

NI Log

London Branch

Offshore renewable energy and the mariner

The number of offshore renewable energy installations (OREIs) around the UK coast is increasing. At present most are wind farms, though tidal and wave energy installations are being developed and some prototype installations have been established which may be close to shipping routes.

Wind farms can be very large, some approaching 100 square nautical miles and present new challenges to safe navigation, but proper voyage planning and access to relevant safety information should ensure that safety is not compromised. The sites may be irregular in shape and adjacent developments can be in close proximity to each other. In addition single wind turbines may be established as isolated units.

Wave and tidal energy devices are currently sited on an ad hoc basis, where wave or tidal stream conditions are optimum but where interference with other marine activities is, as far as practicable, minimised.

The recent London Branch technical meeting focused on OREIs and the interaction with the mariner. Philip Wake, CE of the Nautical Institute took the chair with three speakers: Colin Brown, Offshore Renewables Navigation Risk Consultant; Mike Frampton of London Offshore Consultants and Peter Madigan, Head of Offshore Renewables at Renewables UK.

Colin Brown outlined the processes and developments of OREI around the UK.

Immediately the first UK offshore wind farm (OWF) was completed, trials were carried out in and around the site to assess possible effects on marine radar, communications and positioning systems. Of these, the only significant effects were found to be on ship borne and shore-based radar, the turbines returning strong responses.

As further OWF developments were completed, more radar effects were being reported by Masters and Pilots. In 2006 the British Wind Energy Association (BWEA) commissioned a study in the Thames in which the radar displays of 56 different type

vessels passing the Kentish Flats development were recorded. Reflections from ships' structures and fittings, in conjunction with the large radar cross section of the turbines, were found to be a major, but not sole, contributor to the observed effects.

In the light of these findings and the introduction of other types of OREI, the MCA published MGN 371 "*OREIs – Guidance on UK Navigational Practice, Safety & Emergency Response Issues*". This included an advisory template on the distances of wind farm boundaries, in specific circumstances, from shipping routes.

The MCA also published MGN 372, "*Guidance to Mariners Operating in the Vicinity of UK OREIs*" describing the various types of OREI, potential situations in which mariners might find themselves and how to address these.

Risk assessment and its mitigation is an ongoing process, supported by all stakeholders and with the introduction of Round 3 developments, consideration will have to be given to the effect of vessels having to modify routes, possibility of longer distances, greater exposure to adverse weather, etc

Peter Madigan said there were four key drivers for OREI in the UK – huge energy resource on the doorstep; reducing climate change; less dependent on foreign nations for energy; jobs and investment in UK, which resulted in ambitious targets for the UK by 2020 of 15% of all energy from renewables.

UK wave and tidal capacity is small compared to wind, however this sector is expected to rise a thousand fold by 2020. OREI is a major business opportunity for the UK, with approx 15 new vessels required for cable installation work, 10 to 25 new vessels required for turbine installation and up to 40000 jobs could be created for the construction of Round 3 developments

The latest state of the industry report is available for download from www.bwea.com/marine

Mike Frampton gave an insight into the transportation and construction process. The Round 1 and 2 sites in shallow water had a small impact on shipping, however, Round 3

is a major expansion – larger sites in deeper water, deeper than 50metres, having greater effects on shipping movements. The technology for these wind farms is more complex, with turbines and piles weighing up to 600 tonnes and attached to gravity bases instead of being driven into the seabed. Jack-up platforms and ships need to have 600t + cranes to handle these larger units

During the debate that followed the presentations, we discovered that the operators and constructors are on a steep learning curve and using the experience gained from the oil/gas industry. However, there are more challenges and new techniques to be learned for structures planned for further offshore.

Most of the questions focused on the operation and construction of the developments rather than on the impacts on navigation. Asked if it was a profitable industry, panelists agreed, quoting private companies investing large amounts of capital in the process and with an estimated life span of 20 years, the carbon footprint should be paid within 18 months. In the consultation process, opportunities have to be found and shipping interests were not best used. We have to ensure there are not disproportionate factors for other risks reducing navigational safety with regard to local flora and fauna. Other features taken into account by the developers included the provision of radar scanners on the development to mitigate radar losses for VTS purposes.

Summing up the chairman noted that we can't hold back change – OREI is here to stay and here to grow. If you get an invitation to take part in consultation – do turn up. We have a duty to make sure it is as safe for the seafarer as needs be.

Harry Gale FNI