

9. Appendices

a) Appendix A – EIS Screening Document

GALWAY BAY MARINE AND RENEWABLE ENERGY TEST SITE

APPLICATION FS006566

ENVIRONMENTAL IMPACT STATEMENT SCREENING-(Having Regard to the Application Documents and all submissions associated therewith)

Department of Housing Planning Community and Local Government -MLVC-

PROJECT SPONSORS Marine Institute/SmartBay

LEGISLATIVE REQUIREMENTS

| | |
|--|-----|
| Under EIA Directive is project Annex I ? | No |
| Under EIA Directive is project Annex II ? | No |
| Is project sub threshold for EIS Requirement ? | Yes |
| Is an EIS Mandatory? | No |

OBJECTIVE OF THIS EIS SCREENING REPORT

To determine whether or not this proposed development is likely to have significant effects on the environment by virtue inter alia of their nature, size, and location

DATE OF THIS REPORT 6/3/2017

CHARACTERISTICS OF PROPOSED DEVELOPMENT (SIZE, SCALE AND LOCATION)

LOCATION OF SITE

The proposed Galway Bay Marine and Renewable Energy Test Site will be located at the existing ¼ scale wave energy site situated on the north side of Galway Bay 1.3 km south of the north shore of the bay and 2.4 km east of Spiddal

SIZE OF TEST SITE

37.52 HA (670m by 560m) and located in a water depth of 21-24m

A EXISTING INFRASTRUCTURE ON SITE

Navigational Markers at the four corners of the existing site

A Wave rider buoy

An acoustic monitoring buoy

SmartBay data buoy

A cable to shore (installed under Foreshore Licence No 2014/02786)

B SITE INFRASTRUCTURE

Navigational Markers

Four No Cardinal marks (3m dia by 7m high-2m draught-) moored to seabed by single point chain and 2T Clump weight (2m wide by 2m long) -these will be the subject of an application to CIL for sanction of alteration to existing aids to navigation-

Cable End Equipment (CEE) - and Frame

Deployed on sea bed anchored under its own weight (1.5T) Frame is 3m x 1.5m x 1.7m high

WaveRIDER Data buoy

Floating on surface, 0.9m dia moored to seabed by single point rope mooring and 0.5T clump weight (1m²)

SeaStation Platform

Moored (by 4 no two point chain moorings each affixed to a 3T high hold anchor- ie 8No at 2m x3.5mx1m high-) within test site boundary to house power dissipation system (allowing connections to shore cable via CEE and for up to three energy convertors via separate umbilical cables)

Footprint area will be similar to small vessel (25m x 8m) or test rig (12m x 12m)

Gravity Base (for deployed WEC's)

To be constructed using an interlocking modular frame assembly each interlocking frame will be capable of containing pre-fabricated concrete weights to a maximum weight of 9T.

Frame 2.5m x2.5m x2m high, x 9No. On seabed (56m²)

Weight 9T (Min) 81T (max-full connected system)

Smart Buoy data buoy (floating)

2.5m dia x 7m (2m draught)

Mooring affixed to one or two 3T clump weights -1.5mx1.5mx1.5m-

Acoustic Array

(Used for monitoring the objective noise levels of ocean energy devices and the presence of cetaceans and other sea life for environmental studies)

Refer to pg. 61 of the Marine Institute's Environmental Report (ref 4.3.3.2) which shows a schematic of the Array

Central Hub 1.5m length x 1.5mwidth x 1m high, 1T .On seabed with hydrophones floating mid water

Trawl resistant Acoustic Doppler Current Profiler (ADCP) –to measure water currents-

On seabed, Self-mooring under its own weight. Takes up 2m² in area

Cables and cabling

All cables will be designed with EMF shielding. Located between Test devices, Sea station and CEE

600m long by 0.025m dia (maximum single cable)

Floating mid water column with some cabling resting on seafloor.

- C TEST AND DEMONSTRATION DEVICES (*Indicative list of potential devices with a limited time period for their deployment and testing as illustrated in the Marine Institute's Environmental Screening Report dated August 2015 and also with reference to the 'Environmental Report' dated February 2016) – A maximum of only three of these will be deployed at the site at any one time-**

*-The types of devices that could be deployed include ocean energy converters and components, marine technology test and demonstration experiments, scientific instrumentation and sensors-.

Oscillating Water Column WEC's

Floating. Dimensions vary typically 20m length x 10m width or triangular base of side 30m (max),

Multi point chain moorings affixed to high hold embedded anchors

Sea surface area 400m²(device maximum)

Seabed area 56m²(mooring maximum)

GRS Power Platform (oscillating water column wave generator)

The platform is situated in a minimum water depth of 20-40m. Steel structure of app 300T distributed in 3 leg bases sitting on the seabed.

Footprint surface area for entire device 338m²

Device will be supported by 3 legs on the seabed each with a footprint area of 36m² (i.e. 108m² in total).

Point Absorber WEC's

Floating structure absorbing energy from all directions through their movements at/near the water surface

Dimensions vary, typically 5m dia, moored with a two/three point mooring affixed to embedded anchors or gravity base.

Sea surface area 20m²(device maximum)

Seabed area 56m² (mooring maximum)

Attenuator WEC's

Floating structures.

Dimensions vary, typically 30m length x 10m width x 3m high (maximum).

Multipoint chain moorings affixed high hold anchors

Sea surface area 300m²(device maximum)

Seabed area 56m²(mooring maximum)

Two examples of these types of devices are the 'Sea Power Platform' and 'Perpetuwave Power' (ref visualisations in Environmental Report pg. 66) which are outlined as follows

SeaPower Platform

Consists of three large hollow concrete floating pontoons hinged together .The platform has a shallow draught and a low visual profile above waterline

Dimensions 17m x 5m x 2m depth (0.6m draught)

Perpetuwave Power

Similar to SeaStation with a hinged platform and 4 point moorings to anchors

Dimensions 15m x 6m x 3m (0.3m draught)

Oscillating Wave Surge Converters WEC

OWSC's are a class of wave power device that exploits the horizontal movement of waves in near shore coastal zone in water depths of 10-20m.

Typical dimensions of scale devices varies but <10m wide x <10m high x < 5m long

Fixed to seabed and extending through the water column

Self-mooring under its own weight

Seabed area 50m² (maximum)

Pressure differential WEC's

Dimensions vary depending on device

Fixed to seabed using gravity base extending through the water column

Sea surface area 20m²(maximum)

Seabed area 50m²(maximum)

Water Pressure/Bulge system WEC's

Dimensions vary depending on device.

Floating near sea surface with multipoint mooring affixed to embedded anchors or clump weights.

Sea surface area 32m²(maximum)

Seabed area 56m²(maximum)

Rotating Mass Point Absorber

Dimensions vary depending on device but up to 10m length x 4m wide x 3m height (maximum)

Floating at surface .Multipoint moorings affixed to embedded anchor or clump weights

Sea surface area 40m²(maximum)

Seabed area 56m²(maximum)

Rotating Tidal Turbines

Omni directional turbine that can generate power from ocean currents

Devices may also support multiple sensors for wide area, real time environmental monitoring.

Dimensions vary depending on device

Deployed on the seabed with a gravity base or taught mooring to gravity base.

Seabed area 5m²(maximum)

An example of this type of device is 'Seaformatics' (ref visualisation on Pg. 71 of the Marine Institute's "Environmental Report") which is as follows:

Seaformatics

This device consists of an omni-directional turbine that can generate power from ocean currents as low as 0.1 m/s site device is deployed on the seabed without moorings or external anchoring.

Dimensions 1.8m diameter base, 2.5m height, 1.5m diameter turbine (a sub sea surface structure)

Floating Wind Turbine (on Tetra Float platform)

Floating platform (Tetra float) designed to accommodate floating wind turbine with triangular base of 20m sides

Floating turbine: 25m hub height (maximum), Blade Diameter 20m (maximum)(turbine blade tip 35m above sea level)

Multipoint mooring affixed to embedded anchors or gravity base

Aviation lighting as specified by Irish Aviation Authority

Deployment period 1-12months

This would have the most potential for visual impact but due to limited number of devices (will be limited 1No at any time), distance from shore and deployment duration its potential significance is reduced from moderate to slight. The maximum turbine height is small compared to structures currently being erected in Galway Bay Wind Park

EXTENT/SCALE OF DEVELOPMENT INFRASTRUCTURE/DEVICES RELATIVE TO PROPOSED LICENCE AREA

This is based on a maximum allocation of three devices and taking worst case scenarios (i.e. those devices occupying most extensive area) and relating the resultant percentages to the overall proposed test site area (i.e. 37.52 HA)

1 Seafloor Footprint areas (m²)

Permanent/recurring short term infrastructure 135m²

Devices (3 No GRS Power Platform) 325m²

Total 460m²

% of proposed Licence area taken up by structures 0.12%

| | | |
|----------|---|---------------|
| 2 | Sea surface footprint areas (m2) | |
| | Permanent/recurring short term infrastructure | 235m2 |
| | Devices (3 No Oscillating Water Column WEC's) | 1200m2 |
| | <u>Total</u> | <u>1435m2</u> |
| | % of proposed Licence area taken up by structures | 0.38% |

This indicates that in both the cases of seafloor and sea surface footprint a very small % of the overall proposed licence area will be taken up by infrastructure and indeed in the likely scenario of only one device being in operation at the site at any time (likely if based on past history at existing Licensed site) this would reduce further to just 0.065% (seafloor footprint) and 0.17% (sea surface footprint) which brings the occupancy rates down to imperceptible/miniscule levels in terms of the overall size of the test licence site area

POTENTIAL ENVIRONMENTAL IMPACTS EVALUATION

The proposed energy test site will not generate any waste products during development or operation.

Potential Impact NIL

The proposed energy test site will not generate any pollutants during development or in operation

Potential Impact NIL

BENTHIC FAUNA/MARINE MAMMALS

Studies in 2009 have shown little change to benthic communities at the site since previous studies in 1991 and recent studies in 2013 have shown little change to the marine mammal communities in Galway Bay over the past ten years (i.e. by comparison from pre-test site period to its operational period under current Foreshore Licence)

Results from static acoustic monitoring surveys during wave energy device trials on the site failed to show any significant differences in detection of harbour porpoises between on-site and off-site locations.

Potential Impact SLIGHT to IMPERCEPTIBLE

NOISE RELATED IMPACTS

During installation sound emissions will arise from operation vessels, cranes and at touch down of various components onto the seabed. The magnitude of noise emissions from vessel and cranes would be of the same magnitude as for those from normal operation of large fishing vessels transiting through Galway Bay The duration of potential noise related impacts associated with vessel

operations and deployment of moorings or anchors will be of short duration (a few hours) and of limited frequency of the order of once or twice per year

Potential Impact SLIGHT to IMPERCEPTIBLE

SEDIMENT DISTURBANCE

There may be disturbance of sediment during the deployment of devices/moorings /anchors on the seabed. However the duration of potential impacts related to sediment disturbance associated with the deployment of moorings will be of the order of hours with a frequency of once or twice a year and given the dynamic nature of the seabed in the vicinity of the proposed site the impacts on the seabed would be naturally reversed due to mobilisation of bed sediments due to wave action and storm events

Potential Impact SLIGHT

NATURAL RESOURCES

The proposed Renewable Energy Test site will be used by marine energy test devices to harness the natural resources of the waves and tidal currents passing through the test site lease area. Based on the data from usage of the site by device developers to date there has been no detriment to the natural wave or tidal resources in the area arising from the proposed development. Indeed the proposed test site will aim to establish a natural shared marine research, test and demonstration facility to catalyse and facilitate through research, the commercial development of renewable technologies, environmental monitoring instrumentation and other marine technologies. This can be considered as a potential positive impact on natural resources.

Potential Impact NIL to POSITIVE

ACCIDENTS

The test site will be marked by cardinal marks at each corner in accordance with the requirements of CIL. The site is not on any designated Navigation channel in Galway Bay. The risk of accidents associated with the proposed Test Site is therefore considered minor and not significant. Any impacts would be temporary and localised and would not cause unusual, significant or adverse effects on the marine environment.

Potential Impact SLIGHT

TEST SITE FORESHORE LICENSED AREA

The area of foreshore directly affected by the proposed Test Site would be highly localised to the footprint of any anchor or mooring deployed on the seabed and the maximum number of any devices to be deployed within the site at any one time will be limited to three so there should be no impact to the foreshore beyond the area of the test site.

Potential Impact (within licensed area) SLIGHT

Potential Impact (outside licensed area) NIL

VISUAL IMPACT ON NEIGHBOURING COASTAL COMMUNITIES

Most if not all of the proposed site Infrastructure, energy test and scientific instrumentation devices will have no or only imperceptible visual impact (i.e. majority of instruments will be on the sea bed) and the majority of the proposed Test and Demonstration Devices as set out at Section 4.3 of the Marine Institute's Environmental Report, dated February 2016, will have a "low visual profile above the waterline". Some of the proposed devices (e.g. Floating wind turbine) may have some element of visual impact on the adjacent coastline/population when evaluated by reference to scenic viewing points along the said coastline. This potential impact is likely to be slight to imperceptible as a result of the proposed limited number and infrequent nature of the said installations

The proposed Floating Turbine would have the most potential for visual impact but due to its scale (maximum height above sea level of 35m) , number of devices (limited to only one device maximum)distance from coastline (greater than 1.3km) ,limited deployment duration (1month to 12months max), its potential significance is reduced from moderate to slight.

Potential Impact SLIGHT

CUMULATIVE IMPACT WITH OTHER PROPOSED DEVELOPMENTS

The proposed Galway Bay Marine and Renewable Energy Test Site is located 1.3km offshore of the Galway coastline and 2.4km over water from the Spiddal area. Under a separate Foreshore Licence (FS005751) a cable from the shore to the test site was installed for the purposes of environmental monitoring. Taken individually or together the potential significant cumulative effects are not considered likely. The Significant cumulative effects with any proposed on-shore developments are not considered likely.

Potential Impact SLIGHT to IMPERCEPTIBLE

DESIGNATED AREAS

The Energy Test Site is not located within any designated or protected Sites under EU or Irish Legislation. The nearest such marine site is the Black Head-Poulsallagh SAC site located app 7.6 km to the south with a further 2 designated areas(Galway Bay Complex SAC and Inner Galway Bay SPA) app 8. 9km from the Test Site. In terms of non- marine designated areas the Connemara Bog Complex SPA is situated 5.9m northwest of the test site (the Connemara Bog Complex SAC is slightly nearer at 3.6km but there is no pathway for interaction from this site) while the Lough Corrib SAC is situated 14.2km north west of the test site (there is a potential pathway to the Test Site for migrating sea lamprey or salmon). Other Designated Natura 2000 sites within 30km of the test site include.Kilkieran Bay and Islands SAC (situated 25km west of the Test Site) and Inishmore Island SAC and SPA (situated 27km west of the Test Site).

The low power levels in the proposed cables mean that magnetic field and induced electrical field from proposed interconnecting cables will not have any significant effect on salmon or sea lamprey in the area and migrating salmon and sea lamprey will not be impacted by the presence of 1-3 scaled test devices and associated infrastructure in the test site.

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.

END
