

## Wave Hub Technical Feasibility Study Proposed development of a wave hub at Hayle, Cornwall

### PRELIMINARY CONSULTATION

#### Introduction

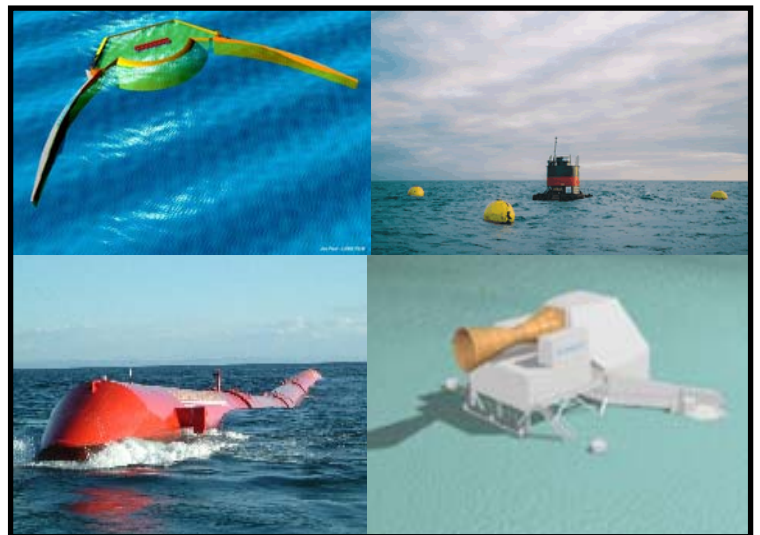
The South West Region is committed to encouraging technologies for renewable energy generation that will contribute to the Region's renewable energy target of 11% - 15% of electricity production by 2010. The region has been identified as having considerable potential for offshore energy generation, because it has a good wave and tidal stream resource, is relatively accessible, and is subject to less extreme weather conditions than other parts of the UK. Tidal stream energy is already being generated in the region at a 300kV demonstration turbine in the Bristol Channel offshore of Lynmouth, and developers are seeking similar opportunities.

A recent review commissioned by the South West Regional Development Agency (SWRDA) found that the north Cornwall coast has particularly high potential for the generation of electricity from offshore wave power. Many companies are currently developing technologies to extract this clean, renewable energy and assistance is required during pre commercial testing to make sure that this industry reaches maturity. The South West region is ideally placed to play a pivotal role.

**Figure 1: Example wave energy devices**

Figure 1 shows some examples of wave energy devices. These devices generally concentrate wave energy, and use it to drive electricity generating turbines. The electricity produced is exported to the shore and into the National Grid via a buried cable.

Halcrow Group Ltd (Halcrow) and Global Marine Systems Limited (Global Marine) have been commissioned by SWRDA to undertake a Technical Feasibility Study for the proposed scheme. This consultation is taking place at an early stage of the Feasibility Study.

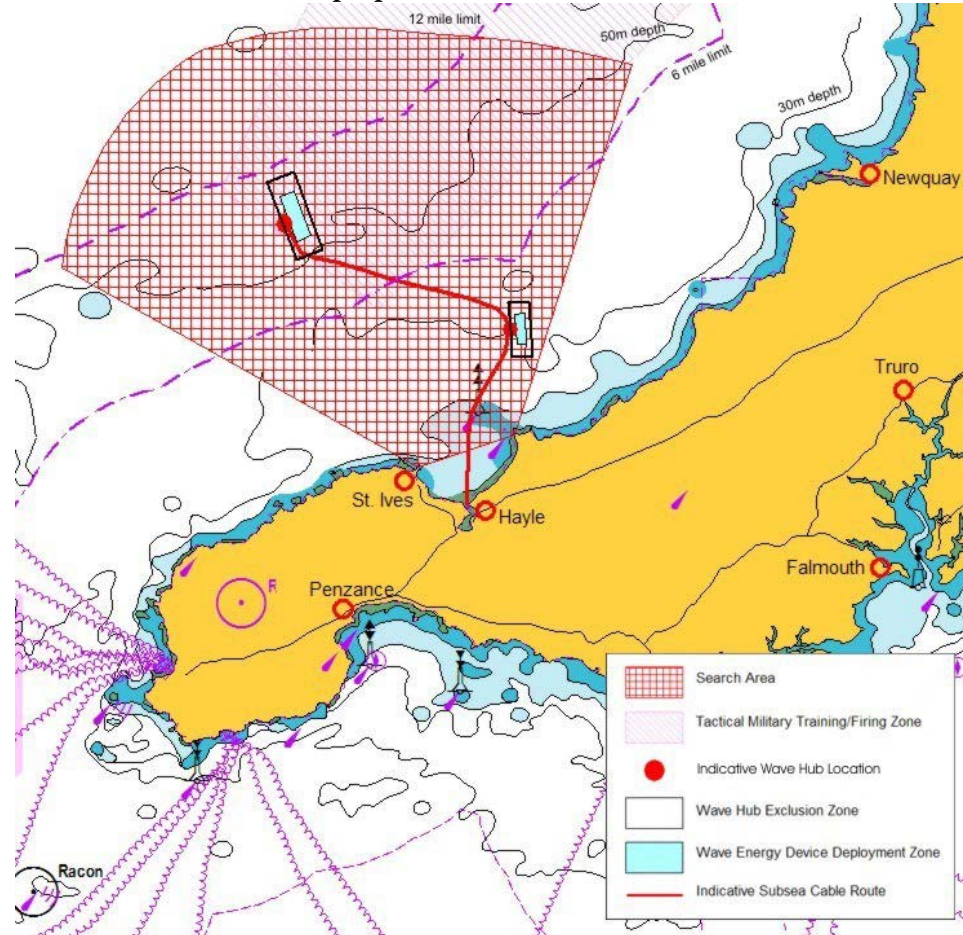


#### What is being proposed?

In order to encourage the development of wave power technology in the region, SWRDA is planning to construct a wave hub off the north Cornwall coast. This hub would provide infrastructure for several different companies to install wave energy generators. The hub would comprise an offshore connection, a cable running to shore, and a connection to the National Grid via a substation. SWRDA would also facilitate a simplified permitting process. At this stage it is anticipated that two wave device deployment zones may be required, one at 50-60m depth (16-25km offshore) and one at 25-30m depth (4-10km offshore). The devices themselves could be floating, semi-submersed or fixed to the seabed. When the project is fully operational, the area of sea occupied by the devices could be up to 10 km<sup>2</sup>, comprising a 2km<sup>2</sup> near shore exclusion zone and an 8km<sup>2</sup> offshore exclusion zone.

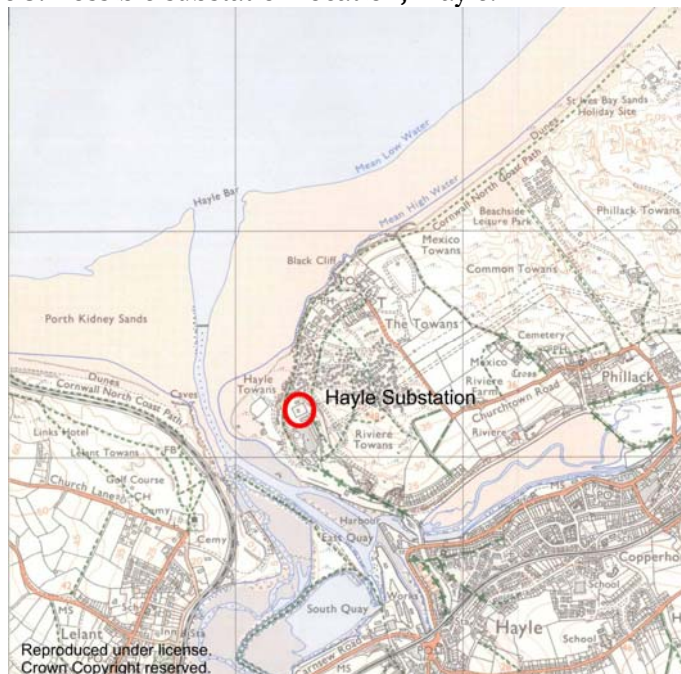
Hayle, situated near St Ives on the north Cornwall coast, has been identified as a suitable potential location for the wave hub. Not only is it near an area of substantial wave activity, it also has suitable infrastructure for connection to the National Grid. Figure 2 shows the area of search within which the device arrays could be located, and an indication of cable route. Figure 3 shows where a connection to the electricity grid could be made at Hayle; the location shown is adjacent to an existing substation and former power station.

**Figure 2: Indicative location of the proposed wave hub and cable.**



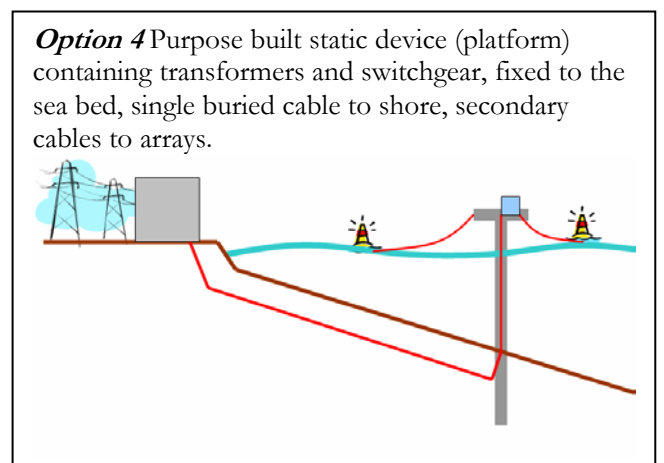
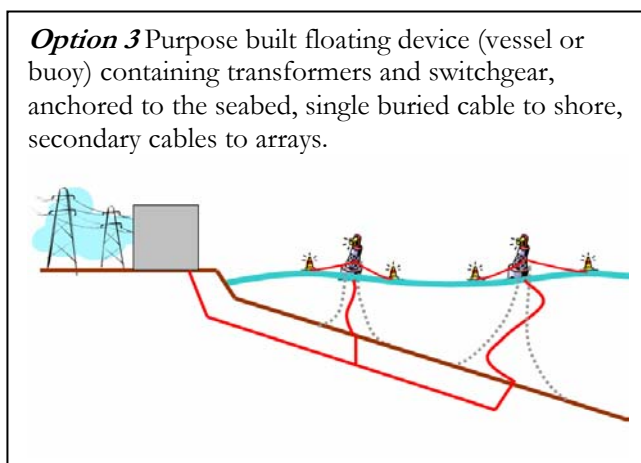
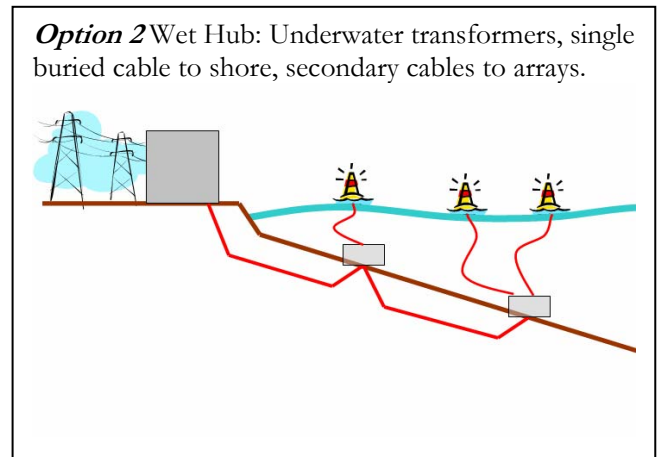
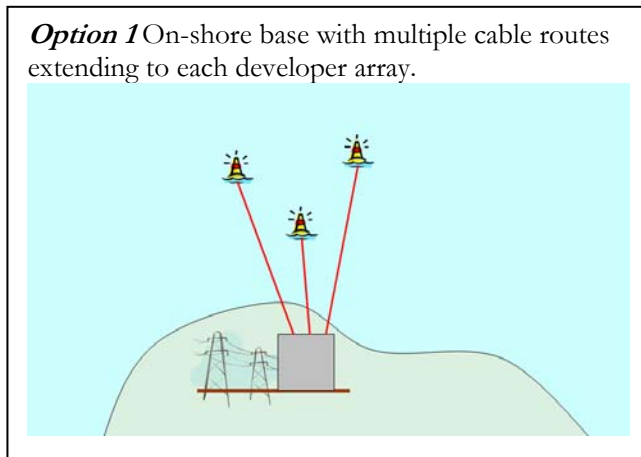
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 NOT TO BE USED FOR NAVIGATION.

**Figure 3: Possible substation location, Hayle.**



### What are the options?

Four options are being considered, each shown with a drawing indicating what they may look like:



Note: it is also possible that a hybrid design combining two or more of the above options will best fit the project requirements.

These options are being assessed during the study using technical, environmental, economic, and safety criteria. The preferred option will thus be one that is technically sound and achievable, has minimum environmental impact, is cost-effective and does not present significant safety issues.

### What are the potential benefits?

The construction of a wave hub would have a variety of direct and indirect benefits:

- The production of a significant amount of clean, renewable energy in the South West region (potentially 30 to 40 MW);
- Recognition of the South West region as a leader in the field of wave power electricity generation;
- The potential creation of a number of new jobs; and
- The creation of new industry and expansion of existing industry capable of manufacturing, deploying, maintaining, inspecting, repairing and decommissioning the potentially wide range of devices.

### **What are the potential environmental impacts?**

The Hayle estuary is internationally recognised for its biodiversity value. As Britain's most south-westerly estuary, its intertidal and saltmarsh habitats provide an important feeding and resting area for birds on migration. Inland, there are large areas of species rich dune habitats, including the Gwithian to Mexico Towans Site of Special Scientific Interest (SSSI). The area is also popular for holidaymakers, with a number of resorts and caravan parks located amongst the dunes.

Hayle's intertidal and marine waters are of both conservation and economic importance: they are part of the St Ives Bay Special Marine Area (SMA), the estuary supports commercial lobster, crawfish and crab fisheries, and Hayle is popular for recreation. Cornwall's coasts also support and are visited by a number of important marine species, including bottlenose dolphins, leatherback turtles and basking sharks.

The environmental impact assessment will involve an analysis of potential impacts on all environmental receptors. This will include the effects of laying the cable (most of which will be offshore) and the impacts of the likely arrays of wave energy devices on marine ecology, fisheries and navigation. There will be very little terrestrial land-take, with only one cable coming ashore for most of the options.

### **What next?**

The results of this public consultation will feed into both the Environmental Scoping study and the design work. The Technical Feasibility Study (including Environmental Scoping report) will be completed by the end of 2004. A decision will be taken to proceed based on all the development work (including the Technical Feasibility Study, the Project Vehicle Study and the Legal and Permitting Study) in 2005 when financing has been sourced.

Subject to gaining the necessary approvals and funding, it is anticipated that construction could begin in summer 2006, with the first power generated by the end of 2006.

We would be interested to receive your comments on the proposed wave hub development, and would be happy to answer any queries. Please address any correspondence to **Peter Stothert**, the Wave Hub Technical Feasibility Study Project Manager at:

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