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Response to the Maritime Area Regulatory Authority's Request for Additional Information (RAI): Installation of an Outfall Pipeline as part of a new WWTP for Lahinch & Ennistymon (MUL Application Reference: MUL260006)

26 June 2026

Dear Sir/Madam,

Further to MARA's Request for Additional Information dated 29th April 2026, Mott MacDonald Ireland Limited provide the attached response on behalf of our client, Uisce Éireann, in relation to MUL application reference MUL260006. The MUL application relates to the surveys required to inform the proposed development associated with the installation of an outfall pipeline as part of the overall Lahinch & Ennistymon Wastewater Treatment Plant (WWTP) project and the associated network pipe crossing under the Inagh River, at Ennistymon.

The information provided in the responses below should be deemed as indicative information, and may require reasonable refinement based on site conditions, or following receipt of additional data to inform the survey design. It should also be noted that the indicative equipment outlined in the response will be dependent on the selected contractor and their in-house capabilities, resources and prevailing sea state at the time of the overwater site works.

MARA RFAI Request 1 - Mapping:

Please note that Area B does not exclude the islands (terrestrial land) as denoted in the High-Water Mark 2026 (<https://arcg.is/1zSran1>). Where the MUL area abuts the land, the boundary of the MUL area should coincide with and follow exactly the High-Water Mark as defined by the Chief Boundary and not traverse into terrestrial land. Please confirm if it is the intention of this application to align with the HWM and exclude all islands as denoted. Relevant GIS data files should be updated accordingly and resubmitted to MARA as per the MARA Technical Mapping Guidance Note for MAC/MUL Applications:

https://www.maritimeregulator.ie/wpcontent/uploads/2025/09/MARA_Technical_Mapping_Guidance_for_MA_C_MUL_Applications.pdf

Response 1:

We confirm that it is the intention of this application to align with the HWM and exclude all islands in Area B as denoted. Please see attached a fully updated set of GIS files included as Attachment 3.4, in addition to the following updated drawings included in Attachment 3.4 and Attachment 3.5:

- 10020408-MMD-XX-XX-DG-Z-0203 – Map 2 – Area B Overview Map
- 10020408-MMD-XX-XX-DG-Z-0207 – Map 4 – Access Point Map Area B

It should be noted that following the above updates to MUL Area B to now exclude all islands, Area B is now reduced to an area of 6,045.98m².

MARA RFAI Request 2 – Geophysical Surveys:

On pages 8 and 19 of the SISSA Report the use of Multibeam Echo Sounder Survey (MBES) Equipment is proposed for the project however no further details are provided in this report. Please confirm if MBES is to be undertaken as a component of this MUL application (MUL260006) and provide details on the sampling effort i.e. indicative locations of survey on a map/chart, indicative equipment model and duration of proposed survey.

For the proposed Boomer-Sparker system to be used in MUL application Area A provide indicative equipment model(s), illustrate sampling effort i.e. indicative equipment deployment location(s) on a map/chart.

Response 2:

The following information is intended to provide an indication of typical marine plant and equipment used in conducting the various marine surveys. The exact plant and equipment adopted for the project will be dependent on the selected contractor and their in-house capabilities, resources and prevailing sea state at the time of the overwater site works. The various marine surveys required for the project are commonly carried out across the industry and should require no extraordinary plant, equipment or processes to be successfully completed.

The geophysical survey area to be investigated within Area A is outlined on drawing 10020408-MMD-XX-XX-DG-Z-0208, included in Attachment 3.5.

Bathymetric Survey:

Equipment type: R2Sonic 2022 Multibeam Echo Sound System 400kHz for bathymetric survey. See <https://r2sonic.com/products/sonic-2022/>.

It is confirmed that the use of Multibeam Echo Sounder Survey is proposed for the project. The multibeam echo sound equipment is attached to the survey vessel (see details of typical vessels provided), where linear traverses of the survey area are undertaken by the vessel to provide full capture of seabed data across the target area. Geo-referencing positioning equipment by Trimble or similar for accurate marine surveying (see <https://info.applanix.com/pos-mv>).

Duration: The survey duration is dependent on the size of the survey area, number of traverses required to capture full data, and also weather dependent. Estimate 1 week duration for the project.

Sub-bottom Profiling:

Equipment type: Using a Boomer / Sparker system, such as Applied Acoustics AA201 Boomer Cat with CSP-P Power Supply and 12-Element Hydrophone, or similar alternative.

Figure 1 - Sub-bottom Profiling Equipment



See <https://www.appliedacoustics.com/news/guide-to-sub-bottom-profiling/>.

The sub-bottom profiling equipment (i.e. towfish) is towed behind a survey vessel (see details of typical vessels provided), where linear traverses of the survey area are undertaken by the vessel to provide full capture of seabed data across the target area. Geo-referencing positioning equipment by Trimble or similar for accurate marine surveying (see <https://info.applanix.com/pos-mv>).

Duration: The survey duration is dependent on the size of the survey area, number of traverses required to capture full data, and also weather dependent. Estimate 1 week duration for the project.

Side Scan Sonar:

Equipment type: Edgetech 4125 or 4200 ultra high-resolution imagery, dual simultaneous frequency, or similar variant by a different manufacturer such as Klein 3000. See attached datasheets for typical details of equipment.

Figure 2 – Side Scan Sonar Equipment



The side scan sonar equipment (i.e. towfish) is towed behind a survey vessel (see details of typical vessels provided), where linear traverses of the survey area are undertaken by the vessel to provide full capture of seabed data across the target area. Geo-referencing positioning equipment by Trimble or similar for accurate marine surveying (see <https://info.applanix.com/pos-mv>).

Duration: The survey duration is dependent on the size of the survey area, number of traverses required to capture full data, and also weather dependent. Estimate 1 week duration for the project.

Marine Magnetometer:

Equipment type: Geometrics 882 magnetometer or similar variant by a different manufacturer. See <https://www.geometrics.com/product/g-882-marine-magnetometer/> and attached datasheet.

Figure 3 – Marine Magnetometer Equipment



The magnetometer equipment (i.e. towfish) is towed behind a survey vessel (see details of typical vessels provided), where linear traverses of the survey area are undertaken by the vessel to provide full capture of seabed data across the target area. Geo-referencing positioning equipment by Trimble or similar for accurate marine surveying (see <https://info.applanix.com/pos-mv>).

Duration: The survey duration is dependent on the size of the survey area, number of traverses required to capture full data, and also weather dependent. Estimate 1 week duration for the project.

MARA RFAI Request 3 – Archaeological Surveys:

Please provide information on the proposed methods, indicative equipment models and illustrate sampling effort i.e. indicative survey location(s) on a map/chart.

Response 3:

A staged archaeological assessment approach is proposed for the development, commencing with a detailed desktop study and progressing, to targeted field investigations. This approach ensures that the level of investigation is proportionate to any identified archaeological risk.

Desktop Assessment:

A desk-based archaeological assessment will be undertaken to establish the archaeological and cultural heritage baseline for the proposed Maritime Usage Licence (MUL) application area and surrounding receiving environment. The assessment will include a review of the Historic Environment Viewer, Wreck Viewer, National Monuments Service datasets, National Inventory of Architectural Heritage, historic mapping, aerial imagery, documentary sources and relevant published and unpublished archaeological sources.

The preliminary review undertaken to date indicates that there are no recorded archaeological monuments, protected structures, National Inventory of Architectural Heritage (NIAH) sites, recorded wrecks or known underwater cultural heritage assets located within the proposed MUL application area.

At Area A, two recorded Bronze Age ring barrows and a NIAH-listed structure are located approximately 140m east of the proposed application area. A recorded shipwreck site is located approximately 1.6km north of the indicative offshore outfall corridor.

Within the surrounding area, a number of cultural heritage assets have been identified. At Area B, these include Ennistymon House, a Protected Structure and NIAH-listed building located approximately 40m north of the proposed MUL application area, a recorded tower house located approximately 50m to the north, and two historic watermill sites located approximately 60m east of the application area.

While no known archaeological sites have been identified within the proposed MUL application areas, the absence of recorded sites does not preclude the presence of previously unidentified archaeological remains. Given the coastal, estuarine and marine setting, there remains potential for unrecorded archaeological material to survive within the receiving environment, including shipwreck remains, isolated artefacts, historic waterfront infrastructure, submerged prehistoric landscapes and palaeoenvironmental deposits preserved within marine and coastal sediments.

The findings of the desktop assessment will be used to inform and refine the scope of subsequent archaeological investigations.

Geophysical Survey:

An archaeological geophysical survey will be undertaken within the proposed marine survey corridor to identify seabed anomalies and deposits of potential archaeological significance and to inform the archaeological assessment of the proposed works.

Indicative equipment will be the same or similar to the equipment specified in Response 2 for the marine surveys.

Survey data will be assessed by a suitably qualified and licensed marine archaeologist, and the results will inform the requirement for targeted diver inspection or further non-intrusive investigation, where appropriate.

Wade and Metal Detection Survey:

In shallow nearshore areas (generally up to approximately 0.7m water depth), a wade survey will be undertaken. This will include:

- Systematic visual inspection of the seabed,
- Metal detection.

Diver Survey:

An archaeological dive survey will be undertaken within deeper areas:

- Along the pipeline centreline and a corridor
- On a targeted basis to investigate anomalies identified through geophysical survey.

The extent of diver survey will be refined following completion of the detailed design and review of the archaeological geophysical survey data. Diving works will be undertaken using standard commercial diving techniques (SCUBA or surface-supplied, as appropriate) and will include visual inspection and recording of seabed conditions and features.

Intrusive Investigations and Archaeological Review:

Intrusive geotechnical investigations may include boreholes, intertidal trial pits, offshore vibrocores and cone penetration tests (CPTs).

The final locations of intrusive geotechnical investigations will be determined following site inspection and archaeological assessment of the geophysical survey data. Where anomalies or features of potential archaeological significance are identified, geotechnical investigation locations will be positioned to avoid direct impacts on such features.

Intertidal trial pits will be archaeologically monitored by a suitably qualified archaeologist under the appropriate archaeological licence.

Recovered core material from boreholes and vibrocores will be reviewed by a suitably qualified archaeologist to identify any indicators of archaeological or palaeoenvironmental material, including peat, timber, submerged land surfaces or other organic deposits.

Where archaeological potential is identified through site inspection, archaeological assessment of geophysical survey data, archaeological monitoring or review of recovered sediments, further archaeological assessment or mitigation measures may be recommended.

Survey Locations and Sampling Effort:

Archaeological investigations will be undertaken within the MUL application area, with survey effort focused on areas where direct or indirect impacts may arise.

The archaeological assessment will comprise a staged programme of investigations, including:

- A desktop assessment of the proposed MUL application area and surrounding receiving environment.

- Archaeological geophysical survey within the proposed marine survey corridor to identify seabed anomalies and deposits of potential archaeological significance.
- Archaeological wade survey of the intertidal and shallow nearshore areas at Lahinch and Ennistymon, including systematic visual inspection and archaeological metal detection survey.
- Archaeological diver survey within subtidal areas of the proposed marine works corridor, including targeted inspection of anomalies identified through geophysical survey where required.
- Archaeological monitoring of intertidal trial pits; and
- Archaeological review and assessment of recovered geotechnical cores and borehole material.

The final locations of intrusive geotechnical investigations will be determined following site inspection and archaeological assessment of the geophysical survey data. Where anomalies or features of potential archaeological significance are identified, geotechnical investigation locations will be positioned to avoid direct impacts on such features.

Indicative survey extents and locations are illustrated on drawing 10020408-MMD-XX-XX-DG-Z-0208, included in Attachment 3.5.

Licensing and Compliance:

The following archaeological licences and consents are anticipated as being required:

- An archaeological survey licence issued by the National Monuments Service (NMS) for the archaeological geophysical survey, archaeological wade survey and archaeological diver survey.
- A Detection Device Consent issued by the NMS for archaeological metal detection survey.
- An archaeological excavation licence issued by the NMS for archaeological monitoring of intertidal trial pits and any other intrusive archaeological investigations, where required.

Applications for the relevant archaeological licences and consents, together with detailed Method Statements, will be submitted to the National Monuments Service a minimum of six weeks in advance of the commencement of works.

All archaeological works will be undertaken by a licensed underwater archaeologist, in accordance with the conditions attached to the relevant licences and consents.

Conclusion:

The proposed approach provides a proportionate, staged assessment of archaeological risk, reflecting the low level of known constraint within the MUL application area.

Investigations will progress from desktop assessment to non-intrusive survey methods, with further targeted investigation undertaken only where required.

Intrusive archaeological works are not anticipated at this stage and would only be considered subject to the findings of geophysical survey or geotechnical investigations.

MARA RFAI Request 4 – Geotechnical Surveys:

For the proposed boreholes please detail the proposed core diameter, estimated depths and illustrate sampling effort i.e. indicative borehole location(s) on a map/chart.

For the proposed trial pits please provide estimated area (s) and depths and illustrate sampling effort i.e. trial pit location(s) on a map/chart.

For CPT operations provide indicative equipment model(s) and an estimate of sample depths.

For the mini boring rig with probing attachment provide estimated depths, core diameter and illustrate sampling effort i.e. mini boring rig sample location(s) on a map/chart.

Response 4:

All exploratory hole positions and extents of marine surveys are indicative and are subject to finalisation in the marine outfall design development and prior to the implementation of the ground investigation site works.

Marine surveys are to be implemented, and the results reviewed and evaluated, prior to finalising exploratory hole positions and the execution of these intrusive works.

Ground investigations and surveys are to be undertaken for ground characterisation purposes to enable the detailed design and construction of the marine outfall. The construction approach for the marine outfall and the specific location of the diffuser head is yet to be determined and will be subject to the findings of the marine ground investigations.

Any ground investigations proposed beyond the High-Water Mark on land, are not subject to marine licence, and as such are not included on this drawing.

The ground investigation scope and layout as depicted on drawing 10020408-MMD-XX-XX-DG-Z-0208, included in Attachment 3.5, is based on the longest potential outfall length. Should a shorter outfall length be confirmed prior to or during the implementation of the marine GI, then the scope of the investigation may be reduced and holes locally repositioned accordingly within the MUL boundary.

Boreholes:

Boreholes (BH) are to be undertaken through superficial deposits and into bedrock and are positioned in a staggered configuration along and to either side of the indicative marine outfall alignment. 16 no. boreholes (typically 150-200mm diameter) are spaced at approximately 110m centres along the route. The MUL Licence is to allow for up to 20 no. boreholes located within the marine GI site boundary to account for repositioning / redrills. Provisional depth of BHs is 30m below seabed level. Borehole BH1 may be undertaken using land-based plant if intertidal access permits, otherwise will be undertaken using an overwater platform.

Trial Pits:

Trial Pits (TP) are to be undertaken within the intertidal zone, using land-based machine excavator, to investigate the depth to rockhead and rock excavatability at the location of the outfall alignment. Provisional size of TPs is 1.5m wide, 3m long and up to 4m deep (subject to stability of side walls). Depending on the ground conditions encountered, the depth of pits may be curtailed.

Core Penetration Tests:

Cone Penetration Tests (CPT) are to be undertaken through superficial deposits and are positioned along and to either side of the indicative marine outfall alignment, alternating with BH locations. 16 no. CPTs are spaced at varying centres, at approximately 50 to 100m. The MUL Licence is to allow for up to 20 no. CPTs located within the marine GI site boundary to account for repositioning in response to early refusal. Provisional depth of CPTs is 20m below seabed level. If shallow bedrock and/or stiff soils are encountered across the site from boreholes, then the use of CPTs may be curtailed.

Vibrocores:

Vibrocores (VC) seabed sediment samples are to be undertaken within the superficial deposits and are positioned along the indicative marine outfall alignment, alternating with BH and CPT locations. 17 no. VCs (typically 100-150mm diameter) are spaced at approximately 100m centres. The MUL Licence is to allow for up to 20 no. VCs within the marine GI site boundary. Provisional depth of VCs is 10m. If shallow bedrock and/or stiff soils are encountered across the site from boreholes, then the use of VCs may be curtailed.

Mini Boring Rig:

The use of a mini boring rig with a probing attachment is not anticipated to be required within the maritime area at this time and therefore does not need to be assessed under this application. The use of a mini boring rig may be required as part of the land-based GI works above HMW.

MARA RFAI Request 5 – Environmental Surveys:

Please confirm if water quality sampling will also take place in Area A - if so, detail the survey methods proposed, duration of campaign.

Response 5:

Water quality sampling will be undertaken within Area A to characterise background ambient conditions over a full spring–neap tidal cycle, for the purposes of informing the dispersion modelling.

Indicative sampling locations include the vicinity of the proposed diffuser zone offshore, in addition to nearshore locations within Area A, to capture spatial variability across the study area. Sampling will be undertaken from a survey vessel using appropriate equipment, such as a handheld multi-parameter sonde and/or Niskin bottle to collect water samples.

The number and timing of sampling events will be optimised to ensure representative coverage of tidal conditions and to provide an appropriate dataset to inform the modelling assessment.

MARA RFAI Request 6 – Vessels:

Please provide estimate of the number of vessels required for the proposed maritime usage and detail estimated vessel speeds while at survey and in transit.

Response 6:

Marine Survey Vessels:

The following information is intended to provide an indication of typical marine vessels used in conducting the various marine surveys and investigations. The exact vessels adopted for the project will be dependent on the selected contractor and their in-house capabilities, resources and prevailing sea state at the time of the overwater site works. The various marine surveys required for the project are commonly carried out across the industry and should require no extraordinary sized vessels to be successfully completed.

Type: The bathymetric, side scan sonar, sub-bottom profiling, and magnetometer surveys would all be carried out using a nearshore workboat, similar to those shown below.

Number: It is expected that a single workboat would be able to carry out all the marine surveys.

Speed: The typical speed of the marine survey workboat during data capture is around 3 to 5 knots. Typical speed in transit to the marine work area will be dependent on sea state and may be up to around 15-20 knots.

Figure 4 – Indicative Marine Survey Vessel (Example 1)

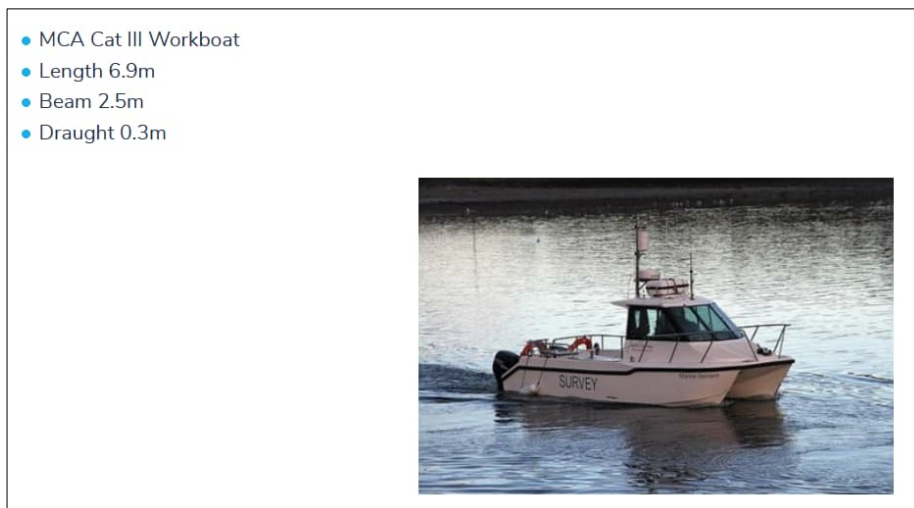


Figure 5 – Indicative Marine Survey Vessel (Example 2)

- MCA Cat III Workboat
- Length 6.5m
- Beam 2.0m
- Draught 0.3m



See for general reference, <https://www.socotec.co.uk/our-services/aspect-land-and-hydrographic-surveys-is-now-apart-of-socotec-uk-and-ireland>.

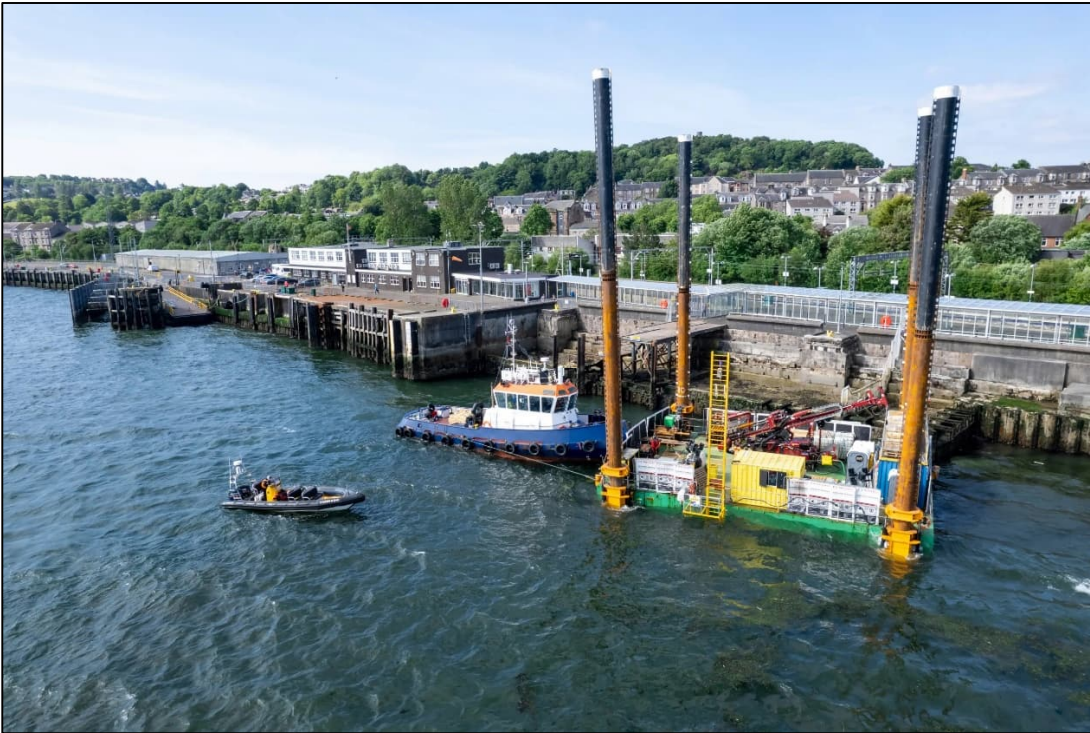
Marine Ground Investigation Vessels:

The following information is intended to provide an indication of typical marine vessels used in conducting marine ground investigations. The exact plant adopted for the project will be dependent on the selected contractor and their in-house capabilities and resources and prevailing sea state at the time of the site works. The various ground investigations required for the project are commonly carried out in the industry and should require no extraordinary plant, equipment or processes to be undertaken.

It is anticipated that a jack-up platform will be required to form the overwater working platform to facilitate boreholes and cone penetration tests. For reference to general types of jack-up platforms, see the photos provided and the attached datasheets in the appendix.

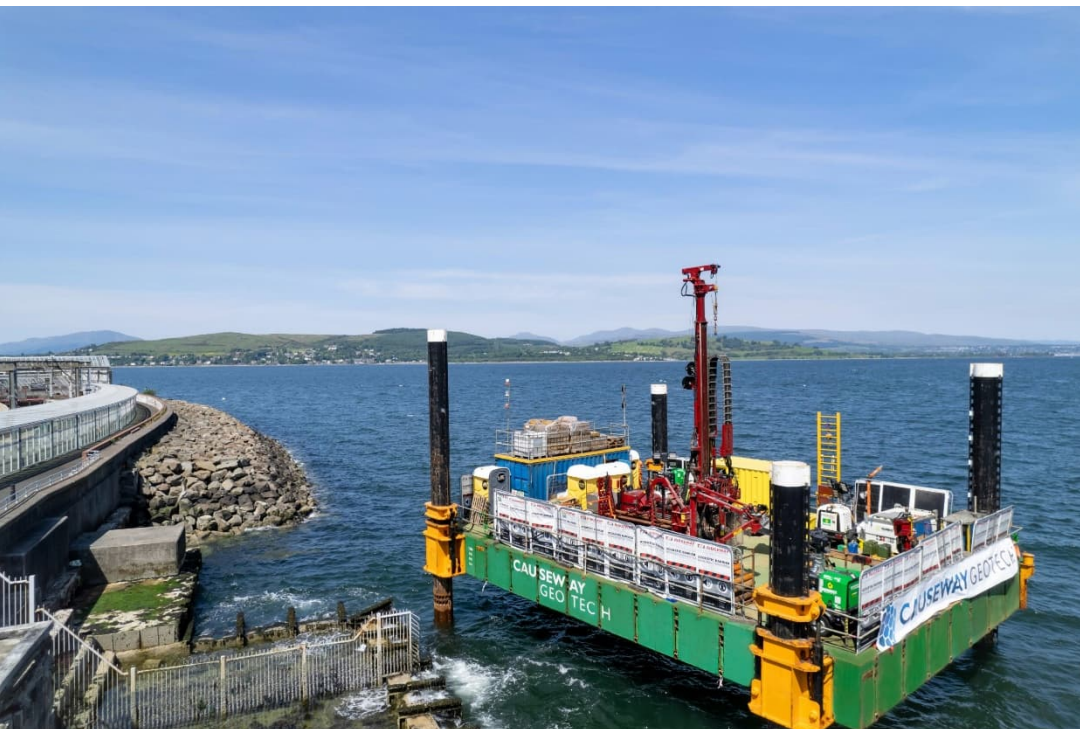
To support operations of a jack-up platform, it is expected that an attendant vessel (tug) will be required to manoeuvre the platform into position, before jacking-up out of the water (see photos provided for visualisation). Also, to enable crew transfer on and off the platform, a small crew transfer boat will be required, typically a Rigid Inflatable Boat (RIB), or similar.

Figure 6 – Indicative Jack-up Platform, Tug Vessel, and RIB Crew Transfer Vessel



<https://causewaygeotech.com/marine-services/>

Figure 7 – Indicative Jack-up Platform



<https://causewaygeotech.com/services/drilling/>

Figure 8 – Indicative Jack-up Platform and Tug Vessel



<https://causewaygeotech.com/marine-services/>

Figure 9 – Indicative RIB Crew Transfer Vessel



Source: Mott MacDonald

The typical speed of a RIB crew transfer boat (travelling from the local harbour to the platform location) will be dependent on the vessel type, sea state and the number of people aboard, but may be up to around 20-25 knots.

A multi-purpose work boat such as the Coastbuster II (pictured below and in the attached datasheet), or similar type of vessel, is expected to be used for undertaking vibrocore sediment samples. This workboat would typically travel at speeds of around 8-10 knots.

Figure 10 – Indicative Vibrocore Sediment Sampling Vessel



<https://www.coastworks.co.uk/full-fleet/coastbuster/>

All vessels will be required to abide by local navigational rules and maritime safety and operational constraints from the local harbour master.

MARA RFAI Request 7 – Outfall Route and Site Investigations:

Please provide the indicative location on a map/chart of the proposed route for the outfall pipe, diffuser zone and trenchless construction exit area in Area A along with all other indicative sample locations for site investigations in Area A -marine and intertidal.

Response 7:

Outfall

Please refer to Drawing 10020408-MMD-XX-XX-DG-Z-0208 included in Attachment 3.5, which presents:

- Three indicative diffuser zones within Area A,
- The indicative marine outfall alignment, shown extending to Diffuser Zone 3 (Diff-3), representing a reasonable worst-case extent in terms of offshore length,
- The indicative landfall/exit location from the terrestrial environment to the marine area.

Should Diffuser Zone 1 or 2 be progressed, the outfall alignment would be revised accordingly, with the intent of maintaining a broadly similar landfall location, subject to the findings of site investigations and detailed design.

At this stage, a specific trenchless construction exit point has not been defined, as this will be informed by the outcomes of marine and intertidal site investigations, ground conditions, constructability considerations, and environmental constraints. Alternative construction approaches, including open trench installation, will also be considered as part of the design development process.

Other Sampling / Investigations

In response to the request for indicative locations of all other site investigations within Area A, drawing 10020408-MMD-XX-XX-DG-Z-0208 presents the indicative extent and locations of marine and intertidal ecological investigations, including subtidal sampling stations and intertidal transects within the nearshore zone.

These locations represent the current anticipated investigation areas and are indicative only, pending refinement following initial surveys, environmental considerations, and detailed design development.

The indicative subtidal sampling stations and intertidal transects shown on Drawing 10020408-MMD-XX-XX-DG-Z-0208 also represent the indicative locations where associated non-intrusive surveys (e.g. ROV or drop-down video) will be undertaken, where required, to inform the refinement of sampling locations.

It is currently anticipated that subtidal sampling stations will be subject to repeat sampling for benthic fauna, with sediment sampling also undertaken, and that intertidal sampling will be undertaken along the defined transects, incorporating upper, mid and lower shore stations and replicate sampling, in line with relevant guidance and standard practice. The final sampling frequency and replication will be confirmed following initial surveys and in accordance with survey objectives and site conditions.

Indicative Non-Intrusive Survey Approach

Prior to any intrusive sampling, non-intrusive visual surveys (e.g. ROV or drop-down video) will be undertaken, where required, at the indicative sampling locations to characterise seabed conditions and identify any sensitive benthic habitats or features.

The outcomes of these surveys will be used to inform and refine the positioning of sampling locations, ensuring that intrusive sampling avoids sensitive habitats where practicable. Where sensitive habitats or features are identified, sampling locations may be refined, relocated or omitted, as appropriate, in order to minimise potential disturbance.

It is anticipated that non-intrusive surveys will be undertaken using typical industry-standard equipment, such as:

- Remotely Operated Vehicles (ROVs) (e.g. compact inspection-class systems such as the FIFISH V6 or equivalent),
- Drop-down video (DDV) camera systems (e.g. high-resolution seabed camera systems such as the STR SeaSpyder or equivalent).

The final selection of equipment will be confirmed at the time of survey, taking into account site conditions, water depth, vessel configuration, and survey requirements.

All survey and sampling locations presented are indicative at this stage and may be subject to refinement following initial site investigations, environmental constraints, and design development.

Where required, non-intrusive ecological surveys may extend across the wider Area A (MUL application boundary) to support seabed characterisation and environmental assessment. The extent of such surveys will be informed by site conditions and survey requirements at the time of investigation.

Detailed survey methodologies will be finalised at the appropriate stage of the project.

Should you require any further information, please do not hesitate to contact the undersigned.

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