THE RYA'S POSITION ON OFFSHORE RENEWABLE ENERGY DEVELOPMENTS: PAPER 2 (OF 4) – WAVE ENERGY JUNE 2019

Executive Summary

This paper sets out the Royal Yachting Association (RYA) position in relation to the development of *offshore renewable wave energy*. It is intended to enable developers to take accurate to take account of recreational boating concerns when developing their Environmental Statements and Navigational Risk Assessments.

In summary, the RYA believes that the impact that offshore renewable wave energy has on recreational boating can be minimised provided developers fully consider the following key points which are drawn from the paper that follows:

- **Collision risk**. The RYA believes that the collision risk posed to recreational craft by wave energy devices and arrays and associated infrastructure can be minimised by specifying a minimum safe water clearance over submerged structures, moving components and associated infrastructure determined in accordance with the methodology set out in MGN 543(M+F), Annex 1;

- **Charting, marking and lighting**. The RYA supports the guidance provided by the MCA, UKHO and GLAs on the charting, marking and lighting of wave energy devices and associated infrastructure and works with them to identify site specific issues that may occur;

- **Navigational and communication equipment**. Any proposed development should account for any effect on small craft navigation and communication equipment in detail.

- **Location**.

    - The impact on recreational routes, general sailing areas, racing areas and access to boating facilities and anchorages must be considered when examining the impacts of wave energy devices and arrays and their associated infrastructure;

    - Poorly sited wave energy devices and arrays and those that are built within the 12nm limit may increase the risk to navigational safety and discourage visiting boaters to the area. This would have an adverse effect not only on visitors but also on the local economy.

- **Sailing and racing areas**. Any interference or adverse impact caused by a wave energy device or array that encroaches into a racing or sailing area would create a significant negative impact on boating and diminish its value for recreation.

- **Cumulative and in-combination effects**. The RYA expects development site plans to include all adjacent developments that may have cumulative and in-combination effects on shipping and navigation.

The Royal Yachting Association (RYA) – who we are

The Royal Yachting Association (RYA) is the national governing body for dinghy, yacht and motor cruising, all forms of sail racing, RIBs and sportsboats, windsurfing and personal watercraft and a leading representative for inland waterways cruising.

The RYA is recognised by Government, the media and opinion formers as the representative body and voice for the activities that it represents. It continually fights for the rights and freedoms of its 112,000 personal members.

The RYA has more than 1,500 affiliated clubs and classes, which represent some 350,000 boaters throughout the UK. It is estimated that 4 million people in the UK take part in boating activity annually.

The RYA also sets and maintains recognised standards for training for both leisure and commercial boating through a network of more than 2,400 RYA Recognised Training Centres across 58 countries. More than 250,000 people per year complete RYA training courses.

The RYA is responsible for one of the UK's most successful Olympic medal winning sports. Our coaching and development schemes actively support 800 of our country's top sailors, from talented juniors to Olympic and World champions.

The RYA is committed to promoting all forms of boating and making them accessible to everyone. For more information please visit www.rya.org.uk.

The regulatory regime

The Energy Act 2004 (as amended) establishes a regulatory regime for Offshore Renewable Energy Installations (OREI) beyond the Territorial Sea, in the UK's EEZ, and supplements the regime which already applies in the UK's internal waters and Territorial Sea. Sections 99 and 100 of the Act deal specifically with navigation and introduce a new section, 36B with the title "Duties in relation to navigation" into section 36 of the Electricity Act 1989 (as amended). Under section 36B, sub-section (1) consent cannot be granted for an OREI which is likely to interfere with the use of "recognised sea lanes essential to international navigation". This expression directly refers to Article 60(7) of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS).

The Merchant Shipping (Safety of Navigation) Regulations 2002 implements the Safety of Life At Sea (SOLAS) Convention 2014 Chapter V (Safety of Navigation). This applies to all vessels on all voyages, therefore for the purposes of this document "sea lanes" are considered to be IMO-adopted routeing measures and potentially other sea routes transited by all vessel types.

Section 36B, sub-section (2) of the Energy Act 2004 (as amended) provides that the decision to grant consent and any conditions placed on a consent must "have regard to the extent and nature of any obstruction of or danger to navigation which (without amounting to interference with the use of such sea lanes) is likely to be caused by the carrying on of the activities, or is likely to result from their having been carried on."

In addition, both the Marine and Coastal Access Act 2009, Part 4, Section 69, sub-section (1)(c) and the Marine (Scotland) Act 2010, Part 4, Section 27, sub-section (1)(a)(iii), provide for marine licence decisions to "have regard to the need to prevent interference with legitimate uses of the sea".

SI 2007 No 1948 "The Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007" implements UNCLOS provisions for the establishment of safety zones during construction, extension, operation, maintenance and decommissioning of OREIs.

The RYA Position

The RYA recognises the UK Government's and devolved administrations' long term efforts to promote renewable energy[1]. We note that it is Government policy that any potential adverse impacts, including long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts should be taken into account. We further note that when considering cumulative effects, the Environmental Statement should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other developments (including projects for which consent has been sought or granted, as well as those already in existence[2]).

Our primary purpose in engaging in consultation regarding the development of offshore renewable energy installations is to secure navigational safety and to ensure that recreational boating interests are not disproportionately affected. The RYA has made objections to some proposed developments on grounds explained in this document. As more issues have come to light, we have reviewed our position on offshore renewable energy development. We recognise that some marine renewable schemes may provide opportunities to benefit recreational sailors, for example, tidal impoundments may provide areas of sheltered water which will allow local sailing clubs to thrive.

This position paper sets out our concerns from a general perspective regarding wave energy and should enable developers to take accurate account of recreational boating concerns in their environmental impact assessments. This paper is one of four position papers discussing renewable energy, the other three address wind energy, tidal energy and tidal impoundments

In summary the concerns of recreational boating and offshore renewable energy developments relate to:

1. Navigational safety:
    a. Collision risk;
    b. Risk management and emergency response;
    c. Charting, marking and lighting;
    d. Effect on small craft navigational and communication equipment.
2. Location:
    a. Loss of cruising routes and impact on offshore racing;
    b. Squeeze into commercial routes;
    c. Effect on sailing and racing areas;
    d. Cumulative and 'in combination' effects.
3. End of life:
    a. Dereliction;
    b. Decommissioning.
4. Consultation

The MCA has developed guidance[3] on the issues that need to be taken into consideration when assessing the impact on navigational safety and emergency response (search and rescue and counter pollution) caused by offshore renewable energy installation developments, proposed for United Kingdom internal waters, territorial sea and the Renewable Energy Zone beyond the territorial sea. The RYA expects this guidance to be used by offshore renewable energy developers seeking consent to undertake marine works. Furthermore, the RYA expects to be consulted on matters that may affect recreational boating during any type of assessment on proposed marine works.

1 The UK Renewable Energy Strategy 2009
2 Overarching National Policy Statement for Energy (EN-1)
3 https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping.

The RYA expects applications and accompanying supporting documents for development consent to be consistent with the instructions and guidance set out by the MCA and in the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Renewable Energy Infrastructure (EN-3).

1 Navigational Safety

Wave energy devices, often arranged in arrays, capture the energy carried by waves. There are many types of device; these can interact in different ways with recreational and other small craft. Most wave energy devices are located at or close to the sea surface with an attachment on the seabed. The RYA expects that no device will interfere with navigation by other legitimate users of the sea. Clearly, it is submerged and semi-submerged devices located in or near cruising routes around the UK coast that cause the RYA the most significant concern.

Prior to departure, mariners are required to make a passage plan based on assessments of weather, tides, limitations of the vessel and crew, and navigational dangers. Offshore renewable energy developments are an additional navigational hazard to the mariner. However, if sited sensitively, well designed and managed effectively these developments can minimise the safety issues of concern to recreational boating to an acceptable level or eliminate them.

Collision risk

The RYA believes that poorly designed wave energy devices and arrays can pose a significant risk of collision to recreational craft. Navigation around well marked and clearly visible static hazards is a part of sailing. However, as is pointed out in MGN372, '*unlike wind farms, systems using wave or tidal energy may not be clearly visible to the mariner*'. The consequences of collision with the mechanisms, particularly when parts are moving and when they are deployed as an array are serious.

The RYA believes that wave energy devices and arrays must adhere to certain consistent design parameters that are nationally agreed to reduce the risk of collision with recreational craft. There are two main hazards that must be considered:

- Collision with tidal energy devices and their mechanisms.

- Underwater allision with sub-surface structures, inter-array and export cable protection, rock armour and scour protection. It is important that where cables cannot be buried, the most appropriate type of cable protection is used taking into account the water depth and mariners using the area. The risk of underwater allision can also be increased where cables cross other cables and water depths are significantly reduced. Minimum safe under keel clearance over submerged structures and associated infrastructure should be determined in accordance with the methodology set out in MGN 543(M+F);

The RYA believes that the collision risk posed by wave energy devices and arrays and associated infrastructure to recreational craft can be minimised by maintaining:

- **a minimum safe under keel clearance over submerged structures and associated infrastructure determined in accordance with MGN 543(M+F);**

- **adequate charting, marking and lighting.**

Risk management and emergency response

A particular issue with wave energy devices and arrays is the risk of damage which may result from collision if they are located in areas where small vessels navigate. Vessels and lives have been lost through collision with shipping containers washed overboard and collision with wave energy devices are likely to pose a similar risk. We recognise that this risk can be reduced by following industry standards and having effective maintenance and monitoring schedules.

Risk management provisions should be formulated from the results of a site specific risk assessment that accounts for small craft of less than 24m LOA (length overall) recognising the significant differences between small and large vessels. This distinction is important when it comes to equipment and other requirements for small and large craft. The methodology[4] outlining the requirements for assessing the navigation impacts of offshore renewable energy installations is available on the Gov.uk website. This should be closely followed throughout any assessment.

For recreational craft, such an assessment should take into account the following parameters:

- The number, size and type of local vessels
- The number, size and type of national and international vessels
- Annual events that are not covered in a short term monitoring period
- Wave height and sea state conditions including seasonal variations
- Seasonal variations including weather conditions
- Seasonal variations in vessel number, size and type including weather conditions
- Proximity to ports of refuge
- A range of possible incidences including loss of propulsive power and failure of navigational systems

Risk assessment consists of an objective evaluation of actual and potential hazards and subsequent evaluation of any associated risks. During the assessment, assumptions and uncertainties must be clearly considered and presented. Part of the difficulty in risk management is that measurement of both of the quantities in which risk assessment is concerned - potential loss and probability of occurrence - can be very difficult to measure and the chance of error in measuring these two concepts is large.

As the number of vessels using an area varies with the season, any monitoring should be carried out in the high season. However, it is not the number of vessels passing through an area that is important but the number passing through in adverse conditions and when waves are most vigorous. Moreover, local vessels will quickly gain experience of wave energy devices and arrays and the biggest risks are likely to be to visitors.

General information on areas used for recreational boating is given in the *UK Coastal Atlas of Recreational Boating* (mentioned later) and RYA can provide additional detailed information about particular sites on request. The degree of hazard will vary according to the type of device and size of array; some types are no more hazardous than existing reefs and buoys.

Experience learned from wind farms should be factored into any navigational risk assessment to provide an accurate and realistic predicted level of risk and to enable proportionate and practical measures to be implemented where a risk is shown to be intolerable. By their nature, wave energy arrays will be located in areas where waves are expected to be frequent and powerful making small craft navigation more challenging.

In order to effectively manage the risk of a vessel in distress drifting towards a wave energy device or array, there needs to be an effective Emergency Response System in place. This may require the

[4] Methodology for Assessing the Marine Navigational Safety & Emergency Response Risks of Offshore Renewable Energy Installations (OREI)

ability to shut down the moving parts when an emergency call is reported. In some cases, where traffic is high and devices cannot be immobilised, a stand-by safety vessel may be required.

Safety zones
The RYA's opinion remains that the simple declaration of a permanent operational safety zone around an offshore renewable energy installation that excludes small craft on a wholesale basis is likely to be unnecessary, impracticable and disproportionate. In our view, such a restriction on small craft right of navigation and legitimate use of the sea is not justifiable in terms of safety alone and it must be recognised that there is little possibility of enforcing such zones. In some locations, a safety zone may increase risk of collision if small craft are consequently forced to use commercial craft shipping lanes.

In principle the RYA has no objection to the creation of *advisory or precautionary zones* but such zones must be designed and implemented on a case-by-case basis and with due respect to the right of navigation. The RYA believes that the purpose of any *advisory or precautionary zones* should be to warn vessels to navigate with particular caution but they should not permanently restrict navigation or exclude recreational vessels.

The RYA does, however, understand that there may be occasions when it may be prudent to impose short-term temporary restrictions, for example during engineering, maintenance or construction works. Such temporary restrictions should be promulgated through clear and timely Notices to Mariners. These need to show clear start and end dates and must be promulgated well in advance of any works. Notices to Mariners should not simply advise mariners to avoid an entire wave energy site, but instead should highlight the areas where works will be undertaken and define the location(s) of such safety zone(s). Many vessels visit the UK from continental Europe and this should be taken account of in any communication.

Cables and anchoring
In most cases, small craft will not anchor within a wave energy array. However, in emergency situations an attempt may be made to anchor a drifting vessel in or near a wave energy device or array which could cause damage to cables if they are not buried sufficiently or snag an anchor. This will require full consideration in the emergency response plan.

Where export cable corridors have not been surveyed in detail or there is a possibility that inter-array and export cabling cannot be successfully buried, it is important that alternative types of cable protection are carefully considered and set out in the Environment Statement; this should take account of the depth of water and the type of mariner using the area. Where there is any possibility that rock protection might be used which might reduce the depth of navigable water, particularly where cables cross, the RYA would expect this to be fully discussed in the Environmental Statement. The MCA specifies that there should be no more than a 5% reduction in Chart Datum as a result of cable protection.

Charting, marking and lighting

The requirements for charting, marking and lighting wave energy devices and arrays should be consistent with IHO and IALA requirements and guidelines[5]. This has been achieved for offshore wind and should be replicated for wave and tidal devices. There appears to be no precedent that can be drawn on from around the world.

IALA Recommendation O-139 on *The Marking of Man-Made Offshore Structures* was written before the advent of tidal or wave energy. Some types of device can be marked in the same way as existing offshore hazards but there is as yet no experience with large scale wave energy arrays. Experience has shown that wave energy devices may not be seen until vessels are close to them, particularly in vigorous wave conditions. Clearly semi-submerged devices may remain unseen no matter how benign conditions are and the RYA therefore strongly supports the need for stakeholders to work

[5] IALA Recommendation O-139 – The Marking of Man-made Offshore Structures - Edition 2: December 2013

with the MCA and GLAs to develop appropriate guidelines for marking wave energy arrays and if necessary individual devices by day and by night.

Unlike wind farms, wave energy devices and arrays will be difficult if not impossible to see from the height of eye in a small vessel. Effective charting of devices and arrays is thus essential. However, charts used by the majority of recreational sailors are updated less frequently than Standard Navigational Charts and there is no easy way to amend electronic charts until a new edition is published. For that reason it is important that information about wave energy devices and arrays is widely promulgated, for example at marinas and harbours from which departing vessels might navigate near to wave energy sites, and by publishing information in the relevant pilot guides, almanacs and sailing directions. Developers should follow the advice provided by the MCA and UKHO.

The RYA supports the guidance provided by the MCA, UKHO and GLAs on the charting, marking and lighting of wave energy devices and arrays and works with them to identify site specific issues that may occur.

Effect on small craft navigational and communication equipment

Wave energy devices are unlikely to have an adverse effect on VHF, GPS and mobile phone reception, although large quantities of steel, cabling and the transmission of electrical power may interfere with magnetic compasses. Wave energy devices may not be detected on radar unless marked by Racons. This causes particular concern when large arrays are sited close to commercial shipping lanes and recreational craft may be squeezed between the lane and the wave energy array.

Proposed developments should account for any effect on small craft navigation and communication equipment in detail.

2 Location

The location of offshore energy installations may conflict with access for recreational craft. It should also be noted that commercial routes and shipping lanes do not represent those routes taken by the vast majority of recreational craft. The RYA has collated recreational routes into the *UK Coastal Atlas of Recreational Boating*[6] which is available from the RYA. In addition, the Atlas marks sailing areas, racing areas and the location of marinas, RYA affiliated clubs and RYA recognised training centres. The *UK Coastal Atlas of Recreational Boating* should be used to inform decision making when planning the location of offshore energy developments including where cables make landfall. When drafting the navigational chapters of an Environmental Statement local knowledge should be sought through the RYA.

Loss of cruising routes and impact on offshore racing

When examining cruising routes and location of wave energy devices it is important to recognise that sailing boats behave differently to power driven craft and that their actual line of travel may 'zigzag' across their intended direction of travel upwind as they are dependent on the wind direction. The *UK Coastal Atlas of Recreational Boating,* , should be consulted together with other available information to inform the siting of the developments and individual installations and the potential provision of navigation routes through the larger sites.

Along many stretches of coast, recreational craft may need to seek shelter in poor weather. Sheltered harbours and anchorages as well as routes to these harbours of refuge should be protected. In many cases these are identified in the Atlas.

[6] A UK-wide dataset with associated spatial geographic information (including lat/long coordinates) which can be mapped to provide a visual representation of most common recreational boating activity.

Loss of routes would also lead to an increased distance of travel. This has environmental implications for powered craft and safety implications for all craft. Some routes, typically narrow channels or strong tidal flows, may already be hazardous at times to navigate through and creating additional obstacles in these areas may seriously compromise navigational safety. There are also safety issues associated with the creation of additional tidal stream turbulence in confined areas where craft may be moving slowly and tidal currents may be strong.

All home country marine plans recognise the importance of safeguarding tourism and recreation activities, and reference should be made to the appropriate policies within marine licence applications.

The impact on recreational routes, general sailing areas, racing areas and access to boating facilities and anchorages must be considered when examining the impacts of wave energy devices and arrays and their associated infrastructure.

Squeeze into commercial routes

Recreational routes differ from commercial routes as recreational craft essentially aim to keep out of the major commercial navigation routes by travelling in the shallower adjacent waters or taking entirely different routes. As a result, the examination of commercial routes through AIS plotting alone will not ensure the safe positioning of offshore renewable energy installations (OREI); recreational boating must also be taken into account when assessing the impact on navigational risk. This may require routes through large developments to be identified or inshore routes for smaller craft to be safeguarded, particularly where there is a wave energy array close inshore and a different type of development further out. Marking the channel rather than arrays should be considered. The cumulative impact of all marine developments is becoming increasingly important when assessing these issues of squeeze.

Poorly sited wave energy arrays and those that are built within the 12nm limit may increase the risk to navigational safety and discourage visiting boaters to the area. This would have an adverse effect not only on visitors but also on the local economy.

Effect on sailing and racing areas

Most of the general day sailing and racing areas are close to the shore and in sheltered waters. Recreational activity is important to the health and wellbeing of the community as well as providing economic support for the local coastal economies. Retaining the undisturbed remoteness of some waters will be important in terms of its wilderness and amenity value.

Any interference or turbulence or adverse impact created by a wave energy devices and arrays in a sailing or racing area would create a significant negative impact on the site and diminish its value for recreation.

Cumulative and ‘in-combination’ effects

As a result of the large increase in the number and scale of projects, it has been recognised that the cumulative effects of offshore renewable energy projects have potential implications for small and large craft alike. Existing and future offshore developments by other EU Member States may also add to the cumulative effect.

There is an awareness that the intended development of offshore wave energy could also lead to in-combination effects (effects arising from these developments in combination with other activities; e.g. wind and tidal renewable installations, fishing and offshore oil and gas activities and those associated with UK and European Marine Protected Areas, including Marine Conservation Zones) that might impact all mariners. The cumulative and in-combination effects of offshore energy installations on navigation routes will be increasingly significant and must be taken into account in future siting proposals and plans.

It is common practice for developers to provide site plans that show their proposed development in isolation. This is confusing and fails to provide a visual understanding of the cumulative and in-combination effects on shipping and navigation that might be caused by other adjacent offshore developments in the area. As the number and complexity of future developments increases, the RYA expects development site plans to include all adjacent developments (including projects for which consent has been sought or granted, as well as those already in existence) that may affect shipping and navigational safety.

The RYA expects development site plans to include all adjacent developments that may have cumulative and in-combination effects on shipping and navigation.

3 End of Life

Dereliction

Whilst we would hope that these installations remain economically viable for the lifetime of the structures, the RYA would support measures taken by Government to secure the financial provision for removing the structures, prior to consents being given. This will ensure that after the installation ceases to produce electricity for whatever reason, derelict structures that are not charted, marked and lit and remain a hazard to navigation or anchoring are removed from UK waters.

Decommissioning

Equally, any decommissioning plan needs to ensure that the structures are completely removed. Any parts of the structure remaining after the commercial operation of the installation may pose a hazard to navigation. However, we recognise that secondary uses may be identified for these structures once energy generation ceases. If structures are to remain in the water, navigational safety must be taken into account and structures should be appropriately charted, marked and lit.

4 Consultation

The RYA's main office in Hamble is a primary point of contact for matters concerning the development of Offshore Renewable Energy Installation sites and the recreational boating sector. Throughout the English regions, RYA Hamble maintains a network of volunteers who are able to provide more detailed site specific information for developments that fall within their area of responsibility. Developers may find this a useful resource for timely site specific information, particularly at the start-up of any project.

In addition, the RYA's main office maintains close links with its Scottish, Welsh and Northern Irish offices, which work with the relevant jurisdictions and they can provide detailed site-specific information in the same way as the volunteers do for England.

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