ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form	Date submitted
Anne Marie O'Hagan	October 13, 2014

Project name:

☒ Planned ☐ In Operation ☐Completed

Project description: Atlantic Marine Energy Test Site (AMETS)

Project Developer: Sustainable Energy Authority of Ireland (SEAI)

Technology Developer: Varies

Technology type: Full-scale wave energy converters

Resource (wave, tidal): Wave

Project scale (test site, prototype, array, commercial): Test Site

Installed capacity (MW): 10 MW (Export Capacity)

Project Website: http://www.seai.ie/Renewables/Ocean_Energy/Belmullet_Wave_Energy_Test_Site/

Launch Date: TBD

End Date (if applicable):

Additional Description: The proposed AMETS includes both offshore test areas and onshore infrastructure and is designed to accommodate and test fully pre - commercial technologies in renewable marine energy. Wave energy converters that could be deployed in the test areas will generate power in situ. They will be anchored in water depths of 50m and 100m and can be in arrays of typically up to five devices. These WECs will transmit power through submarine electricity cables to an onshore substation where connection to the distribution electricity grid will occur. The electricity cables will be buried in the seabed and brought to the substation on shore underground.

Location:
AMETS will be located in the Belmullet area of County Mayo, Ireland. Offshore there will be two test areas: Test Area A at 100m water depth is located some 16km out from Belderra Strand; and Test Area B at 50m water depth is located 6km from the strand. Test Area A will be 6.9 km^2 (2.02 nautical square miles) and Test Area B will be 1.5 km^2 (0.44 nautical square miles). The onshore element comprises a small substation which will be constructed alongside Belderra Strand. The substation site will be 2 acres.

Coordinates (please use Mercator – decimal degrees): 54.2338109°, -10.125399°

Process status:
A foreshore lease application for the test site was submitted in December 2011 and the SEAI continue to work closely with the Foreshore Unit in the Department of the Environment to have the lease in place by the end of 2014. The decision was delayed initially due to inclusion of a portion of the area of interest in a

proposed new Special Area of Conservation (SAC) for bottle-nose dolphins. This occurred some considerable time after the lease application had been submitted and meant that the AMETS team has had to commission an Appropriate Assessment report on the potential impact of test site activities on the new SAC. The final decision on the lease application will take this assessment into account. As part of the lease application an Environmental Impact Statement (EIS) was carried out for the project and has also been published. Coupled with this is the continuing effort to streamline the consenting process through the enactment of new Foreshore legislation, which is continuing to progress through the formal legislative process.

Met ocean data continues to be collected at the site via three wave rider bouys. Live data can be accessed from the Marine Institute's website. Other environmental data is not being currently collected for the site, however SEAI have recently selected a contract team to assist in the progress of the AMETS site. It is anticipated that on-going environmental monitoring at the site will be put in place once this team is fully established (SEAI, *pers. comm.*, October 2014).

Licensing information (brief description): The sea around Ireland's coast from high water mark (highest level of tide) out to the 12 mile limit is owned by the State. In other words it is a publicly owned resource and the test site area will require a foreshore lease, and the cable route to the test site area will require a foreshore licence, both from the Department of the Environment. The lease and licence, if granted, will be for a period of 15 years and the activities which are allowed on the site will be clearly specified. A comprehensive Environmental Impact Statement has to accompany the application for the lease and licence. This EIS will have taken over 2 years to prepare. The proposed substation building onshore will require planning permission from Mayo County Council. A 10 MW connection to the electrical network is proposed and will require permission from the Commission for Energy Regulation.

Key Environmental issues:
Noise: Survey of terrestrial noise included in EIA. Construction noise [terrestrial] will be within the limits set by the National Roads Authority (NRA). Marine noise was also considered but this consisted of a literature review rather than actual noise monitoring, primarily due to the fact that no wave energy converters of the type and scale expected to be deployed at AMETS have been constructed yet. Based on existing studies it is anticipated that the potential impacts of noise at AMETS will be of short duration and low.

EMF: No dedicated survey, critique of existing literature and research results along with advice on mitigation methods and monitoring practice.

Water quality: The main impacts on water quality will arise during the construction phase, when cable burial and anchoring operations will generate suspended sediment close to the cables. However, this will quickly settle and there will be only a temporary and insignificant impact on water quality.

Air quality: Considering the low levels of air pollutants in the receiving environment and the rapid dispersion in the area, the impact on air quality from emissions associated with construction, operation and decommissioning of the test site is expected to be negligible.

Environmental webpage: http://www.seai.ie/Renewables/Ocean_Energy/Foreshore_Lease_Consultation/

Baseline studies and project effects studies: Atlantic Marine Energy Test Site				
General description	Studies conducted for the Environmental Impact Assessment.			
Receptor	**Study description including question and/or**	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)

	objective			
Physical Environment	Impact on the wave resource, sediment transport, and coastal landform.	Modelling of the impact of wave energy converters was carried out by the Hydraulic and Maritime Research Centre in UCC.	The modelling indicated that the impact of the wave energy converters when deployed at the test area would be insignificant in comparison to the natural processes occurring in the bay. There will be no significant impacts on sediment transport, coastal landform or surfing waves.	Completed
	Characterise the wind, atmospheric pressure, and direction.	A Met Ocean buoy is moored at Test Area A. An Acoustic Doppler Current Profiler (ADCP) is located on the seabed adjacent to the weather buoy.		Ongoing
	Characterise the currents and wave resource.	A Waverider buoy is moored at Test area B. At 20m water depth one ADCP may be deployed on the seabed.	Information is available live at: http://www.marine.ie/home/publicationsdata/data/IMOS/WaveBuoys.htm	Ongoing
Marine Mammals	Presence of marine mammals.	Marine mammal surveys were conducted using both land based watches (total 13) undertaken between October 2009 and October 2010 from Annagh Head, seasonal vessel-based line transects through the AMETS (total 6), towed hydrophone surveys and analysis of data recorded by CPODS deployed at the site and a number of control stations. Also looked at historic data.	Seven cetacean species, two seal species, and two other marine megafaunal species (sunfish and basking shark) were recorded.	Completed
	Impact of noise on marine mammals.	Project analysis with literature review.	Of the species recorded in the vicinity of the AMETS, porpoise are likely to be the most sensitive to disturbance, actively avoiding vessels because they are more sensitive to high frequency sounds than dolphins. The impact during construction will be temporary and will not be significant and mammals will return to the area once construction is completed.	Completed
Fish and Fisheries	Impact on the local fishing industry.	Information was obtained from consultations with stakeholders, Corine (Coordination of Information on the Environment) land cover mapping, and site visits.	Inshore fishing activities within the project area consist of brown crab and lobster fishing and some trawling. During the construction and decommissioning phases, and during WEC deployment and recovery operations, the project's impacts on the fishing industry in the area will be temporary in nature and of	Completed

			low significance overall. When operating, the test area will effectively constitute fishing exclusion zones. The impact on the crab and lobster fishing industry will, however, be low as Test Area A was redesigned following an extensive consultation process with the fishing community. Test Area B, at the 50m water depth, will not impact significantly on fishing activity in the area. Trawling activity will be impacted, with a reduction in access to the trawling ground adjacent to Test Area A of some 9%. However this impact, although negative, can be considered low, given that the area is one of five such areas fished in the region and the overall impact will be small (ESBI, 2011).	
Birds	Presence of birds.	Birds were observed through a combination of monthly land-based watches from vantage points and monthly offshore seabird surveys. Land-based surveys were completed for shore and open water bay habitats, for terrestrial habitats at the landfall sites, and on Inishglora Island. Eight sea-based surveys were conducted between October 2009 and October 2010.	The Mullet peninsula and its nearby islands are protected under the EU Birds Directive through a number of Special Protection Area (SPA) designations. Important species that use the shore habitats of the bay are wintering waders, common sandpiper and ringed plover. Use of shore habitats by flocks of roosting gulls and by waders during the summer months is also of note. Survey coverage of shore habitats and their use by birds was considered good. The potential impacts on birds will vary depending on the location of the installations and on the timing of construction activities.	Completed
Invertebrates	Characterise subtidal and intertidal habitats and species.	The Marine Institute conducted multi-beam surveys in 2007 and 2008 (R.V. Celtic Voyager) with supplementary multi-beam surveys by IMAR Survey in September and October 2009. Geotechnical investigation (vibrovoring) was undertaken by the Marine Institute and Coastline Limited. In areas not surveyed by remote methods, concentrated surveys by drop-down video and/or diver surveys were conducted.	The communities present within the site are all characteristic of exposed communities already subject to extreme wave action. During the survey they all showed evidence of being subjected to the effects of sand scouring and sediment movement, and any sedimentation caused during the cable laying process is unlikely to have any more effect on these communities than a natural storm event would have. The greatest potential for impact on subtidal benthos is the creation of artificial reefs which may fragment communities and provide habitat for predatory species leading to impact on benthic species.	Completed
Cultural	Identify any	The cultural heritage of	Although there are a number of recorded	Completed

Heritage	cultural heritage sites.	the area was examined through archaeological, architectural and historical studies. The archaeological and architectural study involved a documentary search and field inspection of the area. Field inspections of the marine environment (geophysics and dive surveys) and walkover surveys on the intertidal and land areas were also undertaken.	archaeological monuments and finds in the vicinity, none will be directly impacted by the proposed development. The combined results of the desktop assessment and the field survey indicate that, although the subject site is one of considerable archaeological and historical significance, there is no evidence of archaeological material at the site of the proposed development. There is, however, the potential that invasive ground works at the site may impact upon previously unrecorded archaeological material.	
Landscape and Seascape Assessment	Determine visual impacts.	Project analysis.	The greatest visual impacts during the construction stage would occur in the vicinity of the substation site and at the location of the underground cable. These impacts would be negative, but would be moderate and temporary.	Completed
Navigation	Identify potential points of conflict.	Consultations were carried out with all groups, organisations and agencies with a stake and/or interest in the waters off the west coast of Ireland, in particular the region off the Mayo coast.	From these consultations it was concluded that some alteration to standard navigation routes may occur resulting from the presence of the test areas but this will not have a significant impact on navigation in the area.	Completed
Reports or Papers	All the documentation related to the Environmental Impact Assessment for AMETS can be found on the SEAI website: http://www.seai.ie/Renewables/Ocean_Energy/Foreshore_Lease_Consultation/AMETS_Foreshore_Lease_Application_-_Documents.html			
Research Projects	N/A			

Monitoring and adaptive management: Atlantic Marine Energy Test Site				
General description	Studies conducted after the test site is operational.			
Receptor	**Monitoring program description including question and/or objective**	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)
Physical Environment				
Marine Mammals				
Other* (can be named)				
Reports or	N/A			

Papers	
Research Projects	N/A