

ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form

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Date submitted

June 2012

Project name: Orkney Hammerfest Strom Tidal Project

Planned In Operation Completed

Project description:

Project Developer: Hammerfest Strøm AS

Technology Developer: Hammerfest Strøm AS

Technology type: Horizontal axis turbine

Resource (wave, tidal): Tidal

Project scale (test site, prototype, array, commercial): Array of 10 devices

Installed capacity (MW): 10 MW (planned)

Project Website: <http://www.hammerfeststrom.com/research-and-development/testing/emec/>

Launch Date: Planned for 2013

Additional Description: The HS1000 tidal device is designed by Hammerfest Strom. The devices are placed on the seabed with a hub height of about 22 meters and a blade length of about 11 meters. The total height from the seabed to the top of the blade tip is approximately 33 meters.

The minimum water depth of the site is 50m so there will be approximately 17m clearance allowing vessels to travel above the tidal array. Ten 1MW tidal devices will be installed and if these operate as expected, the demonstration array will generate around 30GWh per year.

Location:

Ocean/Water body: Sound of Islay, Orkney

Closest city:

Country: Scotland

Depth: 50m

Coordinates (please use Mercator): 55.85°, -6.1°

Process status: Consent for the Scottish Government gave the Sound of Islay Demonstration Tidal Array in March 2011. Further testing is planned for a single device in Orkney in 2011 and if successful the ten devices for the Sound of Islay would be manufactured in 2012 and installed in the Sound of Islay in 2013.

Licensing information (brief description): A number of consents are required for the construction and operation of the Development. The Marine Scotland Licensing Operations Team (LOT) is leading the consents process. SPR has applied for the following key consents:

- Consent under Section 36 of the Electricity Act 1989 to construct and operate the tidal array, including all ancillary infrastructures; License under Section 5 of the Food and Environment Protection Act (FEPA) 1985 to deposit materials such as the turbine foundations and the subsea cables on the seabed. Marine Scotland, which takes responsibility for protecting marine ecosystems, is the consenting authority for the FEPA license; and
- Consent under Section 34 of the Coast Protection Act (CPA) 1949 in order to make provision for the safety of navigation in relation to the export cables.

Key Environmental issues: EMEC undertook a site-wide EIA for the tidal testing facilities in 2005, with subsequent updates in 2007 and 2008. Since 2005 marine wildlife monitoring has been carried out on the tidal test site to establish a baseline of marine wildlife (seals, cetaceans and birds) activities in the waters of the tidal test site. SPR (on behalf of ANDRITZ HYDRO Hammerfest) undertook a device specific environmental assessment for the deployment of the HS1000.

The environmental report concluded that it was expected that the residual impact on wildlife during installation process would be minor. Additionally, operational effects are presently classified as being unknown and may therefore only be assessed on a deploy-and-monitor strategy.

This report can be made available on request to SPR and/or ANDRITZ HYDRO Hammerfest. The relevant test facility EIA can be sought from EMEC.

Environmental webpage: *link to project official environmental webpage (if available)*

| Baseline studies and project effects studies: Orkney Hammerfest Strom Tidal Project | | | | |
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| 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) |
| Benthic | Potential | Surveys and | The direct impact on habitats and | Completed |

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| Ecology | impact to Benthic communities. | desk based studies. | species through the installation of foundation structures, subsea cables and associated infrastructure are considered to be of short term duration and negligible significance. | |
| Anadromous Fish | Potential impact to Anadromous fish species. | Surveys and Literature reviews. | There is no evidence to suggest that anadromous fish use or transit the waters of the Sound of Islay. Furthermore, survey has shown that watercourses on Islay and Jura adjacent to the Development have limited potential to support anadromous fish populations. | Completed |
| Elasmobranchs | Potential impact to Elasmobranch fish species. | Data based upon Marine Scotland, DEFRA, CEFAS, UKOOA and the International Council for the Exploration of the Sea (ICES). | Collision could theoretically impact basking sharks and although the potential magnitude of this impact is considered to be low, given the high importance of this species, the significance of this effect has been assessed as moderate. All other impacts have been assessed as being of negligible significance. | Planned |
| Ornithology | Potential impact to Ornithology species. | Data based upon Marine Scotland, DEFRA, CEFAS, UKOOA and the International Council for the Exploration of the Sea (ICES). | Under the terms of the EIA regulations it is concluded that the likely effects of the proposed development on all bird species are not significant. The available information indicates that the Development will not, either alone or in combination, have a significant effect on any classified or proposed SPAs. Disturbance to important assemblages of birds is considered as negligible with appropriate mitigation in place through all phases of the development. | Planned |
| Commercial Fisheries | Potential impact to Commercial fisheries stock. | Consultation completed with local fisherman regarding the Development. | Fishing for crustacean species such as velvet swimming crab, brown crab, and lobster is practiced by approximately 10 fishing vessels, with concentrated effort occurring during the winter and spring months. Concerns from local fishermen focused on loss of fishing area and navigational issues relating to | Planned |

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| | | | entanglement and loss of boats and equipment. (Navigation is considered within a separate Navigational Safety Risk Assessment). Impacts of the proposed Development are deemed to range between minor adverse and minor beneficial levels providing the appropriate mitigation measures are implemented. | |
| Terrestrial Ecology | Potential impacts to terrestrial ecology. | Data based upon Marine Scotland, DEFRA, CEFAS, UKOOA and the International Council for the Exploration of the Sea (ICES). | Except for otters and terrestrial habitat loss, significance of effect on terrestrial and intertidal receptors is assessed as negligible or no significant effect during construction, operation (including maintenance), and decommissioning of the onshore elements of the Development. | Planned |
| Transport and Traffic | Potential disturbance to transport and traffic. | Desk based study. | The Sound of Islay has a number of ferry routes, which are of high importance to the local community. During construction, the Development could cause a relatively high level of disruption; however, this will be temporary, and with careful planning and mitigation, these effects can be reduced to minor / no significant effect. | Completed |
| Tourism, Recreation and Socio-economics | Tourism, recreation and socio-economics advantages. | Desk based study. | The Development will bring with it minor beneficial socio-economic benefits. A small number of local jobs may be created during the construction of the project, and there will be a temporary increase in local spend associated with the installation phase, as well as ongoing spend associated with operation and maintenance. | Completed |
| Munitions and Military | Potential disturbances to Munitions and Military operations. | Desk based study. | The Development is located outside of any designated military areas and submarines are not expected to use the site. During construction there may be minor disruption to military vessels operating near the Sound of Islay in adjacent PEXAs; however, ongoing communication with the | Ongoing |

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| | | | Defence Estates and subsequent scheduling of works at the tidal site will ensure coordination of any potentially conflicting activities. There are no known unexploded munitions within or near to the Sound of Islay. It is also unlikely that munitions from official disposal sites could migrate into the Sound of Islay, with the nearest site over 100 km away. | |
| Cultural Heritage | Potential impact to Archeological assets. | Archaeological assessment. | All relevant cultural heritage assets known have been identified and the potential for unknown remains also discussed. Five distinct impacts of negligible to major significance have been identified. Mitigation has been outlined which is considered to completely mitigate residual impacts, and which has the potential to result in positive impacts in some cases. | Completed |
| Benthic Ecology | Potential impact to Benthic communities. | Surveys and desk based studies. | The direct impact on habitats and species through the installation of foundation structures, subsea cables and associated infrastructure are considered to be of short term duration and negligible significance. | Completed |
| Anadromous Fish | Potential impact to Anadromous fish species. | Surveys and Literature reviews. | There is no evidence to suggest that anadromous fish use or transit the waters of the Sound of Islay. Furthermore, survey has shown that watercourses on Islay and Jura adjacent to the Development have limited potential to support anadromous fish populations. | Completed |
| Elasmobranchs | Potential impact to Elasmobranch fish species. | Data based upon Marine Scotland, DEFRA, CEFAS, UKOOA and the International Council for the Exploration of the Sea (ICES). | Collision could theoretically impact basking sharks and although the potential magnitude of this impact is considered to be low, given the high importance of this species, the significance of this effect has been assessed as moderate. All other impacts have been assessed as being of negligible significance. | Planned |
| Reports or Papers | <ul style="list-style-type: none"> • EMEC Tidal Test Facility EIA available by request from EMEC. • Device specific environmental report for the deployment of an HS1000 device | | | |

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| | at EMEC available on request from SPR and/or HSUK. |
| Research Projects | N/A |

| Monitoring and adaptive management: Orkney Hammerfest Strom Tidal Project | | | | |
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| General description | | | | |
| Receptor | Monitoring program 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) |
| Elasmobranchs | Monitoring measures Elasmobranch fish species. | N/A | To manage potential impacts and inform mitigation post installation monitoring for elasmobranchs could be combined with marine mammal monitoring. Whilst no mitigation is planned at this stage of the Development, monitoring will allow the significance of collision risk to be continually assessed and if required, appropriate collision mitigation will be implemented. | Planned |
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| Reports or Papers | (Key papers on the areas addressed should be listed here; when possible the files themselves can be made available in downloadable PDF format, alternatively links to the files or project website can be provided when available e.g. SeaGen.) | | | |
| Research Projects | (past or on-going environmental research projects at the site) | | | |