



IRISH NATIONAL HERITAGE PARK MARITIME USAGE LICENCE APPLICATION (MUL260005)



Attachment 3.1 Proposed Maritime Usage



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Irish National Heritage Park Maritime Usage Licence Application

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1. INTRODUCTION

1.1 Background

Roughan & O'Donovan (ROD) was appointed by Wexford County Council to undertake, on its behalf, the preparation of a Maritime Usage Licence (MUL) Application in support of environmental surveys and ground investigation works proposed within the River Slaney at Ferrycarrig, Wexford ('the proposed works' hereafter).

The proposed works are required in support of the proposed development of a new Viking village "Vykingar" incorporating a new interactive visitor experience into the overall visitor offering at the Irish National Heritage Park (INHP). The proposed development includes permanent structures in the maritime area within the River Slaney adjacent to the existing INHP site including three jetties and an artificial beach area.

The proposed works subject to this MUL application are required to inform the design, Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) which will be undertaken for proposed development at the INHP.

This MUL Application and all associated attachments (including this document) will be submitted to the Maritime Area Regulatory Authority (MARA) seeking authorisation under Part 5 of the Maritime Area Planning Act 2021 for the maritime usage associated with the proposed works. The proposed development of a Viking Village at the INHP will be subject to a separate marine area consent application to be lodged with MARA.

1.2 Purpose of this report

This document has been prepared to support the MUL application and is referred to as Attachment 3.1 Proposed Maritime Usage.

2. PROPOSED MARITIME USAGE

The proposed works subject to this MUL application and associated maritime usage will include the following, in summary:

- The deployment of two acoustic doppler current profiler (ADCP) Flow Meters to measure tidal flow, speed and direction within the channel
- Sediments samples to be obtained at 5 no. indicative locations within the River Slaney to determine the sediment particle sizes present and benthic sediment quality
- Ground investigation (GI) works including:
 - 5 no. marine boreholes in the River Slaney in the form of cable percussion boreholes followed by rotary core drilling
 - 1 no. land-based borehole comprised of a single combined cable percussion borehole and rotary corehole with piezometer installed to monitor groundwater levels
 - geophysical (non-intrusive) surveys comprising High Multi-Beam Echo Sounder survey, Side Scan Survey and Sub-Bottom Profiling techniques.

Figure 2-1 below includes indicative locations for the proposed ADCPs and sediment sampling. The proposed GI works will be undertaken within the tidal reach of the River Slaney and in close proximity to the river wall. The exact locations of the proposed GI works have yet to be determined.

All environmental survey and ground investigation works will be confined to the proposed MUL area as shown in the map provided in Attachment 3.4 Proposed MUL Map.

The proposed works are described in more detail in the sections below.

2.1 Acoustic Doppler Current Profiler (ADCP)

It is proposed to install two acoustic doppler current profiler (ADCP) flow meters into the Slaney River Channel to measure tidal flow, speed and direction within the channel, over a full tidal cycle of one month. The ADCPs will be installed at the approximate locations of the blue triangles shown in Figure 2-1 above. The locations of the ADCPs may move slightly on the advice from the supplier at the time of installation, depending on the conditions of the riverbed, and will be confined to the proposed MUL area.

An ADCP is a hydroacoustic current meter similar to a sonar, used to measure water current velocities over a depth range using the Doppler effect of sound waves scattered back from particles within the water column.

The ADCPs will either be:

- deployed in frames or bottom mounts on the riverbed, or
- attached to a floating buoy if site conditions are not suitable for bottom mounts at installation.

Bottom mounted ADCPs will have a footprint of approx. 1.5m² each. The frames / bottom mounts will be selected or developed to suit the riverbed environment upon inspection, prior to the surveys being undertaken (see examples of frames / bottom mounts which may be used in Figure 2-2 and Figure 2-3 below). The frames / bottom mounts will sit on the riverbed and may be held there by lead weights or other heavy weights which will be attached to the frames to keep them in place.

A vessel with a winch will be required to deploy the ADCPs. The ADCPs will be deployed for a full tidal cycle (approx. 29 days) to measure water flow within the river. Contingency has been built into the program to allow for additional time should the survey be required to be supplemented or resurveyed in the event of equipment failure for example.

Each of the ADCPs may be marked with a buoy and precautions will be made to avoid damage or loss of equipment. As they will be located in shallow water, the noise emitted will likely be in the range of 600 kHz to 1 MHz. The results will be saved to internal memory or output online to an external display software.

An unmanned surface vessel may also be deployed over a period of 24 hours. This process may be repeated in different parts of the tidal cycle. (to supplement the data collection, if there are issues with the data or the results come back as incomplete).

2.2 Sediment Samples

Sediments samples will be obtained at 5 locations within the River Slaney, with indicative locations shown in Figure 2-1 above. These samples will be obtained using a Van Veen grab (see Figure 2-4 below) or similar method from a small vessel. Two surface samples of approximately 5 litres (about 15 cm penetration) in suitable sediment will be extracted at each of the 5 locations (total volume of 50L) and removed to a laboratory for testing. One sample from each location will undergo gradient analysis to determine the particle sizes present. The second sample will be tested to determine benthic sediment quality.

2.3 Ground Investigations (the GI Works)

2.3.1 Overview

The GI works will include five combined Cable Percussion (CP) and Rotary Core (RC) Boreholes (BH) in the river, one combined Cable Percussion and Rotary Core Borehole on land, grab sampling at five locations and geophysical surveys comprising Multi-Beam Echo Sounder, Side Scan Sonar and Sub-Bottom Profiling, as presented below in Table 2.1, Table 2.2 and Table 2.3. A piezometer will be installed as part of the land-based CP & RC to monitor groundwater levels.

2.3.2 Location

The proposed GI works will be undertaken within the tidal reaches of the River Slaney and in close proximity to the river wall along the edge of the old R730. The 5 no. in river boreholes will be carried out from a barge. Some land-based investigation works will also be required, located along the alignment of the old R730 within 10m of the existing masonry river wall. The exact locations of the proposed GI works have yet to be determined.

2.3.3 Outline of the GI Works

The scope of the GI works envisaged under this ground investigation is as follows:

- Geophysical surveys comprising High Multi-Beam Echo Sounder survey, Side Scan Survey and Sub-Bottom Profiling techniques;
- Shell and auger or cable percussion boreholes, sampling and in situ testing;
- Vertical open hole rotary drilling, sampling and in situ testing;
- Rock coring, proving rock to a specified depth and in situ testing;
- Monitoring of groundwater levels in standpipes and piezometers;
- Detailed borehole and coring;
- Sampling to IS EN 22475-1 requirements, predominantly providing Category A samples for laboratory testing of strength and stiffness;
- Logs as described in IS EN14688-1; IS EN1489-1; and BS5930 and the specification;
- The ground investigation should be carried out in accordance with British Standard 10175:2001+A2:2017, Investigation of Potentially Contaminated Sites: Code of Practice and the EPA Landfill Manual: Investigations for landfill.
- Specific sediment grab samples to be carried out for the purpose of grading analysis, contamination assessment, waste classification and offshore marine disposal of

- excavated spoil plus laboratory testing of soil and groundwater samples for engineering properties, behaviour and suitability for reuse as engineering fill;
- Laboratory testing of soil and rock samples for engineering properties, behaviour and suitability;
 - Laboratory testing of soil and groundwater samples for environmental contamination, waste classification and offshore marine disposal of excavated spoil;
 - Preparation of detailed Main Factual Report as per S1.21.8 and cl 16.8 of the Specification, together with the production of Digital Data to AGS Format as per S1.21.10 and cl. 16.5;
 - Preparation of an interpretive Ground Investigation Report in accordance with IS EN1997-2, Section 6 as per S1.21.9;
 - Preparation of a Contamination Assessment Report in accordance with the EPA document 'Environmental Risk Assessment for Unregulated Waste Disposal Sites (2007)' as per Cl 1.21.9;
 - Preparation of a Waste Classification Assessment and reporting of acceptability of materials for disposal as inert, non-hazardous or hazardous wastes to landfill facilities in accordance with the Commission Decision of 18 December 2014 and EU Commission Regulation No 1357/2014;
 - Assessment of river bottom sediment samples for potential offshore marine disposal in compliance with Marine Institute (2006) "Guidelines for Assessment of Dredge Material for Disposal in Irish Waters".

The schedule of investigations is presented in Table 2.1, Table 2.2 and Table 2.3 below.

2.4 Mitigation Measures

Mitigation measures will be implemented throughout the proposed works:

- Liaison with the Wexford Harbourmaster in respect of access and safety measures required for the proposed works within or in the vicinity of navigable waterways.
- Compliance with Health & Safety requirements of the client and contractor taking account of any relevant legislative requirements.
- Specific mitigation measures identified in the Natura Impact Statement (NIS) for the proposed works. Refer to Attachment 4.3.2.

Table 2-1 Borehole Schedule

Cable Percussion Borehole (BH) & Rotary Corehole (RC) Locations								
Hole ID.	Type	Scheduled Depth (m BGL)				Remarks	Coordinates (ITM Grid)	
		CP	RO	PG	RC		Easting	Northing
Marine BHs								
BH/R C101	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Environmental samples.	TBC	TBC
BH/R C102	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Environmental samples.	TBC	TBC
BH/R C103	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Environmental samples.	TBC	TBC
BH/R C104	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Environmental samples.	TBC	TBC
BH/R C105	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Environmental samples.	TBC	TBC
Land BHs								
BH/R C106	CP & RC	15	-	-	20 to 30 (5m into rock)	RC may continue beyond its scheduled depth up to the level where rock is found. SPTs as per specification. Piezometer to be installed. Contamination Samples.	TBC	TBC
Notes	Each borehole may take approximately 3 no. days to complete. In-river borehole drilling will be undertaken from a low draft/flat-bottomed jack up barge.							

Table 2-2 Grab Sample Schedule for Contamination Assessment

Contamination Assessment Grab Sample Locations					
Hole ID.	Type	Scheduled Depth (mBGL)	Remarks	Coordinates (ITM Grid)	
				Easting	Northing
GS101	GS	0.5	Sediment samples to be taken from the riverbed soils at shallow depths and locations as per specification	TBC	TBC
GS102	GS	0.5	Sediment samples to be taken from the riverbed soils at shallow depths and locations as per specification	TBC	TBC
GS103	GS	0.5	Sediment samples to be taken from the riverbed soils at shallow depths and locations as per specification	TBC	TBC
GS104	GS	0.5	Sediment samples to be taken from the riverbed soils at shallow depths and locations as per specification	TBC	TBC
GS105	GS	0.5	Sediment samples to be taken from the riverbed soils at shallow depths and locations as per specification	TBC	TBC

Table 2-3 Geophysical Surveys

Geophysical Survey Locations			
Method	Remarks	Coordinates (ITM Grid)	
		Easting	Northing
Multi-Beam Echo Sounder (MBES)	<i>To provide continuous water depth profile and bathymetric chart</i>	-	-
Side Scan Sonar (SSS)	<i>To map riverbed conditions and sediments and detect potential obstructions, debris, existing infrastructure, etc.</i>	-	-
Sub-Bottom Profiling (SBP)	<i>Investigate shallow geology and sub-bottom stratigraphy</i>	-	-

Notes:

1. CP = Cable Percussion, GS = Grab Sediment Sample; MBES = Multi-Beam Echo Sounder; RO = Rotary Open Hole, RC = Rotary Core, PG = Polymer Gel Geobor-S Rotary Coring, SBP = Sub-Bottom Profiling; SSS = Side Scan Sonar.
2. Coordinates to Irish Transverse Mercator Grid (ITM) and reduced levels to Malin Head Datum required for all BH i.e. CP and RC.
3. Undisturbed sampling is required in cohesive soils.
4. A minimum total core recovery of 95% and a minimum rock quality designation of 40% is required when coring in rock. Where voids are encountered a standard penetration test shall be undertaken.
5. Standard penetration tests (SPTs) are to be carried out as per the Specification.

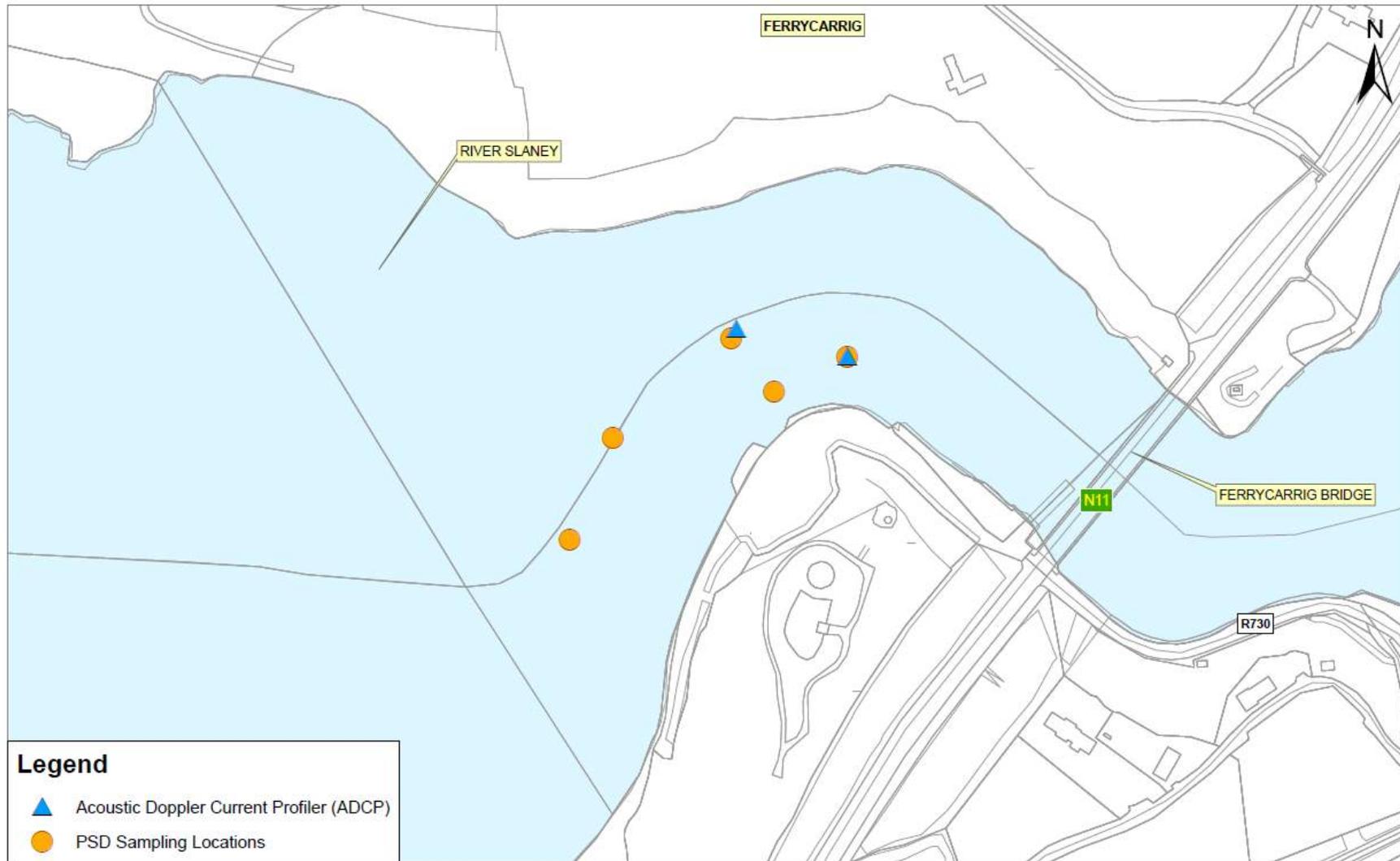


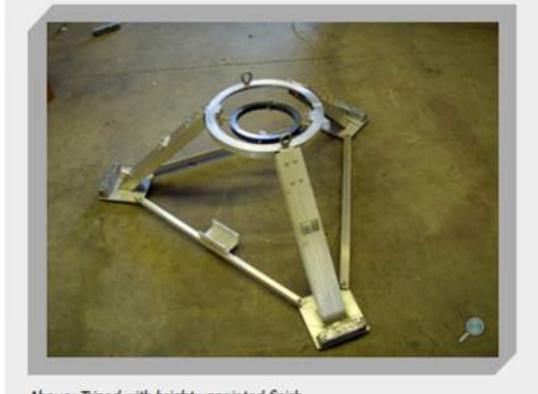
Figure 2-1 Proposed ADCP and sediment sampling locations



Above: Open tripod with yellow painted finish



Above: General Purpose GP-TRBM system manufactured by MSI



Above: Tripod with bright unpainted finish



Above: H-TRBM-65 manufactured by MSI

Figure 2-2 Tripod Bottom Mount Systems for ADCPs

Figure 2-3 Bottom Mount Systems for ADCP



Figure 2-4 Example of a Van Veen Grab to be used for sediment sampling