ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name

Tom Clements/Ian Hutchison

Date submitted

February 24, 2014

Project name: Farr Point Wave Array – Phase 1

☒ Planned ☐ In Operation ☐Completed

Project description:

Project Developer: Pelamis Wave Power

Technology Developer: Pelamis Wave Power

Technology type: Attenuating Line Absorber (Pelamis P2e)

Resource (wave, tidal): Wave

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

Installed capacity (MW): 10MW

Project Website: http://www.pelamiswave.com/our-projects/project/5/Farr-Point-Wave-Farm

Launch Date: TBC

Additional Description: The project aims to install a 10MW wave farm roughly 7-12km off the north shore of Scotland near Bettyhill, Sutherland. In 2010 Pelamis Wave Power (PWP) was successful in securing a seabed lease option from The Crown Estate which provides exclusivity over the 'Area of Search' (AoS) for survey work and site investigations. The area occupies approximately 100 km^2, 2-3km^2 of which will be taken up by this initial phase one deployment. Up to 10 devices will be installed producing a combined capacity of 10MW. The Area for Lease (Afl) is planned to accommodate a capacity of 50MW and it is expected that future deployments will increase the arrays capacity to this level.

Technology: The Pelamis devices to be deployed at Farr Point will be the P2e generation models, the first of which has been tested at the European Marine Energy Centre (EMEC). The machine is made up of up to six tube sections linked by universal joints which allow flexing in two directions. It floats semi-submerged on the surface of the water and inherently faces into the direction of the swell. Each universal joint contains an independent power take-off unit within which hydraulic rams resist the bending moments between adjacent cylindrical tube sections. The rams generate high pressure hydraulic fluid which is used to drive generators distributed in power modules located within the tubes of the machine.

The electricity which is generated along the machine is fed back to the shore via a flexible cable from the nose of the machine which connects the floating machine to a fixed export cable on

the seabed. The electricity connection cables are integrated with fibre optic lines thus also provide the primary route for communications with the machine.

Mooring system: The device is held on station by a forward and rear mooring spread consisting mainly of steel chain and synthetic tethers. The forward mooring connects to the machine nose via a yoke attachment structure which allows the machine to orientate itself into the predominant swell direction. A rear mooring provides heading control and restricts the movement of the machine.

Inter array cables: Dynamic cables will either run directly from the machine to an interface on the seabed and connects each machine within the array or be suspended mid water column between machines. The layout of the cables, and therefore length, will be dependent on the final design of the farm.

Export cables: A dynamic down feeder will connect the array to a static export cable. This export cable will transport the electricity from an offshore splice box to the onshore connection point. The farm location within the AfL has not yet been determined, as such the total length of cable from the proposed onshore transition pit to the junction box is not certain, however it is expected to be range from 10 - 20 km. It is proposed that the cable will be laid on the seabed and subsequently surface laid, ploughed protected or buried depending on seabed conditions.

Onshore infrastructure: An onshore transition pit will house the joint which links the static offshore export cable to an onshore (single core) export cable. The transition pit will be located onshore above MHWS. The transition pit will be excavated by a mechanical excavator after which a concrete chamber will be installed. A manhole or concrete cover will be placed on top of the pit for protection and above ground reinstated to its previous condition.[Error! Bookmark not defined.]

The power cable(s) from the array will to connect to the existing onshore grid at a suitable grid connection point. The current grid connection agreement allows for an upgrade to existing substation.. The favoured option for linking the landfall to the substation is for the connections to be cabled underground. However, there may be a number of reasons why this is not practical in which case overhead wires would be needed supported on wood poles.[Error! Bookmark not defined.]

Vessel Spread: The vessels that will be utilised during this project have not yet been confirmed, however it is expected that the following types of vessels will be used.

Vessel type	Activity
Large Multicat	Installation of export cable, moorings and inter array electrical infrastructure. Maintenance activities. Towing and recovery
Small Multi Cat	Environmental surveying. Installation of moorings. Maintenance activities. Support during device tows and recovery.
Non-DP AHT	Installation of moorings
DP AHT	Installation of moorings and inter array electrical infrastructure.

Survey Vessels	Environmental surveys and maintenance.

Location: Farr Point, Sutherland, Scotland

Coordinates: The four corners of the AfL are:

- 58° 40' 00", 4° 12' 15"
- 58° 34' 45", 4° 12' 15"
- 58° 34' 45", 4° 22' 30"
- 58° 40' 00", 4° 22' 30"

Process Status: PWP is currently undertaking detailed site design activities and a full Environmental Impact Assessment for the proposed Farr Point Wave Array and it is anticipated that the necessary consent and license applications will be submitted summer, 2014.

Licensing information: No licence or consent applications have been submitted for this project.

Key Environmental issues: TBC

Environmental webpage:

Baseline studies and project effects studies: Pelamis- Farr Point				
General description	The following field surveys were undertaken (or commissioned by) the developer to inform baseline characterisation.			
Receptor	**Study description**	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)
	TBC			

Monitoring and adaptive management: Pelamis- Farr Point				
General description	A project Environmental Mitigation and Monitoring Plan will be developed in consultation with the regulator.			
Receptor	**Monitoring program description**	**Design and methods** (brief description)	**Results** (brief description)	**Status** (planned, underway, completed, with dates)
	TBC			