.3 Trial Pit Investigations

Eight trial pits are proposed along the scheme with six of those located within the MUL area. Trial pits will generally extend to a maximum depth of approximately 4.5 m below ground level, subject to ground conditions and safe excavation practices. The trial pits will provide direct visual inspection of near-surface ground conditions and facilitate:

- Soil logging;
- Sampling;
- Dynamic Cone Penetrometer testing;
- Hand vane testing; and
- Environmental sampling.

Information obtained from the trial pits will support pavement, retaining structure and earthworks design along the route.

3.1.4 Sampling and Testing

Recovered soil, rock and groundwater samples will be subjected to laboratory testing to determine relevant engineering and environmental properties. The testing programme will include:

- Soil classification testing;
- Strength and compressibility testing;
- Chemical testing;
- Earthworks suitability testing;
- Groundwater analysis;
- Environmental characterisation testing; and
- Waste Acceptance Criteria (WAC) testing.

The results will be incorporated into a factual Ground Investigation Report and used to inform future design development.

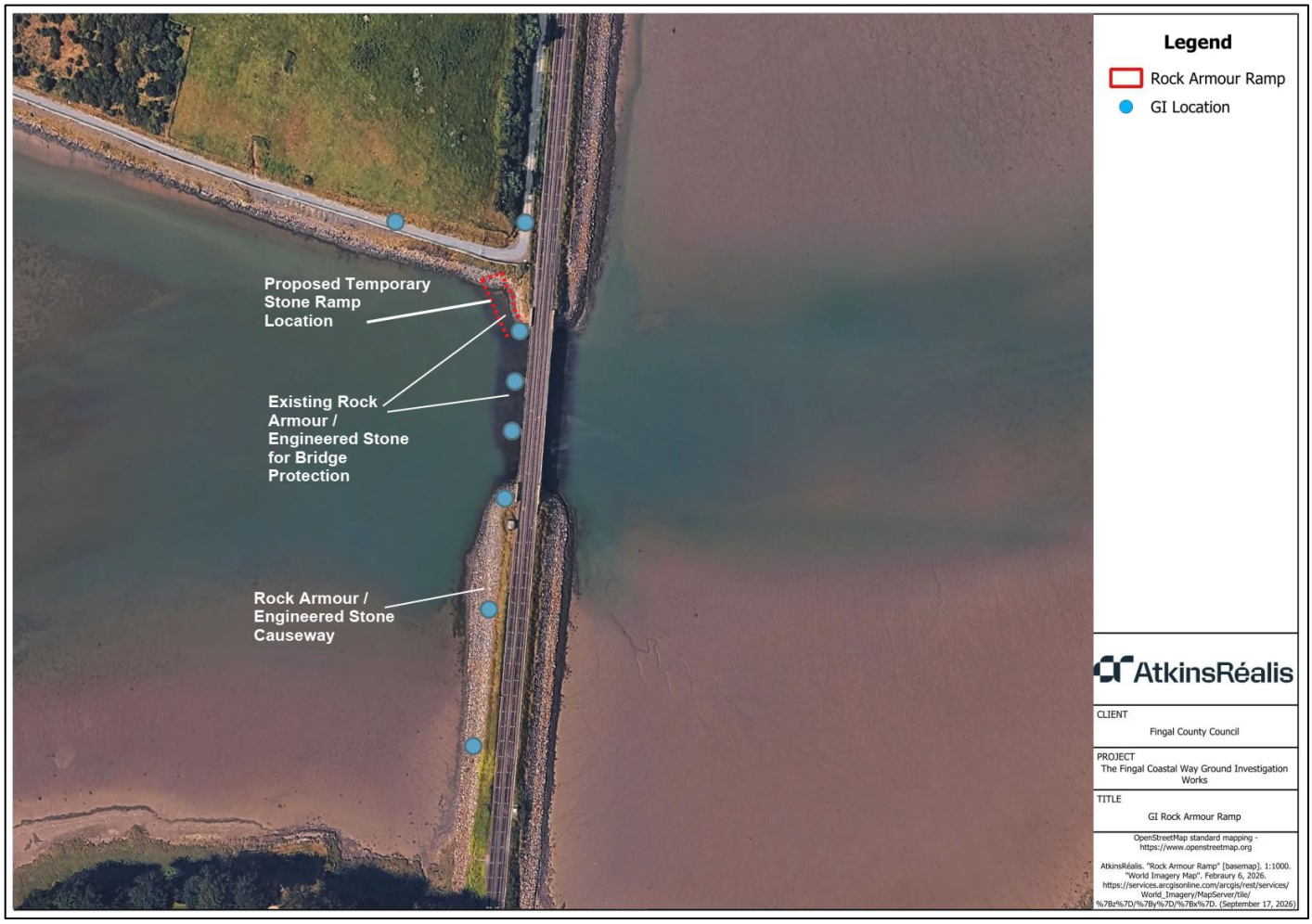
3.2 Access Arrangements

Ground Investigation locations within the estuary will require specialist access arrangements due to the tidal and environmentally sensitive nature of the site. The ground investigation works will be undertaken during the spring and summer months, with activities in the estuarine environment scheduled to coincide with low tide conditions. Where works are required within the maritime area, they will be undertaken only when tidal levels are at there lowest to maximise access and minimise interaction with estuarine waters.

In the context of the Maritime Usage Licence (MUL) application, 6 no. borehole locations are proposed within the maritime area associated with Rogerstown Estuary. Boreholes BH08, BH09 and BH10 are located along the existing railway causeway which extends across the estuary and comprises rock armour / engineered stone fill. A further 3 no. boreholes, BH11, BH12 and BH13, are located within the estuarine channel immediately west of the existing railway bridge.

The borehole locations within the estuary have been specifically selected to be within areas of existing rock armour and stone boulder protection associated with the railway bridge and causeway structures, as illustrated in the figure below. As a result, all drilling activities within the estuary will be undertaken only within existing engineered stone surfaces, and no drilling directly within intertidal mudflat or sandflat habitats will occur.

Figure 2 – Location of Existing Rock Armour and Stone Boulder Protection

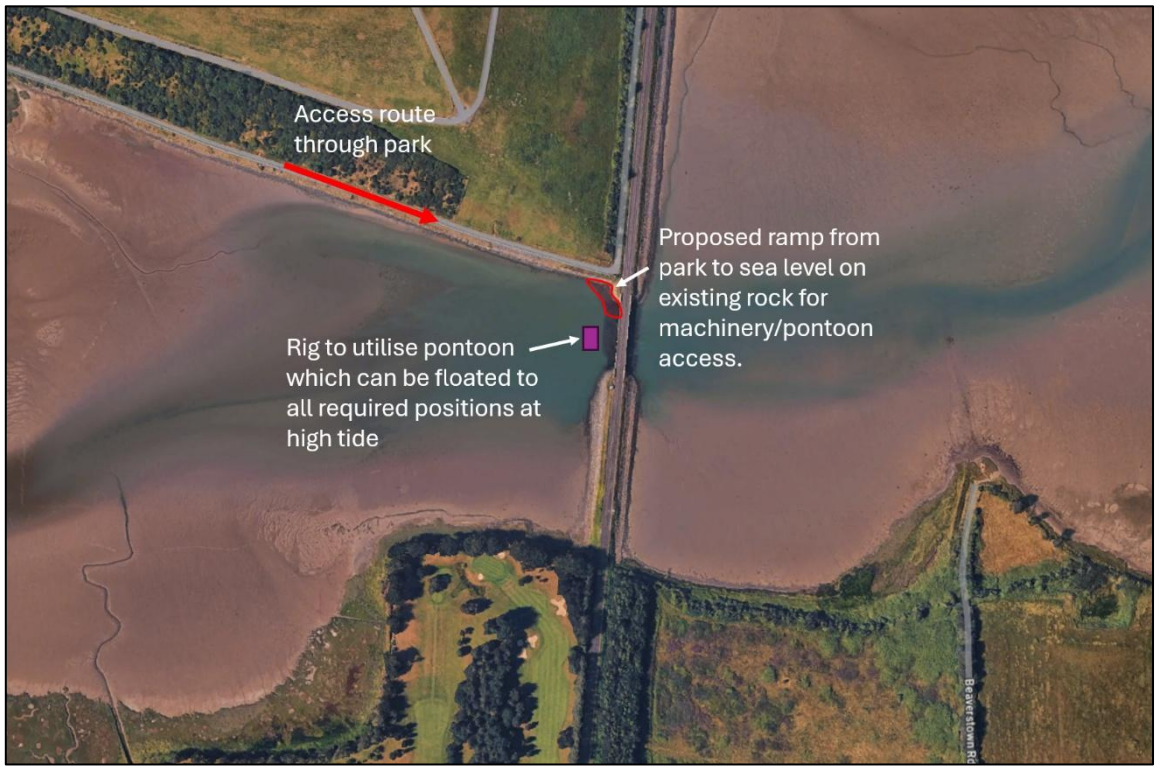


Access to the estuarine borehole locations will be facilitated via a temporary stone ramp (c. 30 m long) constructed from the south eastern side of Rogerstown Park, adjacent to the north western side of the existing railway bridge. The ramp will be formed by placing clean imported stone onto existing rock armour and ballast adjacent to the railway bridge structure. No excavation of the estuary bed will be required to facilitate construction of this temporary access. The ramp will enable the safe launch of a floating pontoon and provide temporary access for plant and drilling equipment. Upon completion of the works, the temporary stone ramp will be removed and the area reinstated to its preconstruction condition. Following launch, the pontoon mounted drilling rig will be manoeuvred between the required borehole locations within the estuary channel. All borehole drilling, sampling and associated GI activities within the maritime area will be undertaken from the pontoon platform, thereby avoiding the need for direct access by machinery to the estuary waters. Upon completion of each borehole, holes will be reinstated and the pontoon will be repositioned to the next investigation location until all planned works have been completed. The machinery will be launched from the ramp and positioned on

the pontoon at the proposed borehole locations within the estuary. The pontoon can be ballasted and adjusted to the appropriate operating level to accommodate varying tidal conditions.

This approach is suitable for all proposed borehole locations within the estuary, including those located at the existing railway rock armour.

Figure 3 – Proposed Access Arrangements



3.3 Environmental Considerations

The proposed Ground Investigation works have been developed having regard to the environmentally sensitive nature of Rogerstown Estuary. Environmental protection measures will be implemented throughout the works, including:

- Pollution prevention measures;
- Spill response procedures;
- Management of fuels and oils;
- Waste management controls;
- Groundwater and surface water protection measures;
- Biosecurity measures to prevent the spread of invasive species; and
- Appropriate reinstatement measures following completion of the works.

The works are temporary and localised and will be carried out in accordance with the requirements of the Maritime Usage Licence and any associated environmental commitments.

3.4 Survey Timeline

The surveys will commence as soon as feasible following the grant of a MUL. The exact mobilisation dates will not be known until the marine usage licence has been obtained and will be dependent on weather and tidal conditions.

4. Summary

The proposed maritime usage comprises temporary Ground Investigation works within Rogerstown Estuary to support the development of the Fingal Coastal Way Section 2 Scheme.

The works will include geophysical surveys, boreholes, trial pits, groundwater monitoring, environmental sampling and laboratory testing required to establish ground conditions within the proposed estuary crossing area. The investigations will provide essential information to inform the design of the Rogerstown Estuary Bridge, retaining structures, seawall infrastructure and associated active travel facilities.

The investigations will be temporary, localised and non-permanent in nature. Upon completion of the works, all exploratory locations and temporary access arrangements will be removed or reinstated as appropriate, and the maritime area will be returned to its pre-existing condition insofar as practicable.

A summary of the all proposed GI works can be found in Table 1 below.

Table 1 - Summary of Proposed Ground Investigation Works

Investigation Type	Description	Purpose	Quantity/Extent
Electrical Resistivity Survey (ER)	Non-intrusive geophysical survey undertaken along the proposed Rogerstown Estuary crossing using electrical resistivity methods.	To identify subsurface stratigraphy, estimate bedrock levels and inform the location and design of intrusive investigations.	5 survey lines (ER01 to ER05) with a combined length of approximately 950 m.
Seismic Refraction Survey (SR)	Non-intrusive geophysical survey using seismic wave propagation techniques.	To assess bedrock profile, depth to competent rock and geological variability within the estuary crossing area.	5 survey lines (SR01 to SR05) with a combined length of approximately 950 m.
Cable Percussive Boreholes (CP)	Boreholes advanced using cable percussive methods, including sampling and groundwater observations where required.	To establish soil stratigraphy, engineering properties and groundwater conditions.	17 boreholes to depths ranging from approximately 10m to 15m below ground level, where 10 of those are within the MUL application area
Rotary Core Boreholes (RC)	Rotary coring undertaken as a continuation of selected cable percussive boreholes.	To recover continuous rock cores and determine bedrock profile and rock engineering properties.	Rotary coring proposed in 10 no. boreholes to depths of up to 15 m below ground level

Investigation Type	Description	Purpose	Quantity/Extent
Trial Pits (TP)	Excavation of trial pits using mechanical plant with associated logging and sampling.	To assess near-surface ground conditions and obtain samples for geotechnical and environmental testing.	8 no. trial pits to a maximum anticipated depth of 4.5m where 6 of those are within the MUL application area
Groundwater Monitoring	Installation of standpipes and monitoring of groundwater levels at selected borehole locations.	To establish groundwater conditions and inform geotechnical design.	Standpipes proposed at selected borehole locations, with subsequent monitoring following installation.
In-situ Testing	Standard Penetration Tests (SPTs), Dynamic Cone Penetrometer (DCP) testing and hand vane testing.	To determine in-situ geotechnical parameters and assess soil strength characteristics.	SPTs in boreholes; DCP testing in all trial pits; hand vane testing in cohesive soils.
Geotechnical Sampling	Collection of disturbed and undisturbed soil, rock and groundwater samples.	To facilitate laboratory testing and determination of engineering properties.	Samples obtained from all exploratory holes as required by the investigation specification.
Geo-environmental Sampling	Collection of soil and groundwater samples for environmental assessment.	To characterise ground conditions and undertake waste classification and environmental testing.	Environmental samples proposed at selected boreholes and trial pits.
Laboratory Testing	Geotechnical and geo-environmental laboratory testing of recovered samples.	To determine soil and rock classification, strength, compressibility, chemical characteristics and waste acceptance criteria.	Testing programme to be undertaken on selected soil, rock and groundwater samples recovered during the investigation.