DEVICE-SPECIFIC EMP: MICRO TIDAL TURBINES WARRIOR WAY

Document Control

Revision		Description	Prepared	Reviewed	Approval
Version 1	19/10/2026	Original	Saul Young, META Operations Manager	Fishtek Marine	[TBC by NRW]

Introduction

This document is being submitted under ORML1957v2 condition 3.20 to submit a device-specific EMP for approval at least 3 months prior to the commencement of works.

The approved META Project Environmental Management Plan (PEMP) and the META Project Environmental Mitigation and Monitoring Plan (PEMMP) form the minimum standard for all device developers to comply with. Developers must take account of the requirements contained within these plans when developing this device-specific EMP.

General Overview of Proposed Testing

Information required	Details
Site	Warrior Way
Type of device	3 micro tidal turbines designed to provide 24/7 power to environmental monitoring and subsea equipment. The aim of test is to confirm the turbines produce enough power for these applications.
Proposed location	51° 42.2072'N 4° 55.6298'W
Commencement of works	19th January 2027
Decommissioning	19th July 2027

Proposed parameters	Proposed	Consented	Source
	Minimum clearance between rotor blades & sea-surface: The blade tip will always be below the sea surface at a minimum of 2m depth	2m	ORML1957v2
	Length x Width: 1.33m x1.65m (x3 frames)	20m x 10m	ORML1957v2
	Rotor diameter: 1m (x3 rotors)	5m	ORML1957v2
	Number of rotors: 3	3	
	Swept area: 0.79m^2 per rotor 2.37m^2 total combined of 3 rotors	19.63m^2	ORML1957v2
	Height above surface: n/a seabed mounted device	5m	ORML1957v2
	No. of tests at a time: 1	1	ORML1957v2
	Sea surface area of device: n/a	200m^2	ORML1957v2
	Proportion of device touching the seabed: <15%	50%	ORML1957v2
	Seabed footprint: 2.19m^2 (x3 frames) 6.57m^2 total combined footprint of the 3 turbine bedframes	200 m^2	ORML1957v2
	Rotor tip speed: 4m/s (max)	10.5m/s	ORML1957v2
	Buffer required around device seabed footprint: none required	5m	ORML1957v2
	Lubricants and antifoulants will be EU/Internationally approved for use in marine environments.	Lubricants and antifoulants will be EU/Internationally approved for use in marine environments.	ORML1957v2
	Mooring method: 3 seabed mounted frames. 6.57m^2 total combined footprint of the 3 frames.	25m^2	ORML1957v2
	Mooring spread: N/a	22,500m^2	ORML1957v2
	No. of vessel used at any one time: 2	5	ORML1957v2
	Frequency of deployment and retrieval operations per year: 10	20	ORML1957v2
	Vessel mooring spread for installation and decommissioning activities: N/a	150m^2	ORML1957v2
	Moored/gravity base deployment duration (estimated % time device in water given in brackets): 6 months	6 months	ORML1957v2
	Number of testing activities in a 12-month period (devices): 1	4	ORML1957v2
	Frequency of O&M visits: 10	104/yr	ORML1957v2
	No. of vessels utilised in O&M at any one time (including guard boat if required): 2	5	ORML1957v2

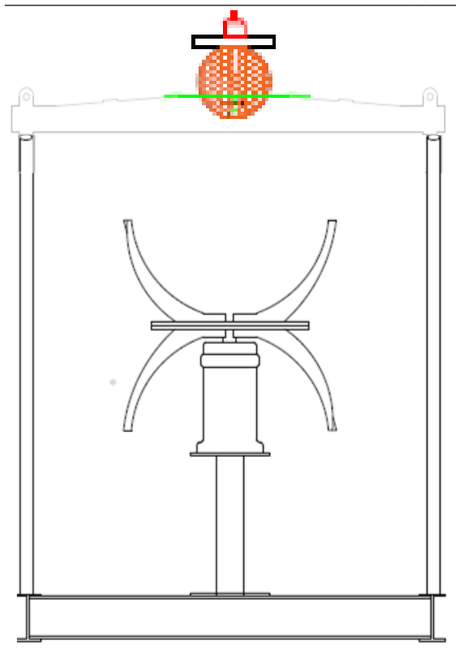


Figure 1 Micro tidal turbine designed to provide 24/7 power to environmental monitoring and subsea equipment. Turbine diameter is 1m. The steel bedframe is 1.33m (W) x 1.65 (L) x 2.5m (H). The bedframe and turbine combined weight is 655kg. On top of the bedframe is an acoustic release system for recovery.

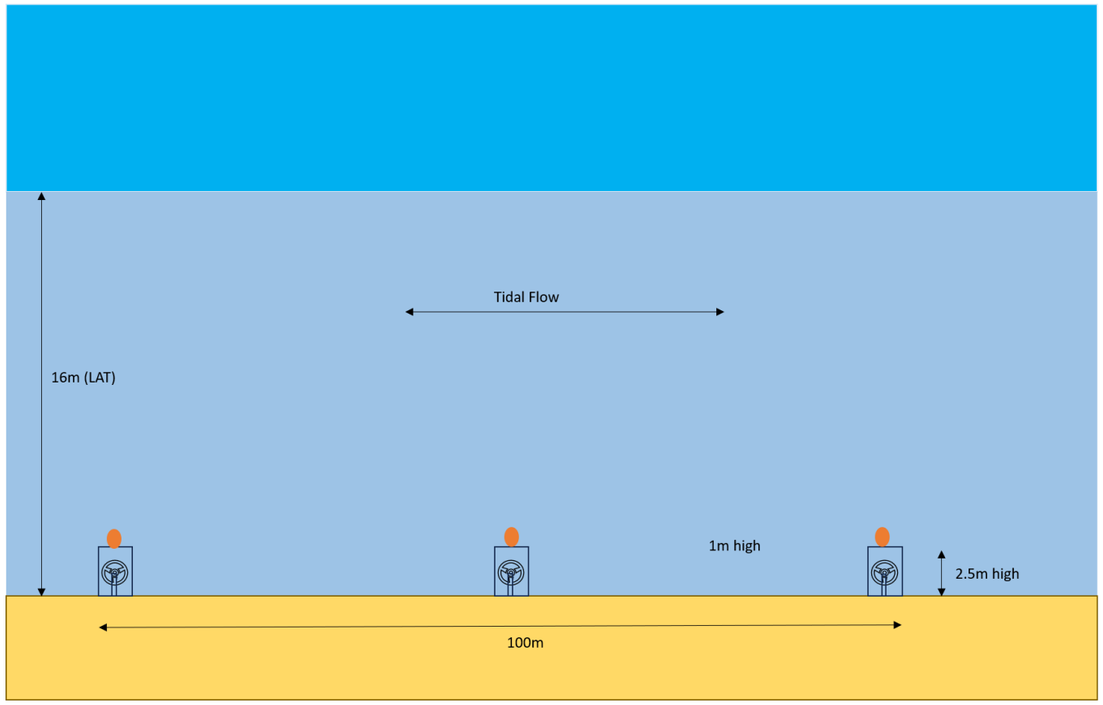


Figure 2 Three micro tidal turbine bedframes (as pictured in figure 1) will be deployed on the seabed at the META Warrior Way test site in a line parallel to the tidal flow / channel in approximately 16 – 20m water depth LAT. Drawing not to scale.



Figure 3 A data buoy like this one pictured will be moored nearby within the Warrior Way site on a single point mooring to remotely collect data from the turbines and mark the site.

Roles and Responsibilities

The key roles relevant to the delivery and implementation of this device-specific EMP are presented below.

Name	Role	Company	Contact details
Saul Young	META Operations Manager	Marine Energy Wales	Saul.young@marineenergywales.co.uk 07944839332
Harry Thatcher	Site lead	Fishtek Marine	07507 690687
Peter Kibel	Shore Contact	Fishtek Marine	07816 374673
Gareth Reynolds	Vessel Operator	Dale Sailing	07969 552006

Communications and Reporting

The lines of communication between the different roles for this device-specific EMP are presented below.

Name	Role	Responsibility	Reporting to
Gareth Reynolds	Vessel Operator	Performing marine operations	Harry Thatcher (Fishtek)
Harry Thatcher	Fishtek Site Lead	Fishtek equipment and personnel	META (Saul Young)
Saul Young	META Operations Manager	Oversee Project and Consents	MHPA, NRW, TCE and other authorities

Device Specific Mitigation and Monitoring

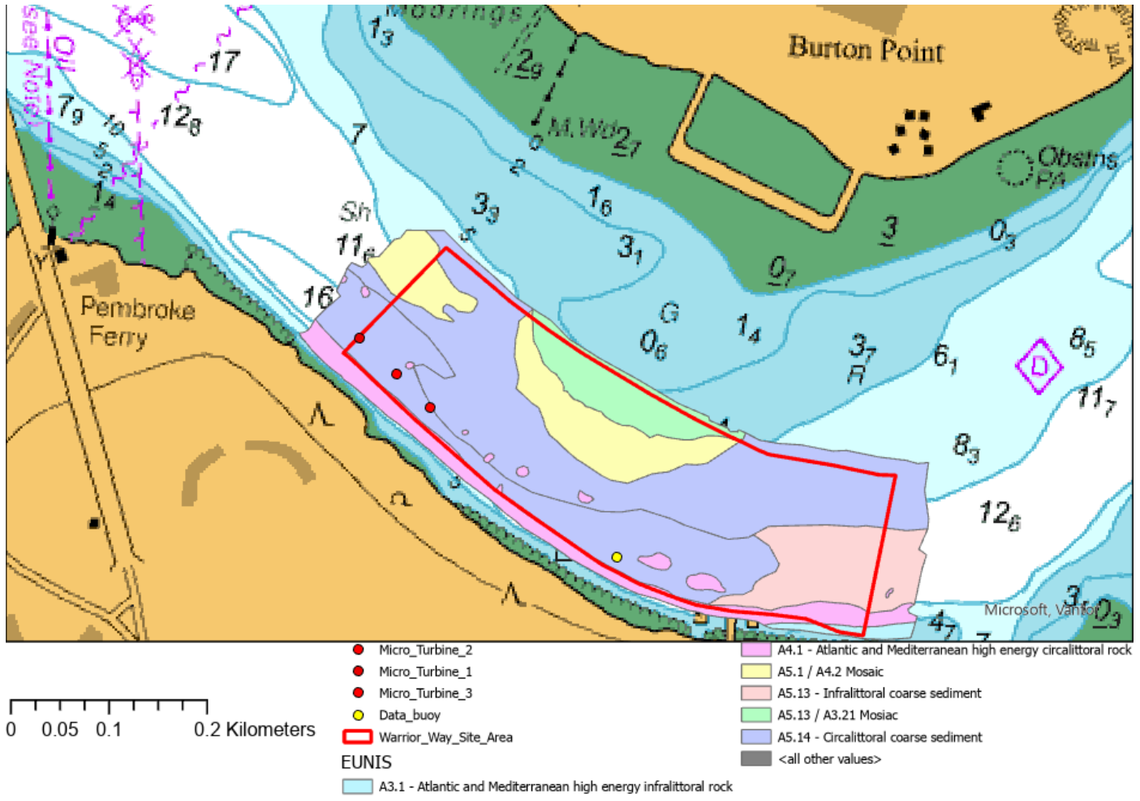
This section translates the mitigation and monitoring measures identified within the META Environmental Statement (ES) into a format which can be developed into practical implementation by device-developers. The mitigation and monitoring measures have been captured within the META PEMMP. Mitigation and monitoring commitments relevant to the specific site and device are presented here.

Receptor	Mitigation/ Survey / Monitoring	Description	Mechanism for Implementation
All birds	Mitigation	Best practice measures to reduce disturbance from vessels and to reduce the potential for pollution incidents.	PEMP (Annex 7), Section 4.2.2
All birds	Mitigation	Implementation of a Marine Pollution Contingency Plan (MPCP) to manage the risk of accidental pollution in the marine environment	PEMP (Annex 7), Section 4.2.1
Diving birds	Mitigation	A minimum distance of 2 m will be maintained between the tip of operational turbine blades and the sea surface.	PEMP (Annex 7), Section 4.2
All marine mammals, basking shark and otter	Mitigation	Implementation of a MPCP in order to manage the risk of accidental pollution in the marine environment	PEMP (Annex 7), Section 5.2.1
All marine mammals, basking shark and otter	Mitigation	Best practice measures to reduce disturbance and collision risk from vessels	PEMP (Annex 7), Section 5.2.2
Otter	Device-specific survey	Walkover surveys to determine species presence and site use to determine whether a European Protected Species (EPS) licence will be required	PEMP (Annex 7), Section 5.4.1

Otter	Monitoring	Monitoring of the first deployment (installation, operation and decommissioning phases) to determine any change in use due to device deployment	PEMP (Annex 7), Section 5.5
All fish and shellfish	Mitigation	Implementation of a MPCP to manage the risk of accidental pollution in the marine environment	PEMP (Annex 7), Section 6.2.1
Benthic habitats and species	Mitigation	Invasive Non-Native Species Management Plan	PEMP (Annex 7), Section 7.2.3
Sensitive habitat and species	Mitigation	Micro-siting of devices or components on the seabed	PEMP (Annex 7), Section 7.2.2
Benthic habitats and species	Mitigation	Implementation of a MPCP in order to manage the risk of accidental pollution in the marine environment	PEMP (Annex 7), Section7.2.1
Archaeological receptors	Mitigation	Micro-siting to avoid impact on marine archaeology receptors	PEMP (Annex 7), Section 8.2

Seabed Habitat Risk Assessment

In 2023 Ocean Ecology Limited (OEL) designed and conducted benthic habitat mapping surveys at the META Warrior site using drop-down camera (DDC) and multibeam echosounder (MBES) methods, with the aim to identify and understand the habitat present. The habitat map produced for Warrior Way is presented below and includes the proposed position of the three micro tidal turbine bedframes and data buoy. The proposed positions are micro-sited on coarse sediment (Eunis Classification A5.1) away from sensitive habitats (e.g. Annex 1 reef).



Probability / Severity	Very Low (1)	Low (2)	Medium (3)	High (4)
Major (4)	4	8	12	16
Significant (3)	3	6	9	12
Minor (2)	2	4	6	8
Very Minor (1)	1	2	3	4

Hazard	Possible impacts	Mitigation	Residual risk
3 bedframes with a combined seabed footprint of 6.57m^2	Damage or disturbance to sensitive benthic habitat	Mooring blocks micro-sited on coarse sediment (Eunis Classification A5.1) away from sensitive habitats (e.g. Annex 1 reef)	Probability (1) x Severity (2) = Minor (2)