



Galway Bay Wave Energy Test Site Procedures for Use

Contents

1	Introduction	1
2	Criteria for Approval of Devices for Testing.....	1
2.1	Insurance.....	1
2.2	Hull Construction/Certification	1
2.3	Mooring System	2
2.4	Deployment and Recovery Strategy	2
2.5	Technical	2
2.6	Safety	2
3	Outline procedure for Deployment of Devices at the Wave Energy Test Site in Spiddal.....	3
	Fig 3.1 Schema of the Application Process.....	5
	Appendix A: Example of Site Visit Log.....	7
	Appendix B: Wave Power Test Site Application Form	10

1 Introduction

This document describes the “Conditions of Use” for a wave energy device developers applying for use of the Marine Institute (MI) Galway bay wave energy test site. This initiative is co-funded by the MI and The Sustainable Energy Authority of Ireland (SEAI).

This document outlines the legal, marine safety, environmental and technical conditions, which must be satisfied prior to a device being granted use of the site for a testing programme.

The site provides developers with an instrumented, licensed test site which is well marked by day and night with a cardinal buoyage system to prevent damage to the device or danger to vessels through unintentional transit of the area. A wave-measuring buoy is installed on site providing a record of wave conditions at the site. Access to the site is available using smaller vessels from Spiddal and for larger vessels from Galway Dock. A shore viewing point is accessed from the main Galway–Spiddal Road. Developers will supply their own mooring system and data acquisition/transmission system. Wave measurements and modelling of the site indicates its suitability for scaled devices of around 1/3-1/5 scale.

Testing periods of devices are expected to be in the region of 3-6 months. An application form for developers applying for use of the site for a testing programme is available on the MI website and applications will be accepted by mail, fax or email.

2 Criteria for Approval of Devices for Testing

2.1 Insurance

Developers are to have public liability insurance (minimum cover €6,500,000) and employers liability insurance. Certificates of these are to be presented to MI with the signed application/at a minimum of four weeks prior to any works beginning at the test site.

2.2 Hull Construction/Certification

Hull design and construction is to be to the appropriate standards in use at the time of application submission and undertaken or approved by a recognized and approved contractor, all mooring and towing points are to be certified welded and proven as such. Detailed specification of the device and evidence of competence of design and construction contractors is to be submitted to MI with the signed application/at a minimum of four weeks prior to any works beginning at the test site.

2.3 Mooring System

Mooring system to be constructed and sized for expected loading and in accordance to the appropriate standards in use at the time of application submission. All mooring materials are to be certified. The mooring design is to be undertaken by recognised and competent contractors. The proposed mooring design and materials are to be submitted to MI for analysis with the signed application/at a minimum of four weeks prior to any works beginning at the test site.

2.4 Deployment and Recovery Strategy

Deployment and recovery strategies are to be outlined in writing, giving details of vessels employed, means of deployment/recovery and duration and weather requirements for deployment and recovery with the signed application/at a minimum of four weeks prior to any works beginning at the test site.

2.5 Technical

The compliance of device development and testing programmes with the broad outline described in the MI/Hydraulic and Marine Research Centre (HMRC) document “Ocean Energy Development and Evaluation Protocol” will also be necessary.

A copy of proposed testing programme aims and objectives and expected duration as well as a broad outline of methodology to be followed will be required with the signed application/at a minimum of four weeks prior to any works commencing on site.

2.6 Safety

- Device is to have an argos/iridium/gsm or similar drift alarm installed giving rapid indication and warning of drift of device outside designated area. This system is to be monitored by the developer or by appropriate local contact to facilitate rapid response to alarm. The system should be fitted with an alarm to indicate the loss of system functionality. Details of both the system and the appointed monitor name address to be included in the emergency plan and procedure.
- Device to be fitted with a marine standard yellow flashing light flashing once every ten seconds at a minimum of three metres above the waterline.
- Radar reflector (compliant with ISO 8729) to be fitted at least 3 meters above waterline.
- Hull to be painted bright orange/yellow or Red.
- Boarding ladder facilitating easy access to be fitted with adequate handrails/harness clipping eyes and markings to be provided as per the appropriate standards in effect at the time of application.
- Towing eyes fitted with towing strops to allow towing/recovery to be provided and to comply with the appropriate standards in effect at the time of application.

- A detailed emergency plan and procedure outlining actions to be taken in case of catastrophic failure, drift or sinking of device to be submitted. A local contact in case of emergency is to be designated and identified within the procedure as well as the locations of suitable recovery vessels.
- All compartments are to be fitted with Bilge alarms and automatic bilge pumps sufficient battery capacity must be provided to allow monitoring and operation of device safety systems for extended periods. Batteries to be located where they are least likely to be immersed in the event of flooding.
- Any oils used in the device are to be biodegradable. Material Safety Data Sheets (MSDS) must also be provided for all hazardous materials being used or stored on the device.
- All staff employed by the developer should be suitably qualified and trained.
- Only fully licensed work vessels to be used.
- The developer or his staff must never visit the site alone.
- No attempt should be made to board moored devices when sea conditions are unsuitable. If there is a fully functioning wave measuring device on the site data from this can assist judgments in this regard.
- Moored device should have full first aid facilities and emergency voice communication system.
- A log of site visits and operations must be maintained by the developer and a copy provided to the Marine Institute as required. A blank log template will be provided by the Institute (see Appendix A).
- Test site users/developers are responsible for their own safety, that of their staff and the safety of visitors invited by them to the test site. They must have prepared a comprehensive risk assessment and corresponding health and safety statement in advance of commencing operations on the site.

Details of requirements as outlined in this section (Section 2.6) must be submitted to MI with the signed application/at a minimum of four weeks prior to any works beginning at the test site.

3 Outline procedure for Deployment of Devices at the Wave Energy Test Site in Spiddal

- Developer completes and submits application form and copies of required documentation to the Marine Institute.
- Application initially assessed for technical competence by MI expert panel and for suitability of proposed testing programme for Galway Bay Test Site.
- The Marine Institute will appoint a surveyor to perform inspections on the device to ensure it is seaworthy and complies with the Marine Institute safety regulations.

- The developer must submit at time of application or at a minimum of four weeks prior to deployment: Insurance certificates, Emergency Plan and Procedure and a detailed Testing Programme to MI for evaluation.
- A test site use/tenancy agreement must be signed by developer at a minimum of three weeks prior to works commencing on the site.
- MI issues a letter of permission to deploy to the developer.
- A marine notice detailing installation details and duration will be issued prior to deployment of moorings and device.
- The device can then be deployed at site location.
- The developer is to inform the MI when testing is completed at their earliest convenience.
- The developer is to remove device and any associated equipment from the test site and reinstate the test site to its original condition as it was prior to deployment. This must be done within a two week period after testing has been completed. A longer duration may be requested but must be agreed with MI.
- The tenancy agreement is then terminated by the MI.

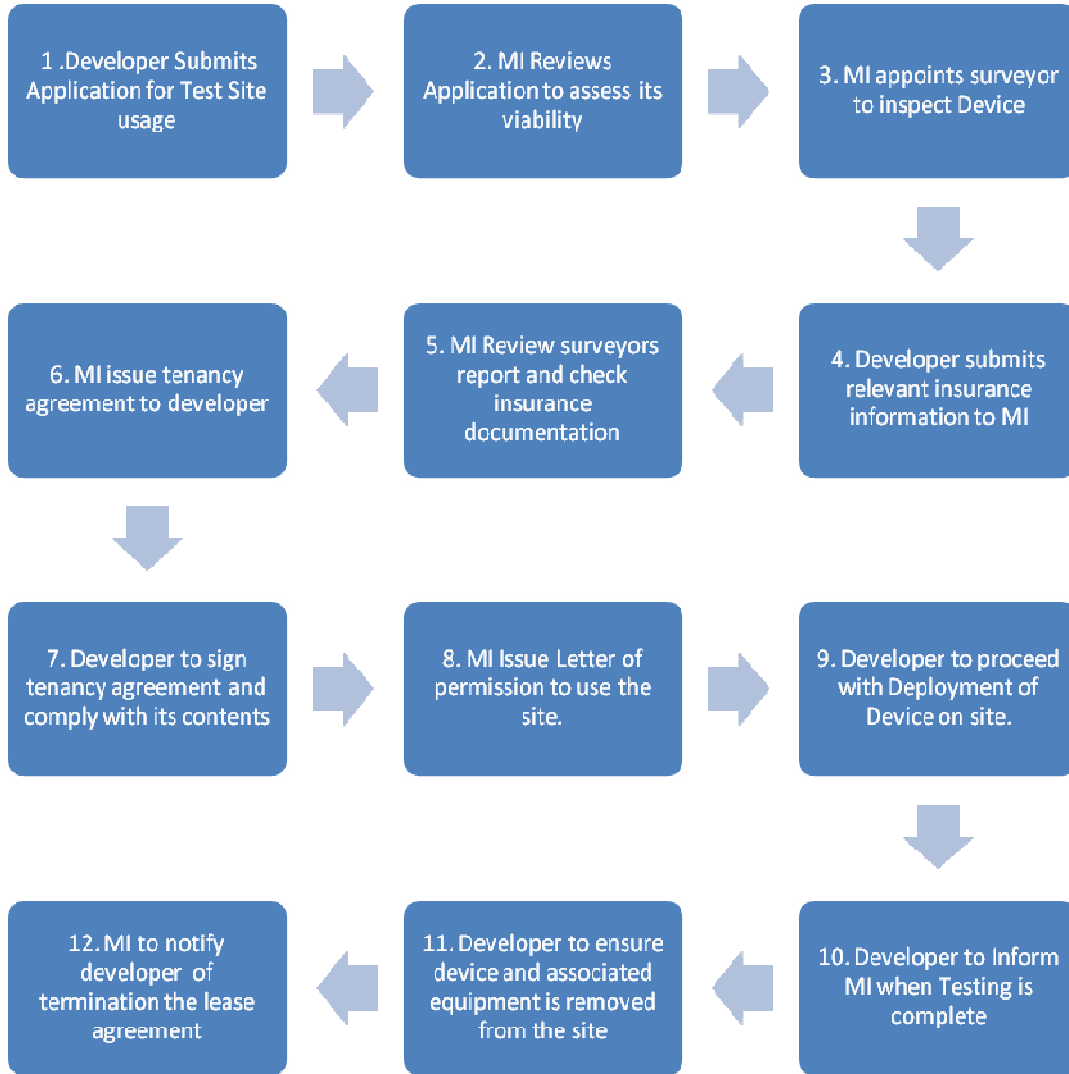


Fig 3.1 Schema of the Application Process

Appendix A: Example of Site Visit Log

Galway Bay Ocean Energy Test Site Site Visit Log

Date:

Log No.:

Company	
---------	--

Personnel Present	
-------------------	--

Vessels Deployed	
------------------	--

Departure Time	
Return Time	

Wind Height*	
Wind Direction*	

Weather Conditions	
Wave Period*	

Wave Height *	
Wave Direction*	

(*Data buoy information to be attached if available)

Activities On - Site	
----------------------	--

Other Remarks or Observations	
-------------------------------	--

Any damage or defects apparent on device during the visit?	
--	--

Signed	
--------	--

Appendix B: Wave Power Test Site Application Form

Application form for use of Marine Institute Galway Bay Wave Energy Test site

Developer Details

Applicant:

Business
Address:

Contact Name:

Telephone:

Fax:

Email:

Device Details

Device Name

Device Description

(Brief description here – attach detailed drawings and specification)

Proposed Mooring Configuration

(Brief description here – attach detailed drawings and specification)

Company/Device History:

(Brief description here)

Details of Device Development Team

(Brief description here)

Proposed Testing Program

A proposed testing programme including objectives and expected duration are to be attached to the application form also. An example of headings around which the report should be constructed has been given hereunder as taken from the HMRC “Ocean Energy: Development and Evaluation Protocol” publication (see Section 2.4 of said document).

- Hull seaworthiness and survival strategies
- Mooring and cable connection issues
- Power Take Off (PTO) performance and reliability
- Local wave climate/conditions
- Service, maintenance and operational experience

Safety

- Design and construction are to be undertaken by a recognised competent party as outlined in the document entitled “Galway Bay Wave Energy Test Site Procedures for Use.” Please attach certificates/evidence with the application.
- Mooring design is to be undertaken by a competent party. Please attach certificates or other evidence of similar authority that this has been performed with the application.
- The mooring materials are to be certified. Please provide evidence of such with the application.
- Deployment and Recovery Strategy document is to be submitted with the application.
- Provisions for ensuring adequate visibility of the device must be provided, details of which are to be submitted with the application.
- An Emergency Plan and Procedure document must be provided, including details of available recovery vessels, please submit with the application.
- Provisions for ensuring adequate visibility of the device must be provided, details of which are to be submitted with the application.
- An Emergency Plan and Procedure document must be provided, including details of available recovery vessels, please submit with the application.

Off-station alarm details

(Brief description here – attach detailed description with the application)

Provisions for emergency towing:

(Brief description here – attach detailed description with the application)

Provision for access by personnel:

(Brief description here – attach detailed description/drawings with the application)

Please return this form to:

Wave Energy Test Site Application,
Marine Technology,
Marine Institute,
Rinville,
Oranmore,
Co. Galway

or

Marinetech@marine.ie