

**REPORT OF THE MARINE LICENCE VETTING COMMITTEE (MLVC)
on
FORESHORE LEASE APPLICATION FOR THE DEVELOPMENT OF A ONE
QUARTER SCALE RENEWABLE ENERGY TEST SITE FOR THE PURPOSES OF
THE TESTING OF PROTOTYPE SCALED WIND, WAVE, AND TIDAL DEVICES
BY**

**MARINE INSTITUTE
Rinville,
Oranmore,
Co. Galway.
H91 R673**



**Richard Cronin
Chair, Marine Licence Vetting Committee
06-07-2017**

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Marine Institute Foreshore Lease Application for the development of a one quarter scale renewable energy test site for the purposes of testing prototype, scaled wind, wave and tidal devices in Galway Bay off the coast of Spiddal, Co. Galway (FS006566)

1. Background

On 6th April 2016 The Marine Institute (MI) submitted an application for a Foreshore Lease to facilitate the development of a one quarter scale renewable energy test site of 37.52 Ha in area, for the purposes of testing prototype, scaled, wind, wave and tidal devices at a site approximately 1.3km off-shore in Galway Bay adjacent to Spiddal. The one quarter scale refers both to the test site conditions which are gentler than those that a commercial operation would operate in and to the size of the devices to be tested which will be a maximum of one quarter the size of a commercial sized device.

In 2006 the Sustainable Energy Authority of Ireland (SEAI) in association with the Marine Institute established a one quarter scale wave energy test site for prototype wave energy converters (WECs) in Galway Bay (FS004904). A Foreshore Lease was granted for this facility in 2006 by the then Department of Communications, Marine and Natural Resources (DCMNR) for an area of foreshore off the Spiddal coast.

The Marine Institute has now applied for a new Foreshore Lease to the Department of Housing, Planning, Community and Local Government (DHPCLG) for a period of 35 years for the same area of foreshore. The purpose of this lease application is to allow for new site infrastructure (to replace that which was in place under the previous foreshore lease terms) and the deployment of a range of renewable energy test devices and marine sensors and technologies. The location of the test site is shown on Drawing No 'Galway Bay Marine and Renewable Energy Test Site 01: Site Location Distances'.

In April 2015 a 4km standard single conductor telecommunications type cable containing 12 fibres was installed between the test site and a shore station via Spiddal Pier under Foreshore Licence MS 51/12/622 (FS005751). This cable will also supply power to the test site and allow data transfer from the site for testing innovative marine technology including renewable ocean energy devices. The multi-purpose cable connects to a subsea observatory via Cable End Equipment (CEE). The CEE allows for the provision of power by the cable to the test devices and communications to and from the test devices.

The proposed works under this application require a foreshore lease from the Minister for Housing, Planning, Community and Local Government, under the Foreshore Act 1933, as amended.

This report deals with the application for a foreshore lease. The Foreshore Act requires that a lease or licence must be obtained from the Minister for Housing, Planning, Community and Local Government for the carrying out of works, placing structures or material on or for the occupation of or removal of material from state-owned foreshore. The foreshore is the seabed and shore below the line of high water of ordinary or medium tides and extends outwards to the limit of twelve nautical miles (approximately 22.24 kilometres).

2. Proposed Development

The application consists of one quarter scale renewable energy test site area of 37.52 Ha, a number of proposed activities which will be required to upgrade the test site infrastructure (from that which was licensed under the previous foreshore lease (FS004904)) to facilitate the connection and testing of scaled devices and scientific marine instruments in a powered test site. It allows for a maximum of three scaled test devices at any given time with maximum deployment duration of eighteen months. Test devices of type listed below (under Section 3: Test and Demonstration Devices) will have the potential to be deployed at the site. This includes wave, tidal and floating wind devices.

Under the application the proposed duration of deployment will be specific for each device but ranges from a number of weeks to eighteen months (ref: Environmental Report S 4.5.4: Duration and Phasing: Pg.76). The test site is proposed to be structured into three berths to allow for up to three prototype devices to be deployed and tested at any one time with only one floating wind device allowed. The types of devices that potentially may be deployed are inert and include ocean energy converters and components, marine technology test devices and scientific instruments and sensors.

The application also provides for cables to allow for interconnecting the test devices to the Sea Station platform and CEE. The cables will be designed for this specific application with embedded strength members and a protective jacket commensurate with their intended use and performance.

The umbilical cables between the Sea Station and a test device will be designed to float within the water column to both avoid any interference with the seabed and to reduce wear and tear on the cable. All cables will be designed with EMF shielding. Cables will inter connect between the devices, the SeaStation and the cable end equipment (CEE) and will float in the mid water column with some cabling resting on the seafloor.

The proposed development on site can be separated into two categories as follows:

- i. Site infrastructure;
- ii. Test and demonstration devices.

Full details for all proposed test site infrastructure and device dimensions are provided with reference to Section 4.3 of the accompanying Environmental Report, and also with reference to Sections 2.1, 2.2 and 2.3 of the Environmental Impact and Mitigation Desk Study report.

i. Site Infrastructure

A. Underwater or mostly underwater

- Cable End Equipment (CEE) - and Frame
- WaveRIDER Data buoy
- Gravity Base for deployed test device wave energy converters

- Acoustic Array (for monitoring underwater sound)
- Trawl resistant Acoustic Doppler Current Profiler (ADCP) (to measure water current speeds)
- Interconnecting cables to allow the devices to be connected to the Sea Station platform and Cable End Equipment

B. Above water or mostly above water

- Navigational Markers (Four Cardinal Markers, one placed at each corner of the site)
- SeaStation Platform (to provide power to and dissipate power from ocean energy devices as well as providing data communications to shore)
- Smart Bay data buoy

ii. **Test and demonstration devices**

The description of potential test devices set out below is illustrated in the Environmental Report (Ref: Section 4.3.4) with reference to Sections 2.1, 2.2 and 2.3 of the Environmental Impact and Mitigation Desk Study report.

The following are the specified types of devices proposed for testing:

- Surface Ocean Energy Converters: An example of this type of device is an Oscillating Water Column Wave Energy Converter. This is a floating structure open to the sea below the water line.
- Sub-surface Ocean Energy Converters: An example of this type of device is an Oscillating Wave Surge Converter WEC. This seabed mounted device collects energy by means of an oscillating arm part of which may protrude above the waterline.
- Seabed Ocean Energy Converters: An example of this type of device is a Pressure Differential WEC. The motion of the waves causes the sea level to rise and fall above the device, inducing a pressure differential in the device.
- Prototype Floating Wind Turbines: Floating platforms designed to accommodate wind turbines.

The procedures and protocols under which the Marine Institute propose to manage the activities under consideration in this Foreshore Licence/Lease application in terms of the individual test site operators are outlined with reference to the SEAI Document titled "Galway Bay Test and Demonstration Site Procedure Manual" Version 3 dated 27th November 2014 which was included with the application documents.

3. Consultation

In line with normal procedures both a public consultation and prescribed bodies consultation were undertaken for this application.

A. Public Consultation

The following steps were undertaken as part of the public consultation process:

- Announce public consultation through advertisement in a number of publications (those relevant for this application are listed below)
- Receive submissions from public and other interested parties
- Acknowledge receipt of submissions
- Provide all submissions to the applicant
- Receive a matrix of submissions from the applicant summarising the issues/concerns raised within
- Receive responses from the applicant in relation to the issues/concerns raised under the public consultation
- Publish the submissions (in batches) and the applicants responses thereof on the Department's web-site

The public consultation for this application commenced on May 19th 2016 and was due to conclude on the expiry of the standard 21 working day consultation period. Three extensions to the public consultation period were granted as outlined below.

Initial Consultation Period **May 19th 2016 to June 17th 2016**

Publications: Irish Times (19/5/2016), Connacht Tribune (20/5/2016), Marine Times (June 2016 edition), The Skipper (June 2016 edition)

First Extension: **June 18th 2016 to July 1st 2016**

Publications: Irish Times (17/6/2016), Galway Advertiser (23/06/2016), Connacht Tribune (24/6/2017)

Second Extension **July 2nd 2016 to August 2nd 2016**

Publications Irish Times (28/6/2016), Galway Advertiser (30/6/2016), Connacht Tribune (1/7/2016), Marine Times (July 2016 edition)

Third Extension **August 3rd 2016 to September 9th 2016**

Publications Galway Independent (3/8/2016), Irish Times (4/8/2016), Galway Advertiser (4/8/2016), Connacht Tribune (5/8/2016)

With the exception of the "Marine Times" and "The Skipper", the public notices appeared in both Irish and English.

Copies of the application and supporting documentation were made available for inspection by members of the public for the duration of the extended public consultation period (May 19th to September 9th 2016) at:

- Salthill Garda Station, Galway City
- Spiddal Public Library, Spiddal, Co Galway
- The offices of Comlacht Forbatha, An Spideal Teoranta, An Spideal, Co na Gallaimhe

As per standard procedures the application and supporting documentation was also made available at the time of the public consultation on the Department's website at:

<http://www.environ.ie/planning/foreshore/applications/marine-institute-spiddal>

During the public consultation period the Department's name changed to the Department of Housing, Planning, Community and Local Government. The application documentation remains available at:

<http://www.housing.gov.ie/planning/foreshore/applications/marine-institute-spiddal>

A total of five hundred and fifty five (555) submissions were received under the public consultation. The issues and concerns raised were identified by examining each submission. The applicant responded to the concerns raised in the public submissions to the consenting authority and copies of all the public submissions received and the applicant's responses to the concerns raised have been published on the Department's website at the link provided above.

The main concerns raised under the public consultation process include:

- Inadequate public consultation;
- Lack of, misleading or inaccurate information on the proposal;
- Impacts on tourism including impacts on the Wild Atlantic Way;
- Non-compliance with EU environmental laws or requirements including the belief that an Environmental Impact Assessment (EIA) is required, that no screening for EIA has been undertaken and that the Precautionary Principle should be invoked to ensure compliance with OSPAR;
- Claims that the proposal constitutes unsuitable development in terms of location, proximity to the coast, alleged project splitting, includes tall structures, no requirement for the testing of sea based turbines as there is already a body of research available, leads to industrialisation of Galway Bay;
- Negative impacts on human health and marine safety;
- That an Environmental Impact Statement (EIS) is required; Negative impacts on the environment including natural heritage, wildlife, impacts on protected species which

require the preparation of a Natura Impact Statement (NIS) and the potential for pollution;

- Lack of consideration of cumulative impact of other projects in the area;
- Term of the lease is too long (35 years);
- Planning and administrative Issues including a conflict of interest and contrary to the Galway Development Plan;
- Negative visual impact;
- Noise from test site;
- Negative impacts on recreation and damage to recreational amenity
- Impacts on heritage including impacts on archaeological features and impacts on historical sites;
- Negative impacts on fishing.

B. Prescribed Body Consultation

The following steps were undertaken as part of the Prescribed Body consultation process:

- Write to the prescribed bodies inviting observations on the application and supporting documentation;
- Accept receipt of submissions from the prescribed bodies;
- Provide all submissions to the applicant;
- Accept responses from the applicant in relation to the issues raised under the public consultation;
- Facilitate further discussion/correspondence where necessary between the applicant and the prescribed bodies in relation to observations received from the prescribed bodies;
- Publish the submissions (in batches) and the applicant's responses thereof on the Department's web-site.

Written submissions on the proposed development were invited from the prescribed bodies listed below:

- Sea Fisheries Protection Authority;
- Marine Survey Office;
- National Parks and Wildlife Service, Department of Arts, Heritage Regional, Rural and Gaeltacht Affairs;
- National Monuments Service (underwater archaeology), Department of Arts Heritage Regional Rural and Gaeltacht Affairs;
- Environmental Protection Agency;
- Irish Coast Guard;
- Commissioners of Irish Lights;
- Bord Iascaigh Mhara;
- Department of Defence;
- Met Eireann;
- The Heritage Council (Inland Waterways and Marine);
- Geological Survey of Ireland;
- Birdwatch Ireland;

- Health and Safety Authority;
- Commission for Energy Regulation;
- Inland Fisheries Ireland;
- Galway Co Council;
- Department of Agriculture Food and the Marine;
- The Sustainable Energy Authority of Ireland;
- The Department's Water and Marine Advisory Unit.

With the exception of the Heritage Council, submissions were received from all of the prescribed bodies. There were no objections in principle to the proposed development but a number of key issues were raised and these are addressed within this report.

4. Screening for the requirement for an Environmental Impact Statement

The MLVC screened the application and supporting documents and found that the proposed works are not of a category or scale that would require the submission of an Environmental Impact Statement (EIS) under EU Directive 2011/92/EU. The proposed development is sub threshold for EIS Requirements. The MLVC EIS Screening document dated 6th March 2017 (Appendix A) concluded that the proposed development will not have a significant effect on the environment by virtue of its nature, size or location.

The Marine Licence Vetting Committee is satisfied that this proposed development does not require an EIS.

5. Application Documents Considered by the MLVC

- The MLVC assessed this application at its meeting of 20th February 2017 and the following documents were considered:
- Completed Foreshore Lease Application form dated 6/4/2016
- Environmental Report (prepared by Marine Institute, SEAI and SmartBay and dated February 2016);
- Environmental Impact and Mitigation Desk Study for the Galway Bay Marine and Renewable Energy Test Site (prepared by Aquafact International Services Ltd and dated October 2015);
- Cetacean presence at the Ocean Energy Test Site Spiddal: As determined through Land Based visual monitoring and static acoustic monitoring using PODs (prepared by Dr Joanne O'Brien Galway Mayo Institute of Technology and dated March 2013);
- Seascape and Visual Impact Assessment Proposed Galway Bay Marine Energy Test Facility (prepared by MACROWORKS and dated January 2016);

- Visual Impact Photomontages –(5 Number included);
- Galway Bay Test and Demonstration Site Procedure Manual Version 3 (Prepared by SmartBay and dated 27/11/2014);
- Marine Environmental Appraisal of an Ocean Energy Test Site in Inner Galway Bay (a Benthic Appraisal of Test Site) (Prepared by Aquafact International Services Ltd and dated April 2010);
- An aerial survey of harbour seals in Ireland Part 2 Galway Bay to Carlingford Lough August-September 2012 (a report for NPWS of DAHG) (prepared by Callan Duck and Chris Morris of NERC Sea Mammal Research Unit, Scottish Oceans Institute, University of St Andrews, East Sands, Scotland and dated December 2012);
- Marine Safety Statement (prepared by Marine Institute, SEAI, SmartBay and dated February 2016);
- Marine Archaeology Impact Assessment for the Marine Institute (prepared by Finn Delaney of Geomara Ltd and dated September 2015);
- Appropriate Assessment Stage 1 Screening Report (prepared by Aquafact International Services Ltd and dated November 2015);
- Environmental Screening Report Dated August 2015 prepared by Marine Institute;
- Environmental Screening Report Addendum 1 dated November 2015 prepared by Marine Institute;
- SmartBay HSEQ Management System;
- Resource Characterisation of the Galway Bay ¼ Scale Wave Energy Test Site.

6. MLVC Assessment of Submissions and Applicant's Responses

The MLVC identified a number of general topics, and are satisfied that they encompass the main concerns raised during the consultation process which are relevant to the foreshore application. These included:

- a) Public consultation process
- b) Accuracy of information provided;
- c) Environmental Impact Assessment requirements;

- d) Appropriate Assessment including the requirement for the preparation of an NIS and potential impact on Natura 2000 sites;
- e) Health concerns including impact of light and noise on public health and safety;
- f) Potential visual impact;
- g) Potential impact on tourism;
- h) Potential impacts on fisheries;
- i) Potential impacts on navigational safety;
- j) Potential impacts on marine mammals;
- k) Potential impacts on seabirds;
- l) Potential impacts on Natura 2000 sites;
- m) Term of lease;
- n) Other.

Each category of concern is discussed in the following pages.

a) Public consultation process

The public consultation process that was followed for this application is discussed in detail in Section 3 of this report.

b) Accuracy of information provided

The MLVC examined all the application documents as listed earlier in this report and considered them of an appropriate standard on which to make a decision. Furthermore the application documents were of an appropriate standard for all of the Prescribed Bodies to provide considered views and in the cases where clarifications were sought, the MLVC is satisfied that the Applicant provided adequate responses to address the queries.

Chapter 4 of the Environmental Report describes the full nature and extent of the proposed development including, test site location, project components, method of installation and prototype test device specifications including timelines for deployment.

The MLVC considered that this information was appropriate to describe the proposed development and that only the devices as described therein can be considered as part of this Foreshore Lease Application, with the timelines for deployment and device specification to be in accordance with those as outlined in the application documents. The number of test devices on the site at any time will also be in accordance with the application documents; i.e.

maximum of three devices at any time with only one device permitted to be a floating wind device.

c) Environmental Impact Assessment requirements

This proposed development is not an Electricity Power Generating Station and there will be no power connection to the National Grid Network. The proposed development relates to the “testing of prototype scaled wind, wave and tidal devices” as set out in the Application Documents and specifically described at Section 4 in the Environmental Report with a limit of only three devices being deployed at the site at any one time (see also “Proposed Development” section of this report). There would only ever be one floating wind device of a maximum height of 35m within the test site at any time over the lifetime of the foreshore lease.

The proposed renewable energy test site is therefore not of a Class specified in Part I or Part II of Article 24 of the EC (EIA) Regulations 1989 to 1999 for which an EIS is mandatory. The proposed renewable energy test site is considered a sub threshold development under the 1997 amending EIA Directive (97/11/EC) which introduced guidance for Member States in terms of deciding whether or not a development is likely to have a significant effect on the environment.

The MLVC undertook EIS Screening of this proposed development in order to determine whether or not this proposal is likely to have significant effects on the environment by virtue, inter alia, of its nature, size or location. The findings of the MLVC are presented in the EIS Screening Report dated 6/3/2017. This EIS Screening Statement examined the proposed development with reference to inter alia, the potential impact to the following:

- Benthic fauna/marine mammals;
- Noise related impacts;
- Sediment disturbance;
- Visual impacts on neighbouring communities;
- Cumulative impact with other proposed developments ;
- Designated areas.

The extent, size and scale of the development infrastructure and devices relative to the proposed licensed area were also examined.

The chief findings and conclusions from the EIS Screening Report are presented in the concluding Summary which are as follows:

- The deployment of any test devices will be short term and temporary, any potential impacts are considered to be of a very short term nature, infrequent in occurrence, reversible and of imperceptible impact when compared to the background natural marine environment;
- In terms of size and scale, the proposed test devices and associated site infrastructure will only take up an extremely small area of the overall Test Site (37.52 ha) at 0.45 ha which equates to 0.12% of seafloor footprint and 0.143 ha or 0.38% of sea surface

footprint (at full deployment, i.e. the maximum three devices deployed at the same time);

- This is not a commercial venture and there will be no capacity to export power to the grid from any wave, tidal or floating wind energy test device that may be deployed on site;
- Various studies on benthic fauna and marine mammals support the view that the proposed development of the renewable energy test site will not have any significant effect on them;
- The proposed renewable energy test site is not located within any designated Natura 2000 area, i.e. Special Area of Conservation (SAC) or Special Protection Area (SPA). It is considered that there is unlikely to be any significant impact arising from the proposed renewable energy test site on the conservation objectives of any of the surrounding designated SAC/SPA sites (see also MLVC Appropriate Assessment Report dated 15/3/2017);
- Based on the assessment of environmental sensitivities of the site, it is considered that there is the potential for the proposed renewable energy test site, to have a slight to imperceptible effect on the surrounding environment. In addition it is not considered likely that there will be any significant cumulative negative effects on the environment when examined in conjunction with any proposed on-shore or foreshore developments;
- The MLVC concludes that the proposed development will not have a significant effect on the environment by virtue of its nature, size or location. It is therefore concluded that an EIS is not required in this case.

The Marine Licence Vetting Committee is satisfied that this proposed project does not require an EIS, however the Marine Institute did submit an "Environmental Report" (prepared by the Marine Institute, SEAI and SmartBay, dated February 2016) which closely followed the pro forma structure and content of an EIS. Indeed with reference to Section 2.4 of the said Environmental Report the Applicant points out that it has been prepared in line with the European Communities Environmental Impact Assessment Regulations 1989 to 1999, the Foreshore Act 1933, as amended and the regulations thereto.. Reference was also made to the Guidelines on the Information to be contained in Environmental Impact Statements, published by the EPA in 2002 and Advice Notes on Current Practice in the preparation of Environmental Impact Statements published by the EPA in 2003.

d) Appropriate Assessment including the requirement for the preparation of an NIS and potential impact on Natura 2000 sites

The requirements for Appropriate Assessment (AA) derive directly from Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC). AA is an impact assessment process that fits within the decision making framework and tests of Article 6(3) and 6(4). The AA Process encompasses all of the processes covered by Article 6(3) of the Habitats Directive, i.e. the screening process, the NIS, the AA screening by the Competent Authority. It also includes a record of the decisions made by the competent authority at each stage of the process up to a point where Article 6(4) may come into play, following a determination that the plan or project may significantly adversely affect the integrity of a Natura 2000 site.

The EU methodology guidance promotes a four stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages of the process are as follows:

- Stage 1 Screening for AA
- Stage 2 AA (requirement to prepare an Natura Impact Statement NIS)
- Stage 3 Alternative Solutions
- Stage 4 Imperative reasons of overriding public interest (IROPI)

Stage 1: Screening for Appropriate Assessment is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i. Whether the plan or project is directly connected to or necessary for the management of the site, and
- ii. Whether a plan or project, alone or in combination with other plans and projects is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

The greater level of evidence and justification is needed in circumstances where the process ends at the Screening Stage on finding of no significant effect.

The documentation associated with the application FS006566: Foreshore Application by the Marine Institute to develop a one quarter scale renewable energy test site for the purposes of the testing of prototype scaled wind, wave and tidal devices at Spiddal, Co. Galway is available on-line at:

<http://www.housing.gov.ie/planning/foreshore/applications/marine-institute-spiddal>

This documentation includes an official foreshore licence application form and a suite of documents including an Environmental Report with eleven appendices, one of which is the Applicants own screening report for the Appropriate Assessment process.

- An Environmental Report was submitted;
- Page 26 of the Environmental Report identifies why a full Environmental Impact Assessment is not required in respect of this application;

- A Screening report in the context of Appropriate Assessment was compiled by the applicant in the context of *Natura* 2000 sites within a 15 km radius of the foreshore licence application site.

It is the role of the consenting authority (competent authority), i.e. the Minister (or his/her agents advising) in the case of this foreshore licence application, to undertake an appropriate assessment (AA) process.

The MLVC carried out an assessment of all material provided in the context of all potential impacts of the proposed development on qualifying species and habitats listed for *Natura* 2000 sites that encompassed the application site or were in some way adjacent to it in such a way as qualifying interests might be adversely impacted.

An Appropriate Assessment Screening Report taking into account all the application documents and submissions has been prepared by the Marine Licence Vetting Committee (Appropriate Assessment Report dated 15th March 2017)

This appropriate assessment screening report will form part of the MLVC report to the Minister for Housing, Planning, Community and Local Government.

This Appropriate Assessment Screening Report examined all of the *Natura* 2000 Sites with the potential to be impacted upon by the test site operations, up to a distance of 27km from the test site which included the following *Natura* 2000 sites:

- Galway Bay Special Area of Conservation Complex SAC (000268) situated 8.9km east of the Test Site;
- Connemara Bog Complex SAC (002034) situated 3.6km north of Test Site;
- Lough Corrib SAC (000297) situated 14.2km north east of Test Site;
- Inishmore Island SAC (000213) situated 27km west of Test Site;
- Black Head and Poulsallagh Complex SAC (000020) situated app 7.6km south of test site;
- Kilkieran Bay and islands SAC (002111) situated 25km west of Test Site;
- Inner Galway Bay SPA (004031) situated 8.9km east of the Test Site;
- Connemara Bog Complex SPA (004181) situated 5.9km northwest of the Test Site;
- Lough Corrib SPA (004042) situated 14.2km north east of Test Site;
- Inishmore SPA (004152) situated 27km west of the Test Site;

Based on the assessment of the effects of the proposed development on the habitats and species of the *Natura* 2000 sites listed above this Appropriate Assessment Screening Report

concluded that there are not likely to be any significant effects as a result of the proposed development on the Conservation Objectives of the 10 No pertinent Natura 2000 Sites.

The Marine Licence Vetting Committee is satisfied that this proposed development does not require an NIS (Stage 2 of AA process) Appendix B.

e) Health concerns including impact of light and noise on public health and safety;

During the public consultation process concerns were raised about the potential impact of light and noise on public health and safety.

In terms of light, it is planned that the only marking lights denoting the presence of the test site will be those of the statutory sanctioned cardinal marks. No devices deployed on site will carry marking lights other than any floating wind test device which must comply with aviation lighting as specified by the Irish Aviation Authority. Therefore in terms of light, with only one turbine device ever being permitted, the MLVC is satisfied that there will be no significant impact from light on public health and safety

In terms of noise, this is addressed in Sections 33 - 36 of the Foreshore Lease Application form. The maximum noise levels from the operation of full scale commercial wind farms are typically approximately 100 dB (A). It is estimated that operational noise at the test site will be approximately 50 dB (A). Ambient background noise levels in a coastal marine environment of 30 to 50 dB (A) would be expected to prevail at the test site.

The nearest habitation is located approximately 1.5km from the boundary of the test site, It is estimated that maximum noise levels expected at this location will be within the range of ambient background noise in a coastal marine environment of between 30-50 dB(A). Noise impacts from maintenance and installation vessels will be temporary and infrequent and will be lower than that posed by commercial shipping traffic in the area.

The MLVC is satisfied that there will be no significant impact from noise on public health and safety

f) Potential Visual Impact

Visual Impact Assessment (VIA) is addressed in Section 11 of the Environmental Report. The VIA was carried out by Macroworks Ltd and their associated report is included in the submitted documentation accompanying this foreshore licence application (ref Seascope and Visual Impact Assessment: Proposed Galway Bay Marine Energy Test Site (dated January 2016) together with 5 number photomontages which formed part of the Visual Impact Assessment. The main findings of the Visual Impact Assessment were as follows:

- The proposed test site is 1.3km offshore and most of the components will be less than a few metres above the waterline. While some of the components may be discernible from distances of up to 10km in optimal viewing conditions, they are likely to be

barely discernible and thus unlikely to give rise to any significant visual impact at such distances.

- The maximum degree of visual impact is only likely to occur at viewing distances of less than 2km and only when all devices (a maximum of three) are in place at once. Beyond 2km impact levels fall away quickly to slight to imperceptible. The three structures that will tend to stand out the most are the floating wind device, due to its height and movement, the SeaStation platform, due to its bulk, and the twin-float wave machine due to its length.
- The proposed site is currently identified by 4 No buoys (one at each corner) which are discernible in clear viewing conditions but are unlikely to draw the attention of casual observers. This marine energy test site has been in operation for nearly 10 years and the occasional placement of wave energy devices will not be an unfamiliar occurrence for the local population.
- Given that the proposed Renewable Energy Test Site does not represent significant bulk, visual impacts will almost entirely be from visual intrusion rather than visual obstruction.
- The proposed structures may contribute a minor degree of visual clutter to the seaward view. However this is a living and working section of the coastline that hosts an array of structures and land uses and it is not considered that the renewable energy test site conflicts with the character and values associated with the coastal vistas in this area. Important ameliorating factors are the temporary nature of the installations for the devices (i.e. in the case of floating wind device only one device permitted with a maximum turbine tip blade at 35m above sea level).
- There will be no residual seascape or visual impacts once the various devices are removed from the site.
- Overall it is not considered that the proposed Test Site will give rise to any significant impacts in visual impact assessment terms.

The Marine Licence Vetting Committee is satisfied that the Applicant has demonstrated that the proposed renewable energy test site will have minimal visual impact on the surrounding coastline and seascapes and considers the findings as presented in Section 11 of the Environmental Report and also with reference to the MACROWORKS Seascapes and Visual Impact Assessment report to be reasonable and satisfactory in this regard.

g) Potential Impact on Tourism

This is addressed in Section 12.4 of the Environmental Report. During the operation of the test site an array of different structures (maximum of 3 No) might appear slightly anomalous to visitors who are unaware of the sites purpose. The overall impact is judged to be slight and this only applies to the worst case scenario where three above surface devices are briefly in place at the same time. Due to the uniqueness of the test site it may result in an increase in visits to the area.

During the public consultation phase Failte Ireland made a submission (ref Public Consultation Submission No 297). They commissioned an independent report by AOS Planning for the purposes of assessing the significance of any impacts on the tourism amenity of the local and wider areas and the conclusion from that report was as follows:

In this instance it is considered that although the proposed development will change the nature and character of the receiving environment-namely in relation to changed views of Galway Bay- , these impacts are not significantly different from the existing activities which take place in this working bay. It is also considered that the majority of visitors to the area will view the development intermittently while travelling along the R336 coast road. In this context it is considered that there is unlikely to be a significant negative impact on tourism in the area arising from the current proposal.

In the public submissions concerns were expressed about the potential impact to the Wild Atlantic Way. The Marine Institute commissioned specialised independent consultants Macro Works Ltd to undertake a Seascape and Visual Impact Assessment. The report is included as Appendix 8 of the Environmental Report and the accompanying photomontages included as Appendix 9. View-shed Reference Points are the locations used to study the visual impacts of the proposal in detail and are intended to reflect a range of different receptor types, distances and angles. Three of the VRP's detailed in Section 1.2.2.3 of the Seascape and Visual Impact Assessment report (i.e.VP2, VP4 and VP5) are representative of views that would typically be experienced along the Wild Atlantic Way. The visual impact of the test site infrastructure from each of the VRPs is assessed in Section 1.3.2.4 of the Seascape and Visual Impact Assessment report and the impacts were judged to range from low to negligible.

In the public submissions concerns were also expressed about the potential impact on the "Burren UNESCO Site". The Burren UNESCO GeoPark is located app. 8km from the proposed development at its nearest point and components of the proposed development are likely to be barely discernible and be very unlikely to give rise to any significant visual impacts at such distances.

Activities under the previous licence (FS004904), had a negligible impact on recreational vessel activity in the area. Based on both this past performance and the marking of the site boundary with cardinal markers we would expect this to continue and are of the view that the risk of collisions is highly unlikely.

Taking into account Bord Failte's observations and the results of the Visual Impact Assessment as presented in the Environmental Report (Appendices 8 and 9), the Marine Licence Vetting Committee is satisfied that there is likely to be no significant effect on tourism including the Wild Atlantic Way and the Burren UNESCO site over the life of the operation.

The Marine Institute aims to encourage the test site to be used to enhance tourism in the area by committing to providing an interpretative centre on the shoreline to provide information about both the test site activities and marine renewable energy technologies (Environmental Report: Section 12.4.3). The Marine Licence Vetting Committee welcomes this proposal and considers that as well as potential benefits for tourism this centre could also be used as part of any communication plan put in place for the local area, ensuring that the local community are aware of the on-going operations at the test site.

h) Potential impacts on fisheries

Section 6 of the Environmental Report examines the potential impact to fisheries under a series of headings including habitat loss, noise and electromagnetic fields (e.m.f). The impacts to fish stocks are also addressed in the Environmental Report in Section 12.3. During the Prescribed Body Consultation Phase a response was received from Inland Fisheries Ireland which addressed fishery related matters. The MLVC considered these and other related submissions in their evaluation of the potential impact on fisheries. The MLVC also considered the loss of fishing areas during the operation of the test site.

A variety of demersal and pelagic fish species are likely to be present in the waters along the north shore of Galway Bay in the vicinity of the test site. Some of the most common fish inhabiting or migrating seasonally through the area would include pollack, wrasse, whiting, plaice, brill, sole, turbot, mackerel, sprat, sand eels, herring, cod, haddock, saithe, congor eels, Atlantic salmon and sea trout. Annex II fish species such as Atlantic salmon and lamprey may seasonally occur at the mouth of the Boluisce River, especially during May to July as they move up river. The Corrib plume flows along the northern coastline of Galway Bay therefore salmon and sea lamprey migrating to and from Lough Corrib and the Boluisce River have the potential to migrate adjacent to the test site.

In terms of loss of fishing areas one of the main impacts on fishing would occur during the operational phase of the development, during which test devices would be deployed, tested and removed. The test area would effectively become an exclusion zone for fishing activity and there would be movement of vessels servicing the test areas, towing test devices to / from the area which could disrupt fishing activity, albeit to a limited extent. During adverse weather, fishing gear may drift and become entangled in moorings of the marker buoys or test devices. Similarly, during severe weather, moored test devices could break free and damage fishing gear.

It is evident that the applicant has engaged in discussions with the local fisheries organisations and that the operation of the same area as a test site since from 2006 to March 2017 (under a foreshore leases FS004904 and FS006611) has led to a familiarity of the fishing industry as to the nature and scale of the on-going operations within the test site. While test operations within the lease area have now ceased and the site has been de-commissioned the site remains as an exclusion zone due to post lease monitoring being carried out under the de-commissioning plan. Furthermore the Sea Fisheries Protection Authority (SFPA) did not identify any general or specific issues in regard to the present application

The MLVC is of the view that the establishment of a specific forum to facilitate consultation and information dissemination to fishermen and other relevant stakeholders would mitigate adverse effects on fishing activities. The appointment of a Fisheries Liaison Officer as well as advance notice of all marine operations at the site to fishermen and other relevant stakeholders would also be effective in this regard.

Habitat Loss

In terms of **habitat loss**, in situations where all three permitted test devices are deployed simultaneously, total seabed habitat lost would amount to 460m². The Environmental Report (at 6.6.1.1) concludes that this is an extremely small area (0.13%) relative to the extent of the

test site (37.52Ha) and that the actual area lost is so small that the impact on benthic communities will be negligible. In addition, following the removal of the infrastructure, the impacted areas will immediately begin to recover through recruitment from neighbouring undisturbed areas. In addition the loss of such a small area of seabed is extremely unlikely to cause any reduction in fish stocks or spawning and nursery areas. The only fish species feeding on the benthos are likely to be demersal and as birds are more likely to feed on pelagic species there will be no knock on effect for birds of the habitat loss. Marine Mammals in the area are extremely unlikely to be impacted upon given the very small area of seabed impacted and the extremely unlikely impact on fish stocks in the area.

The placement of any structures on the seabed will disturb and remobilise sediments in the immediate footprint of the objects. This will result in a short term (minutes) localised increase in suspended sediment levels and turbidity.

It is pointed out with reference to the Environmental Report (at 6.6.1.2) that naturally high suspended sediment background levels of 65000mg/l have been recorded in Galway Bay under storm conditions and these volumes are orders of magnitude greater than what would be generated from the proposed activities. The disturbance to sediment and the resultant increases in suspended sediments and turbidity and the subsequent deposition of sediments will be of such scale that the impacts on the benthos, fisheries, birds and mammals will be negligible.

The Impact Assessment as presented in the Environmental Report indicates that habitat loss and disturbance to seabed will have a low impact on fisheries.

Impact of Noise

The impact of noise (6.5.3.3 of the Environmental Report) in displacing species or in impeding their normal biological capacities within or adjacent to the test area is identified. The noise generated from the addition of a small number of service/maintenance and installation vessels to the area is not expected to have any significant impact on marine mammals, fish or bird species given the levels of marine traffic that currently exist in this area. The installation of an acoustic array for monitoring underwater sound will permit monitoring of any noise issue.

Operational noise from individual devices or small arrays of devices (maximum of three) will be considerably lower than that generated by vessel noise and is unlikely to have any significant impact on the behaviour or survival of marine mammals, fish or bird species. Based on studies carried out to date and the nature and use of the proposed renewable energy test site, the impact of a maximum of three operating scaled energy devices on marine mammals, fish and bird species in the area will be negligible. The predicted operational noise impact will be low.

Impact of Electro-Magnetic-Fields (EMF)

Magnetic fields generated by cables may impair the orientation of fish and affect migratory behaviour. Elasmobranch fish e.g. sharks, skates and rays can detect magnetic fields which are weak compared to the earth's magnetic field.

OSPAR (2009)¹ has noted that while the environmental impact of electromagnetic fields on the population or ecosystem level is uncertain, there is sufficient evidence that significant effects cannot be excluded. Suitable mitigation measures are available including:

- deploying cable types suited to reducing the emission of magnetic fields;
- use of adequate shielding to minimise the emission of directly generated electric fields;

The issue of EMF or electro-magnetic-fields and the potential for such fields to impact on sensitive species is discussed in the Environmental Report (6.5.3.4). The fields can be associated with wave energy machinery and also with the cable carrying electricity to the prototypes under test. The sensitive species include bottom-living species that might come into close contact with cabling e.g. elasmobranchs (sharks, skates and ray). The report indicates that "These EMFs can affect migration and prey detection in certain electro-sensitive fish species such as elasmobranchs (sharks, skates and rays), lamprey, some bony fish such as Atlantic salmon and eel and some cetaceans (whales and dolphins)".

The Impact Assessment in the Environmental Report summarises both the issues and mitigation measures.

It is anticipated that there could be up to three cables connecting scaled test devices to the SeaStation and a 4th cable connecting the SeaStation to the CEE. These cables will be free floating between the devices. The CEE will provide 400V DC (3.5kW) power supply to the sensors, SeaStation, test devices and HDTV monitoring cameras through a standard single conductor telecommunications type cable which was laid between the CEE and the shore in April 2015 under FS005751. This cable was double armoured and buried to a depth of 700mm where substrata allowed and laid directly on the seabed and protected with either cast iron protection or concrete bags where substrata did not allow.

At 3.5kW and 400V the power and voltage of the proposed cables are a fraction of those found in high power undersea cables. The East-West interconnector, which was recently laid in the Irish Sea connecting the Irish and UK electrical grids, can transmit up to 500,000kW at up to 200,000 V. The low power levels of the proposed cables will not have a significant impact on marine species in the area.

It is recommended that the mitigation measures as outlined by the OSPAR Commission be applied as appropriate. Additionally a strategy of adaptive management, based on the outcome of on-going industry-wide monitoring of deployed energy devices, offshore wind farm cables and other relevant research studies, should be adopted at the site.

Mitigation Measures Incorporated into the Project Plan

Section 6.7 of the Environmental Report presents a series of mitigation measures/recommendations to ensure minimal impact of the Galway Bay test site to mammals, fish and bird communities. Inland Fisheries Ireland has indicated in its submission that it is broadly supportive of these and that many are highly pertinent to the protection of fish and fish habitat. In particular in terms of the following mitigation measures:

- a) *Avoid sensitive time periods for local receptors, and*

¹ OSPAR Commission (2009) Assessment of the Environmental Impact of Cables

- b) Target work to take place when porpoise presence is at its lowest e.g. during the spring or early summer*

IFI points out that there will be salmon smolt out-migration during the period March-June from the adjacent Lough Corrib SAC and that it is likely that smolts hug the north shoreline of Galway Bay on out-migration. IFI recommends that installation timing should be done in advance in each case in consultation with IFI.

The MLVC is satisfied that the adoption of the mitigation measures as proposed in Section 6.7 of the Environmental Report should afford adequate protection for fish and fish habitats and recommends that these mitigation measures, along with IFI alterations, be incorporated into licence conditions for this application.

The small number of scaled devices that will be deployed in the test site at any one time and the open water extending c1km between the test site and the northern shore of Galway Bay make the likelihood of any exclusion or barrier effect occurring remote and the consequences were it to do so would be negligible.

Section 12.3 of the Environmental Report notes that “the test area with its effective exclusion on fishing activity, may result in the development of nursery areas which could enhance fish and shellfish stock. Mooring systems may also create artificial reef structures which could also lead to enhanced fish and shellfish stock in the area. Such nursery areas may lead to increased catch in future, enhancing fishermen’s income on a substantial basis”. This can be considered as a potential positive impact on fisheries.

The MLVC Appropriate Assessment Screening Report dated 15th March 2017 examined the potential impact of the proposed test site on the conservation objectives of designated Natura 2000 sites within 27km of the test site including qualifying interests (e.g. Atlantic salmon and sea lamprey). It concluded that there would be no significant effect on the conservation objectives of the relevant Natura 2000 sites.

Taking into consideration the views of IFI, the submissions received under the consultation process and the Environmental Report the MLVC is satisfied that there will be no significant effect on fisheries from the operation of the proposed test site subject to the recommendations as outlined above and the adoption of mitigation measures as outlined in section 6.7 of the Environmental Report.

i) Potential impacts on navigational safety

Section 13 of the Environmental Report examines the potential impact to navigation. During the public consultation phase a response was received from the Marine Survey Office which addressed navigational related matters. The MLVC considered these and other related submissions in their evaluation of the potential impact on Navigation.

The test site will be operated in accordance with the accredited HSEQ Management System. The system takes into account:

- a) recommended offshore wind and marine energy health and safety guidelines, and

- b) International and national maritime safety and environmental regulations, codes and guidelines.

More details in relation to this Site Management System are provided with reference to Section 13.6 Site Management in the Environmental Report.

During the operational phase of the test site the presence of vessels on site and the additional vessel movements to and from the main ports of Rosaveel and Galway will pose an additional navigation risk. The previously licensed (in existence for ten years) wave energy test site was demarcated by four cardinal marks at each corner and marked on navigation charts as an ocean energy site. Under the decommissioning plan as agreed with the Department of Housing, Planning, Community and Local Government, the cardinal markers remain in place to facilitate a period of post-project environment monitoring. The location of the test site, outside commercial shipping routes coupled with local knowledge of the site location (as the same footprint area was previously licensed to the MI) means that the potential navigation risks are low.

It is planned that the only marking lights denoting the presence of the test site would be those of the statutory sanctioned cardinal marks. No devices deployed on site would carry marking lights other than any floating wind turbine which would have to comply with aviation lighting as specified by Irish Aviation Authority.

Any marking and lighting of each device installed would be in accordance with the International Association of Lighthouse Authorities standards and agreed with the Commissioner of Irish Lights, the Marine Survey Office and the Galway Harbour Master.

During the operational phase the clear marking of the test areas would be very important. The requirements of the Commissioners of Irish Lights, the Irish Coastguard and the Irish Aviation Authority with respect to marking and lighting should be fully met.

The potential impact from the proposed test site on fishing vessels would be minimal as there is sufficient sea room to the north and south of the test site to transit to and from fishing grounds, also local boats have become familiar with the previously licensed test site through the cardinal marking scheme and no fishing activity (predominantly potting) has been carried out within the test site area.

Similarly there would be negligible impact expected to commercial vessels since they use the shipping routes to the south of the test site and the marking of the test site on Admiralty Charts minimises the risk of collisions. The MLVC is satisfied that the proposed test site operations would have a negligible impact on the recreational vessel activity in the area with the marking of the test site on Admiralty Charts minimising the risk of collisions.

Mitigation Measures to minimise any potential impact on navigation from the operation of the proposed test site are presented in Section 13.8 of the Environmental Report and they include for:

General Measures

- Control measures for frequent users of the area around the test site to be defined and managed e.g. defining and agreeing procedures with fishermen for retrieving any fishing gear that enters the site;

- Position monitoring of devices and buoys to ensure stationary position;
- A separate device specific risk assessment outlining the hazards associated with the devices will be prepared by the device developer before the devices are installed and this risk assessment will conform to the guidelines of SmartBay HSEQ Management System.

Operational Phase Measures

- Notices to issue in advance of installation or decommissioning of any device;
- All vessels employed to comply with all statutory regulations;
- The installation and decommissioning of devices to be planned and managed to ensure the safety of those involved and other maritime users in the area in accordance with the HSEQ Management System;
- Reliable inspection, maintenance and casualty response regime conditions in accordance with the HSEQ Management System to be implemented and targets for navigation aids (as specified by IALA standards) to be met;
- RNLI and other emergency services will be notified of the layout and workings of the site and included in any emergency exercises for the site;
- Personal protective equipment will be compulsory for all personal on site to ensure safety in accordance with the HSEQ Management System.

From a navigational and safety viewpoint, the Marine Survey Office referred to the previously licensed operations. During the consultation phase for that earlier application, they had raised concerns about the effectiveness of the anchoring system to be deployed and the possibility of one or all of the devices breaking free during adverse weather condition. They were satisfied that third party verification and certification of the anchoring systems is available and that AIS (Automatic Identification Systems) technology would be employed to detect any uncontrolled drift outside a prescribed radius.

Should any device break free from its restraints, the AIS settings will transmit a signal to key individuals, upon which an emergency activation plan will be initiated. This will involve the Irish Coast Guard, the Galway Bay Harbour Authority and the Marine Institute. A workboat will be on short notice throughout the deployment.

The MSO was satisfied that its study of the new foreshore application raises no new issues for the MSO. Having considered the mitigation measures as presented in Section 13.8 of the Environmental Report and being mindful of the site markings the MSO is satisfied that the site and the structures therein do not pose a threat to navigational safety. The MSO requests that a new chart correction be sought designating the area as either a precautionary area or as an area to be avoided in order to reinforce the existence of this site to all mariners.

Conclusions – Navigational Safety

Taking into consideration the views of the MSO, the submissions, and the Environmental Report, the MLVC is satisfied that there would be no impact to navigational safety from the operation of the proposed test site subject to both the recommendations as outlined above and the adoption of mitigation measures as outlined in section 13.8 of the Environmental Report. The MLVC also concurs with the MSO that a new chart correction should be sought by the applicants to designate the area as an area to be avoided (ATBA) in order to reinforce the existence of the test site to all mariners.

The MLVC, having reviewed the foreshore application documents, is satisfied that all reasonable steps have been considered to minimise disruption to marine navigation.

j) Potential impacts on marine mammals

Potential effects to marine mammals as a result of this proposed development are addressed at several points throughout the application and assessment process.

The applicant in section 6 of the Environmental Report submitted in support of the application examines the potential effect on marine mammals and the information contained within is backed up by a specific Marine Mammal Risk Assessment in Appendix 6 at Section 4 (ref the Applicant's Appropriate Assessment Stage 1 Screening Report dated November 2015).

A response was received from the National Parks and Wildlife Service of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs as part of the prescribed body consultation which addressed nature conservation issues including those pertaining to marine mammals.

The MLVC's Appropriate Assessment Report dated 15th March 2017 also addresses potential impacts on Natura 2000 sites including marine mammals. The MLVC considered the aforementioned documents and other related submissions in its evaluation of the potential impact on Marine Mammals of the ocean energy test site.

A number of submissions highlighted concerns relating to the impact of noise on biota; in particular, on marine mammals including Cetaceans (whales, dolphins and porpoises) and seals. All Cetaceans are listed under Annex IV of the Habitats Directive (Council Directive 92/43/EEC) as species requiring protection.

The Environmental Report presented the results of marine mammal monitoring carried out in the area between 2009 and 2010 when an ocean energy scaled device was on site (under FS004904) which is within the same footprint area as the application (FS006566) under consideration at this time.

Visual sighting records from the Irish Whale and Dolphin Group found that 13.2% of all sightings were from Galway Bay. Harbour porpoises were the most frequently reported species together with a significant number of sightings for the bottlenose dolphin. and the visual sighting records highlighted that mid-summer through to December are the months when the porpoises are most active. The visual data showed that when compared with other sites within the bay which are subject to land based watches, the test site is not the most

important, with a greater relative abundance at Black Head as porpoises are known to use tidal races when feeding.

Acoustic monitoring using in 2009-2010 at the test device site (under FS004904) showed that porpoises were present at the site on almost a daily basis (~88%) while dolphins were only present for 3% of the time. The Harbour porpoises regularly use the site as a feeding location especially during the winter months during night time hours. The monitoring coincided with the deployment of a wave energy test device within the test area. The results failed to show any significant differences in detections between sites suggesting that the ocean energy test device did not influence harbour porpoise behaviour.

Both harbour seals and grey seals are protected species under the Wildlife Amendment Act 1976 -2005 and Annex II of the EU Habitats Directive. In Inner Galway Bay much of the harbour seal population occurs on the south shore with haul-out sites located around Tawin Island Eddy, Kinvara Bay and Deer Island (ref Fig 4.1 in applicant's Appropriate Assessment Stage 1 Screening Report). Very few haul-out sites are known to occur along the exposed north shore of inner Galway Bay and are not known to occur in the Spiddal area. While the grey seals can occur in Galway Bay no individuals were recorded in the 2007 moult survey.

The potential impacts on marine mammals associated with the test device site can arise from:

- a) installation of foundations for devices, installation of devices, sensors, equipment due to noise from installation vessels and the collision risk posed by the installation vessels; and
- b) Operating working devices, sensors and equipment due to noise produced during the operational phase, EMF propagation, collision risk, entanglement with the physical structures and potential habitat loss, sediment displacement or localised disturbance of normal ecological activities.

Installation Phase

The addition of a small number of vessels to the area is not expected to have any significant impact on marine mammals given the levels of marine traffic that currently exist in Galway Bay.

In addition seal haul-out sites are c 13km from the test site and any airborne noise from the vessel activity will not disturb harbour seals on land. While the likelihood of a noise related impact occurring during the installation phase is possible, the consequences would be negligible based on the foregoing.

The collision risk during construction is likely to be lower than that posed by commercial shipping traffic.

Operational Phase

Marine Mammal monitoring (ref pg. 122 and 123 of the Environmental Report) to assess the effect of a one quarter scale ocean energy test device on harbour porpoise presence was carried out at the previously licensed Galway Bay test site between 2009 and 2010 when an ocean energy scaled device was on site. Monitoring was also carried out at 2 control sites, one 1km east of the test site and the second one 500m west of the test site. The presence of the wave platform which was a substantial size (28t) could have had a positive or negative effect on the occurrence of harbour porpoises in the area.

Results from this short term deployment and monitoring failed to show a significant difference in detections between sites, suggesting that the ocean energy platform did not influence harbour porpoise presence, either positively or negatively.

Noise impacts from maintenance vessels will be the same if not lower than that from the installation vessels.

Operational noise from individual devices or small arrays of devices is unlikely to have large scale effects on behaviour or survival of marine mammals. Based on studies carried out to date and the nature and use of the proposed renewable energy test site, the impact of 3(max) operating scaled energy devices on marine animals in the area will be negligible. The predicted operational noise impact will be low.

Any marine mammal that enters the test area has the ability to see and avoid all scaled test devices and infrastructure. Given the scaled sizes of devices, the slow speed of turbine blades in the water column (low current velocities), the number of turbines (max 1) likely to be in operation at any one time and the low number and short term intermittent nature of the installation/service vessels, the likelihood of any collision occurring with marine mammals, fish or bird species is considered to be very low and the predicted impact is low.

Not all devices proposed for testing have propellers. Many have their moving parts sealed inside the actual structure, thereby reducing or eliminating any potential for entrainment and damage to marine mammals, fish and birds. Furthermore the applicant has undertaken that it will liaise with the appropriate state authorities in regard to the timing of installation of specific devices in the context of known sensitive times for marine mammal and fish species listed under Annex II of the Birds and Habitats Directive.

The scale of the proposed development is small in terms of the open ocean environment where it would be located and the MLVC is of the view that the risk of collision with test devices would be small and that the impacts would not be significant.

It is anticipated that there could be up to three cables connecting scaled test devices to the SeaStation and a 4th cable connecting the SeaStation to the CEE At 3.5Kw and 400V. The power and voltage of the proposed cables are a fraction of those found in higher power undersea cables (e.g. East West Interconnector which operates at - 500,000Kw at up to 200,000V). The low power levels in the proposed cables means that the magnetic field and induced electric field from the proposed cables would not have any significant effect on marine mammals in the area. The MLVC considers that the likelihood of an impact occurring would be unlikely and the consequences would be negligible.

The placement of any infrastructure on the seabed would disturb and remobilise sediments in the immediate footprint of the object. This would result in a short term (minutes) localised increase in suspended sediment levels and turbidity therefore they would be of a significantly low level as to have no effect on the water quality of habitats. Naturally high background levels of 65000 mg/L have been recorded in Galway Bay during storm conditions which are orders of magnitude greater than what would be generated by the proposed activities.

Sediment disturbance during the operational phase include for scour around gravity bases however given the relatively low velocities in the area any impact from this would be likely to be minimal. The movement of moorings, cables and devices on and off the seabed has the

potential to disturb and remobilise sediments. It is estimated that up to 5m either side of the lines/cables could be affected however the sediments disturbed by this activity would be orders of magnitude lower than that generated during storm events and any short term temporary impacts from this would have a negligible impact on the environment.

The MLVC is of the view that disturbance to sediments and the resultant increases in suspended sediments and turbidity and subsequent deposition of sediments would be of such a scale that impacts on marine mammals and fish species would be negligible.

In its submission the National Parks and Wildlife Service of the Department of Arts Heritage, Regional, Rural and Gaeltacht Affairs, following its evaluation of the proposed operations, were of the view that the operation of the renewable energy test site "is unlikely to have a negative interaction with Natura 2000 nature conservation sites due to the nature and location of the works". NPWS also recognised that "an evaluation of the potential interaction with marine mammals is clearly presented in the documentation circulated in support of the Foreshore Lease". They also recommended that a series of mitigation measures should be included as a condition of consent which included the following:

- Presence of a trained experienced Marine Mammal Observer (MMO) to implement the NPWS best practice guidelines when all work is taking place and to implement appropriate buffer zones in good sea-state;
- Target work to take place when porpoise presence is at its lowest e.g. during the spring or early summer;
- If bow thrusters are required on installation vessels, they should be covered to prevent collision with marine mammals;
- Only carry out observations (and therefore work) during daylight hours (this will also minimise risk of bird and mammal collision with vessels);
- Carry out SAM (Static Acoustic Monitoring) at the site during and after installation works to assess if avoidance behaviour is recorded and if so for how long it lasts;
- Design devices for minimal impact of collision risk;
- Plan operations efficiently to minimise the number of trips that the service vessel must make;
- Avoid sensitive time periods for local receptors;
- Use low toxicity and biodegradable materials;
- Design infrastructure for minimum maintenance;
- Design devices to minimise risk of leakage of pollutants.

These measures are included in a wider suite of mitigation/best practice measures as presented at Section 6.7 of the Environmental Report in order to ensure minimal impact on

Flora and Fauna including marine mammals, fish and birds. The MLVC is satisfied that the implementation of these best practise measures would minimise any potential impact to marine mammals.

k) Potential impacts on seabirds

Section 6 of the Environmental Report examines the potential impact to birds. This information is backed up by information contained in the applicants Appropriate Assessment Stage 1 Screening Report in Appendix 6 (Section 3). During the Prescribed Body Consultation Phase a response was received from statutory consultee Department of Arts Heritage and the Gaeltacht which also addressed nature conservation issues including birds. A submission was also received from Birdwatch Ireland. The MLVC's Appropriate Assessment Report dated 15th March 2017 addressed potential impacts on Natura 2000 sites including birds. The MLVC considered these and other related submissions in their evaluation of the potential impact on birds.

There is a risk of birds colliding with the single 35m high scaled wind turbine that may be deployed at the site. The greatest risk would be from rotating blades as opposed to the tower. The species which fly at the height of the rotor e.g. northern diver, sandwich tern and common tern would be at greatest risk. Lighting on turbines may attract birds and increase risk of collision however the intermittent nature of the navigational lighting may reduce the risk of bird attraction. It is unlikely that a single temporary scaled wind turbine will have any impact on bird populations in Galway Bay.

The collision risk to birds of vessels during installation is likely to be lower than that posed by commercial shipping traffic.

The risk of any collision occurring with diving bird species is likely to be very low and the predicted impact is low given the scaled size of devices and the slow speed of turbine blades in the water column (low current velocities). In addition not all devices proposed for testing have propellers. Many have their moving parts sealed inside the actual structure, thereby reducing any potential for entrainment and damage to birds. Furthermore the applicant has undertaken that it will liaise with the appropriate state authorities in regard to the timing of the installation of devices.

Given the very small area of available feeding habitat affected by the devices (460m² or 0.13% of test site area on the sea floor and 1435m² or 0.38% of test site area on the sea surface) which are only a very small percentage of the inner bay, there will be no impact on bird populations from impact to food habitats.

The noise generated from the addition of a small number of service/maintenance and installation vessels to the area would not be expected to have any significant impact on bird species given the levels of shipping traffic that currently exist in this area.

Operational noise from individual devices or small arrays of devices (maximum of three) would be considerably lower than that generated by vessel noise and would be unlikely to have any significant impact on the behaviour or survival of bird species. Based on studies carried out to date and the nature and use of the proposed renewable energy test site, the

impact of a maximum of three operating scaled energy devices on bird species in the area would be negligible. The predicted operational noise impact would be low.

No part of the proposed test site forms part of any designated Natura 2000 site. In its submission NPWS of the Department of Arts Heritage, Regional, Rural and Gaeltacht Affairs indicated that “the construction and operation of the renewable energy test site is unlikely to have negative interactions with Natura 2000 nature conservation sites due to the nature and locations of the works”. This would include the various Special Protection Areas (SPAs) designated as Natura 2000 sites.

The MLVC’s Appropriate Assessment Report dated 15th March 2017 examined the potential impact of the proposed test site on the conservation objectives of designated Natura 2000 sites within 27km of the test site with qualifying interests including bird species where relevant and concluded that there was no significant effect on the conservation objectives of the relevant Natura 2000 sites.

BirdWatch Ireland, in their submission recommend that “ornithological survey work is conducted to determine bird species, their abundance and behaviour in and around the test site using appropriate methodologies and the MLVC notes that the Marine Institute “welcomes guidance from BirdWatch Ireland as to the most appropriate methodologies for inclusion in the Environmental Monitoring Plan for the proposed test site”.

l) Potential impacts on Natura 2000 sites

The Appropriate Assessment Screening Report, taking into account all the application documents and submissions, has been prepared by the Marine Licence Vetting Committee (ref “Appropriate Assessment Screening Report” dated 15th March 2017).

This screening report forms part of the MLVC report to the Minister.

This Appropriate Assessment Screening Report examined all of the Natura 2000 Sites with the potential to be impacted upon by the test site operations, up to a distance of 27km from the test site which included the following Natura 2000 sites:

- *Galway Bay SAC Complex e SAC (000268) -situated 8.9km east of the Test Site –*
- *Connemara Bog Complex SAC (002034) - situated 3.6km north of Test Site*
- *Lough Corrib SAC (000297)-situated 14.2km north east of Test Site-*
- *Inishmore Island SAC (000213)- situated 27km west of Test Site*
- *Black Head and Poulsallagh Complex SAC (000020) - situated app 7.6km south of test site*
- *Kilkieran Bay and islands SAC (002111) - situated 25km west of Test Site*
- *Inner Galway Bay SPA (004031) – situated 8.9km east of the Test Site-*

- *Connemara Bog Complex SPA (004181)-situated 5.9km northwest of the Test Site-*
- *Lough Corrib SPA (004042) situated 14.2km north east of Test Site-*
- *Inishmore SPA (004152) situated 27km west of the Test Site-*

Based on the assessment of significance on the habitats and species of the Natura 2000 sites this Appropriate Assessment Screening Report concluded that there are not likely to be any significant effects as a result of the proposed development of a 37.52Ha wave, tidal and wind energy test site (on same footprint area to that which was previously licensed under FS004904 and FS006611) on the Conservation Objectives of the ten pertinent Natura 2000 Sites.

In its submission NPWS of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, was also of the view that the operation of the renewable energy test site “is unlikely to have a negative interaction with Natura 2000 nature conservation sites due to the nature and location of the works” and with the application of mitigating/best practice measures described in the Environmental Report, it is likely to reduce the potential impact to negligible levels.

This MLVC Report has also assessed the potential impacts to fish species, marine mammals and birds and in all cases the MLVC was satisfied that subject to the implementation of the recommended conditions, there would be minimal effect to fish, marine mammal and bird species arising from the proposed test site operations.

The MLVC is satisfied that this proposed development would have a negligible effect on designated Natura 2000 sites, does not require an Natura Impact Statement (NIS) which is stage two in the appropriate assessment process and agrees with the conclusion as presented in the applicant’s Appropriate Assessment Report that there is not likely to be any significant effects on the Conservation Objectives of the ten pertinent Natura 2000 sites.

m) Lease issues (term and length of lease)

A significant number of submissions relating to the proposed lease term indicated that a 35 year lease was too long. The MLVC discussed this matter at length and understand the concerns expressed by the public in this regard. It is the MLVC’s considered view that design horizons on evolving new technologies for marine renewable energy devices can be reasonably set at 10 years.

The MLVC considered that the lease for the test site area at 35 years is reasonable and that the proposed site infrastructure and associated facilities could also remain in place for the duration of the lease period i.e. 35 years. The totality of these structures on the seabed would amount to no more than 135m² which is a small portion of the overall test site area (37.52 Ha). The MLVC is satisfied that this infrastructure would have a nil to imperceptible effect on the marine environment, if operated in accordance with standard good practice and as per conditions of the lease if granted.

The MLVC recommends that should this lease be granted the following restrictions should apply to the site:

- | | |
|--|----------|
| a) Test device site area | 35 years |
| b) Test and Demonstration Devices (ref S4.3.4 of Env.Report) | 10 years |
| c) Site Infrastructure within test site | 35 years |

New technologies not covered in this application will require a separate foreshore licence before deployment. This application does not include a provision for piled moorings for any of the proposed devices or the site infrastructure. Should this lease be granted, the MLVC recommends the inclusion of a suitably worded condition to that effect.

Timelines for deployment of devices (as per S4.3.4 of the Environmental Report)

Device Type	No Months
a) Oscillating Water Column Wave Energy Converter (WEC)	0-18 (max)
b) Point Absorbers WECs	0-18 (max)
c) Attenuating WECs	0-18 (max)
d) Oscillating Wave Surge Converters	0-18 (max)
e) Pressure Differential WEC	0-18 (max)
f) Water Pressure/Bulge System WEC	0-18 (max)
g) Rotating Mass point absorber	0-18 (max)
h) Floating Wind Turbine	0-12 (max)
i) Innovative Projects	0-12 (max)

Restrictions (permitted number at any one time) for deployment of test devices (as per S4.3.4 of the Environmental Report)

All test devices with exception of a floating wind turbine	3 No Max
Floating wind turbine of max height above sea surface to be 35m	1 No Max
Other test devices if floating wind turbine is also deployed	2 No Max

The MLVC recommends that the schedule as outlined above should be included in an appropriately worded condition of the lease.

n) Other

- i. Government initiatives on renewable energy
- ii. Industrialisation of the bay
- iii. Extent, size and scale of the project
- iv. Project splitting
- v. Grid connection
- vi. Marine archeology

The MLVC considered all the submissions made during the public consultation process and some of the issues raised and not already addressed in this report require specific clarification.

I. Government Initiatives on Renewable Energy

Some of the submissions raised concerns that this proposed project is not key to meeting Government Initiatives in relation to renewable energy policy. In February 2014 the then Department of Communications Energy and Natural Resources (DCENR) published the Offshore Renewable Energy Development Plan (ORED P). One of the purposes of this ORED P is to provide a framework for the sustainable development of offshore renewable energy in Ireland.

The ORED P acknowledges that realising the potential of offshore renewable energy developments should not adversely impact on Ireland's rich marine environment. One of the core principals of the ORED P is that all offshore wind and other classes of ocean energy developments in Irish waters should be fully in line with EU environmental obligations, the relevant best practice guidelines and the Plan and Project Level Mitigation Measures developed as part of the SEA and AA processes carried out for the ORED P.

Suggested Project Level Mitigation Measures are presented in Section 4 (ref Table 4) of the ORED P and having reviewed these, and also reviewed the Mitigation Measures as presented in Section 16 of the Environmental Report which accompanied this Application, the MLVC is satisfied that the proposed test device site will conform with the relevant project level mitigation measures as presented in the ORED P in so far as they would relate to the specific project being considered here.

The ORED P describes ten policy and enabling actions as key to the development of the offshore renewable energy sector and support for the Galway Bay test site is specifically mentioned (ref ORED P Policy No 2 - Increase Exchequer Support for Ocean Research Development and Demonstration). Therefore the test site is an integral component of Ireland's Ocean Energy Strategy and is being developed in accordance with the national strategies for renewable energy as outlined in the ORED P. The provision of the test site would meet one of the key initiatives set out in the ORED P.

In view of the above, the Marine Licence Vetting Committee is satisfied that this proposed test site conforms to the objectives as set out in the ORED P for renewable energy in the marine environment.

II. Industrialisation of the Bay

A significant number of the public submissions raised concerns as to the potential for this project to lead to larger scale development at this site and a resultant unacceptable industrialisation of the bay.

The very nature of the conditions present in Galway Bay, i.e. one quarter the scale of open ocean conditions means that this site is unsuitable for a full scale commercial development. The MLVC is satisfied that this proposed development, which is specifically for the testing of prototype scaled wind, wave and tidal devices, is of a non-commercial nature. Should the lease be granted it will be subject to both the restrictions inherent to the environmental

conditions on site together with the lease conditions such that it will never be anything other than a test device site.

The MLVC is satisfied that this site in Galway Bay will only ever be used as a test device site for the purposes of informing the industry in relation to potential full scale renewable energy projects (i.e. such as the AMETS site in County Mayo).

III. Extent, Size and Scale of Project

It would appear, from the extent of the public submissions that the public perception is that this will be a significant development in terms of its size and scale within the Galway Bay footprint area. Ten different types of projects/devices are described with reference to Section 4.3.4 of the Environmental Report, however the proposed restrictions/timelines as outlined earlier means that only a maximum of three devices will ever be permitted on the site at any one time.

These three devices will only take up a small portion of the test site (0.13%) of the sea floor of the entire test site area of 37.52 Ha and only 0.38% of the sea surface. In addition it is only a very small percentage of the inner bay area.

IV. Project Splitting

Some of the public submissions expressed the view that previous project approved by licence was in effect a form of project splitting and that the two projects taken together should be subject to an EIS. The MLVC can clarify that Foreshore Licence FS005751 and related Galway County Council planning application 13/947 submitted in 2013 was for the Galway Bay Cable Project which involved the installation and operation of a single telecommunications cable from the secondary school in Spiddal to the standalone Galway Bay observatory, a scientific research station, co-located at the test site. A fibre optic telecommunications and power cable was installed from the test site to shore in April 2015 under Foreshore Licence FS005751. The fibre optic cable was a two way system while the power supply was running one way from the shore to the test site at low voltage.

While the cable is capable of running as a stand-alone project, the Environmental Report submitted in support of this application includes the installation of the cable in the context of this application. The cable resulted in negligible temporary disturbance in the area immediately in the vicinity of the cable during the course of laying the cable in 2015. Much of the cable lies approximately 700mm below the sea floor and there are no permanent environmental effects of installing the cable or cable end equipment. The MLVC is satisfied that even if taken as one combined project an EIS would not be required.

V. Grid Connection issues

A significant number of submissions raised concerns that there was a potential for power generation from the test devices to be connected to the national grid. The MLVC, having reviewed the application documents, is satisfied that there would be no capacity to export power to the grid from any wave, tidal or floating wind energy device that might be deployed at the test site. The power transmission, storage and dissipation structure is the proposed SeaStation platform which would be permanently based on site and would not be a power producing platform connected to the national grid. This SeaStation Platform is designed to (a)

transmit power to the test devices, as required; (b) store any electricity generated by test devices and use it to power environmental sensors and other monitoring equipment within the test site and (c) dissipate any excess power generated by test devices.

VI. Marine archaeology

There would be no excavations at the proposed test site, there would be no trenching (for cabling) and no piling (for foundation). The MLVC is therefore satisfied that there would be no impact on Marine archaeology as a result of the proposed test device site operations.

In addition during the laying of the cable in 2015 the Marine Institute in discussion with the Underwater Archaeology Unit of the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs varied the course of the cable to avoid interfering with or damaging items of potential archaeological interest lying between the test site and the shore at Spiddal.

7. Summary of Assessment

The MLVC reviewed both technical and scientific aspects of the documentation supplied by the Marine Institute. The Committee is satisfied that the purpose and objective of the proposed works on the foreshore are adequately explained. In addition, the Committee is satisfied that the environmental information provided is sufficient to allow an assessment of the environmental impacts of the proposed development to be carried out and to make a recommendation.

A number of key issues were identified during the public and prescribed body consultation phase including:

1. Accuracy of information provided.
2. Environmental Impact Assessment requirements
3. Appropriate Assessment, requirement for NIS and potential impact on Natura 2000 sites
4. Health concerns – impact of light and noise on public health and safety
5. Potential visual impact
6. Potential impact on tourism
7. Potential impacts on fisheries
8. Potential impacts on navigational safety
9. Potential impacts on marine mammals

10. Potential impacts on seabirds
11. Potential impacts on Natura 2000 sites
12. Lease issues (term and length of lease)
13. Other including:
 - a. Government issues on renewable energy
 - b. Industrialisation of the bay
 - c. Extent/size/scale of project
 - d. Project splitting
 - e. Grid connection
 - f. Marine archeology

The MLVC has considered each of these issues above and has made specific recommendations in respect of each of them.

8. Concluding Statement:

This test site is not a commercial power generating venture and there will be no capacity to export power from any wave, tidal or floating wind energy device that might be deployed at the site.

The MLVC recommends that this lease should be granted subject to Site Specific Conditions in Appendix C including the following restrictions applying to the proposed development:

- | | |
|---|----------|
| a) Test device site area | 35 years |
| b) Test and Demonstration Devices (ref S4.3.4 of Env. Report) | 10 years |
| c) Site Infrastructure within test site | 35 years |

The application is for a maximum of three test devices at any given time, with a deployment of up to 18 months in duration. Only one of the three test devices to be deployed at the same time may be a floating wind energy device. In addition the floating wind device may only be deployed for a reduced maximum period of 12 months at any time).

Based on the information submitted, consultations and assessments undertaken, Site Specific Conditions, the MLVC is satisfied that the proposed development works on the foreshore in its substance and scale and at this location are not likely to have significant negative effects on human health and safety, the marine environment or designated Natura 2000 sites in the area.


Richard

6th July 2017

END