

ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form

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Project name: EMEC Shapinsay Sound Non Grid-Connected Nursery Tidal Test Site

Planned In Operation Completed

Project description:

Project Developer: European Marine Energy Centre Ltd.

Technology Developer:

Technology type: Tidal devices

Resource (wave, tidal): Tidal

Project scale (test site, prototype, array, commercial): Nursery test site

Installed capacity (MW): Non-grid connected test site. A purpose-built Test Support Buoy moored on site acts as a power sink to allow load-dumping of any electricity generated as heat dissipated to air.

Project Website: <http://www.emec.org.uk/facilities/scale-test-sites/>

Launch Date: September 2011

Additional Description: The EMEC Shapinsay Sound nursery tidal test site offers a non-grid connected test berth with pre-laid foundations for the testing of full scale or partial-scale versions of tidal devices in less challenging sea conditions to those found at EMEC's main tidal test site. A second berth offers developers the option of laying their own foundations, or alternatively the berth can act as a designated lay-down area for rehearsal of operational techniques. The devices to be tested at the EMEC Shapinsay Sound nursery test site may be either (i) full size, but to be deployed for a short duration or (ii) of smaller scale deployed for durations up to one year. Elements being tested will include devices and their components, mooring arrangements, foundations and deployment techniques. Device testing can, if required, be supported by EMEC's own purpose-built Test Support Buoy, which serves three key functions: (i) It acts as a power sink to allow load-dumping of any electricity generated as heat dissipated to air. (ii) It enables measurement of device performance and facilitates data transfer to shore via wireless technology. (iii) It is equipped to act as a Navigational Aid when present on the site.

Developers testing at EMEC's Shapinsay Sound nursery test site can also benefit from a streamlined consenting process, whereby developers whose devices fall into the pre-consented envelope of

parameters have the option of using EMEC’s generic site consent, dramatically cutting down the time taken to consent deployments.

Location: The EMEC Shapinsay Sound nursery tidal test site is situated adjacent to the Orkney Mainland to the north-east of Kirkwall in the Orkney Islands, Scotland. The two test berths on site range from 21-25m water depth.

Coordinates: 58.996495°, -2.875706°

Process status: Site selection surveys and environmental studies were carried out in 2009-10. Construction of the EMEC Shapinsay Sound nursery tidal test site was completed in 2011 and EMEC welcomed their first client on site shortly afterwards. EMEC hold a valid consent for the installation of an additional set of foundations which gives the potential for two serviced berths to become available in future.

Licensing information (brief description): EMEC hold a valid generic Marine Licence which obviates the need for developers whose devices fall into the consented envelope of device parameters to apply for their own Marine Licence. Thus EMEC apply to Marine Scotland for an amendment to their generic Marine Licence to include developer’s device details. This gives a reduced consenting time of 1-3 months. Developers whose devices fall outwith the consented envelope of device parameters will need to apply for their own Marine Licence, which may take 3-6 months.

Key Environmental issues: At the time of commissioning, environmental sensitivities at the Shapinsay Sound site include Harbour seal haul-out sites, as well as Grey seal haul-out and pupping sites in the vicinity. Harbour Porpoise are frequently recorded in the surrounding area. The Shapinsay Sound test site area is considered to be part of a larger wintering ground for scoters, divers, grebes and eiders that gather in spring prior to the migration north to breeding grounds. Data gathering is ongoing at the test site and once analysed site sensitivities will be updated accordingly.

Environmental webpage: <http://www.emec.org.uk/facilities/nursery-test-sites/>

Baseline studies and project effects studies: EMEC Shapinsay Sound Non Grid-Connected Nursery Tidal Test Site				
General description				
Receptor	Study description including question and/or objective (several can be listed per receptor)	Design and methods (brief description)	Results (brief description)	Status (planned, underway, completed, with dates)
Physical Environment	Initial site selection: Wave climate study.	Analysis of waverider data.	Monthly wave reports.	Completed

	Initial site selection: Tidal climate study.	Analysis of seabed-mounted and surface-mounted ADCP data.	Monthly tidal reports.	Completed
	Initial site selection: Bathymetry.	Geophysical survey.	Water depths agree well with Admiralty Chart data. Survey identified a contact near the centre of the area which may be a wreck.	Completed 2010
	Initial site selection: Geology	Review of British Geological Survey Charts (BGS, 1985).	Site comprises parts of the lower Eday sandstone formation.	Completed
Benthos	Initial site selection: determining biota and sediment particle size.	Grab sampling.	Moderately high energy site. Variety of rock and shell fragment sizes.	Completed 2010
Seabed Habitats, Species Assemblages and Biotopes	Marine Scotland marine survey programme.	Video and photographic stills imagery.	Moore, 2009. SNH commissioned report No. 319.	Completed 2009
Fish and Fisheries	Considered as part of site Environmental Description.	Desk based review.	Site located in an important area for a number of commercially important fish species, some of which use the area as a nursery ground year round. The site is isolated from major fishing grounds worked by white fishing vessels, but sits immediately south of a steaming route for fishing vessels in and out of Kirkwall.	Completed 2010
	Baseline Acoustic Characterisation of ambient noise at site.	<ul style="list-style-type: none"> Seabed-mounted hydrophone deployments. 	Results not yet available.	Due to complete 2010
Large Vertebrates	Considered as part of site Environmental Description.	<ul style="list-style-type: none"> Desk based review. Consultation with Sea Mammal Research Unit, SNH. 	<ul style="list-style-type: none"> Nearest known grey seal haul-out site 1 km away, number of animals is low. There are numerous harbour seal haul-outs around the site, with the number of animals reaching 100 in the wider Shapinsay area. Cetacean fauna of Orkney is one of richest in UK, however no known resident cetacean populations in the Orkney area. Unlikely that many species will 	Completed 2010

			be sighted regularly within Shapinsay Sound due to inshore location and shallower waters.	
Birds	Considered as part of site Environmental Description.	<ul style="list-style-type: none"> • Desk based review • Consultation with RSPB, SNH 	Species of conservation significance on Annex I of the Birds Directive or Annex II of the Habitats Directive are present but the site is not thought to be integral to significant groups of any species. Sensitive period for seabirds April – October, divers and grebes in winter and least sensitive period June – September.	Completed 2010
Navigation/ Marine Users	Navigational Risk Assessment	<p>Desk study reviewing AIS shipping data, vessel monitoring logs, government fishing surveillance data, SAR resources, historical maritime incidents & RYA UK Coastal Atlas data. Hazard review workshop.</p> <p>Consultation with stakeholders.</p>	<p>Navigation Risk Assessment Report. Risk deemed to be “broadly acceptable” due to careful site selection and minimisation of site footprint.</p> <p>Risk control measures include marking on UKHO Charts, issuing Notices to Mariners, Emergency Response Planning with emergency services such as RNLI and stakeholder engagement.</p>	Completed 2010
Reports or Papers	Moore, 2009. SNH commissioned report No. 319			
Research Projects	http://www.emec.org.uk/research/			

Monitoring and adaptive management: EMEC Scapa Flow Non Grid-Connected Wave Test Site

General description				
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	Hydrographic resource study.	Waverider measurement studies.	Collection of raw wave data.	Underway since May 2010
Large Vertebrates & Birds	Wildlife observations programme.	Land-based observer.	Species activity data used in support of licence applications.	Underway since June 2010
Reports or	N/A			

Papers	
Research Projects	http://www.emec.org.uk/research/