



Executive Summary

This paper sets out the RYA position in relation to the development of *tidal impoundments*. It is intended to enable developers to take accurate account of recreational boating concerns when developing their Environmental Statements and Navigational Risk Assessments.

In summary, the RYA believes that the impact that tidal impoundments have 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 to recreational craft posed by tidal impoundments and associated infrastructure to recreational craft can be minimised by specifying:
 - Minimum safe under keel clearance over any associated submerged infrastructure determined in accordance with the MCA Under Keel Clearance policy;
 - Dredging mitigation and monitoring schemes in case of siltation;
 - Design of seawalls that minimise the effects of wave reflection;
 - Adequate protection on the seaward and lagoon side of turbine/ sluice gate housings.
- **Charting, marking and lighting.** The RYA supports the guidance provided by the MCA, UKHO and GLAs on the charting, marking and lighting of tidal impoundments 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.**
 - Recreational routes, general sailing areas, racing areas and access to boating facilities and anchorages must be considered when examining the impacts of tidal impoundments and their associated infrastructure. Access to harbours and rivers used by recreational craft must be preserved.
 - Poorly sited tidal impoundments may increase the risk to Safety of Navigation 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 on tidal streams and navigation routes created by a tidal impoundment in a sailing or racing area would create a significant negative impact on the site and diminish its value for recreation. However the RYA recognises the potential benefit for many forms of recreational boating that may arise from an impoundment that is sympathetically designed.
- **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 RYA is the national body for all forms of recreational and competitive boating. It represents dinghy and yacht racing, motor and sail cruising, RIBs and sportsboats, powerboat racing, windsurfing, inland cruising and personal watercraft. The RYA manages the British sailing team which is one of the UK's most successful Olympic medal winning sports.

The RYA is recognised by all Government offices as being the negotiating body for the activities it represents; as such, it takes an active role in influencing policy and has been a voice for recreational boating for more than a century.

The RYA currently has over 100,000 personal members, the majority of whom choose to go afloat for purely recreational non-competitive pleasure on coastal and inland waters. There are an estimated further 500,000 boat owners nationally who are members of over 1,500 RYA affiliated clubs and class associations.

The RYA also sets and maintains an international standard for recreational boat training through a network of over 2,200 RYA Recognised Training Centres in 49 countries. On average, approximately 160,000 people per year complete RYA training courses. RYA training courses form the basis for the small craft training of lifeboat crews, police officers and the Royal Navy and are also adopted as a template for training in many other countries throughout the world.

The RYA Position

The RYA recognises the UK Government's and devolved administrations' efforts to promote renewable energy¹. 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 existence²).

Our primary purpose in engaging in consultation regarding the development of offshore renewable energy installations is to secure navigational safety and to ensure that existing recreational boating interests are not adversely 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. However we also recognise that well designed tidal impoundments may improve the value of local recreational amenity and provide considerable opportunities to benefit recreational sailors, for example, by providing areas of sheltered water which will enable local sailing clubs to thrive.

This position paper sets out our concerns from a general perspective regarding tidal impoundments while acknowledging that such schemes may provide considerable benefits. The position paper 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, wave energy and tidal energy.

¹ The UK Renewable Energy Strategy 2009

² Overarching National Policy Statement for Energy (EN-1)

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 guidance³ 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. Where such guidance is relevant the RYA expects it 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 craft during any type of assessment of proposed marine works.

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

1 Navigational Safety

Tidal impoundments or lagoons are 'offshore generating stations' that capture energy carried by the rise and fall of the tide. The RYA expects that navigation by other legitimate users of the sea should not be hindered by such schemes. Clearly, it is increased tidal flows around turbine housings, wave reflection from sea walls that are nearby navigation channels and siltation caused by alterations to tidal flows 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. All Offshore renewable energy developments pose an additional navigational hazard to the mariner. However, if sited sensitively, designed well and managed effectively these developments can minimise the safety issues of concern to recreational boating to an acceptable level or eliminating them.

Collision risk

The RYA believes that poorly designed tidal impoundments 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, the effects of wave reflection from sea walls and strong currents in the vicinity of

³ (MGN 371(M+F) Offshore Renewable Energy Installations (OREIs) - Guidance on UK Navigational Practice, Safety and Emergency Response Issues, MGN 372(M+F) Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs. This is currently being updated.

turbine housings may catch mariners out. The consequences of collision with any part of an impoundment, particularly when parts are moving may be serious.

The RYA believes that the design of tidal impoundments must adhere to certain consistent design parameters that are nationally agreed to reduce the risk of collision with recreational craft. There are three main hazards that must be considered:

- Allision with submerged infrastructure and moving components;
- Reduction of navigable depths due to siltation;
- Allision with the impoundment wall itself.

The RYA believes that the collision risk posed to recreational craft by tidal impoundments and associated infrastructure can be minimised by specifying:

- **Minimum safe under keel clearance over any associated submerged infrastructure determined in accordance with the MCA Under Keel Clearance policy;**
- **Dredging mitigation and monitoring schemes in case of siltation;**
- **Design of seawalls that minimise the effects of wave reflection;**
- **Adequate protection from turbine/ sluice gate housing structures, both on the seaward and lagoon side.**

Risk management and emergency response

The advent of tidal impoundments are new and the long term effects as yet are unknown despite mathematical modelling. However the RYA recognises that as the industry grows, this risk can be reduced by following well know industry standards that already exist such as charting, marking and lighting and by implementing effective maintenance and monitoring programmes.

Nevertheless, 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 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. Guidance⁴ developed in 2005 to outline the requirements for assessing the navigation impacts of offshore renewable energy installations has recently been updated by the MCA and is available on the Gov.uk website. This should be closely followed throughout any assessment where it is applicable.

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 in vessel number, size and type
- Proximity to ports of refuge

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

- A range of possible incidents 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 any tidal streams are strongest. Moreover, local vessels will gain experience of navigating near impoundments 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 the RYA can provide additional more detailed information about particular sites on request.

Experience learned from other forms of offshore renewable energy 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, tidal impoundments will be located in areas where tidal ranges are large and associated tidal streams are likely to be strong, the Bristol Channel is such an example. This will have a significant effect on speed over the ground making small craft navigation more challenging.

In order to manage the risk of a vessel in distress drifting towards turbine housings or a lee sea wall, there needs to be an effective Emergency Response System in place. This may require the ability to shut down turbines when an emergency call is reported. In some cases, where traffic is high a stand-by safety/towing vessel may be required.

Safety zones

The RYA's opinion remains that the simple declaration of a safety zone around an offshore renewable energy installation that seeks to exclude 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.

European standards are now being considered where small craft of less than 24m LOA are exempt from any operational safety zones. The German Government was the first to recognise the negative implications of imposing safety zones on small craft and has exempted small craft from such zones.

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 site, but instead should highlight the areas where works will be undertaken and define the location(s) of such safety zones. Many vessels visit the UK from continental Europe and this should be taken account of in any communication.

Cables and anchoring

In emergency situations an attempt may be made to anchor a drifting vessel to ensure no damage is done even though it may be inadvisable. This will require full consideration in the emergency response plan.

It is not anticipated that there will be export cable corridors to the seaward side of any impoundment sea wall, however if the grid connection is elsewhere 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 from cable protection.

Charting, marking and lighting

The requirements for charting, marking and lighting should be consistent with IHO and IALA requirements and guidelines⁵. This has been achieved for other offshore energy installations and should be readily achievable for tidal impoundments. The RYA therefore strongly supports the need for stakeholders to work with the MCA and GLAs.

Effective charting of tidal impoundments is 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 is widely promulgated, for example at marinas and harbours from which departing vessels might navigate, 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 tidal impoundments and works with them to identify site specific issues that may occur.

Effect on small craft navigational and communication equipment

Tidal impoundments 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.

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

2 Location

The location of Tidal impoundment schemes may conflict with access for recreational craft to harbours and rivers; for that reason traditional navigation routes and access must be preserved. 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 commonly used recreational routes into the *UK Coastal Atlas of Recreational Boating* which is available from the RYA. The lines in the Atlas represent indicative routes of varying width that are most commonly used as cruising

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

routes. 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 tidal impoundments. 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 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*, the RYA's spatial dataset⁶, should be consulted together with other available information to inform the siting of the developments with regard to navigation routes that may cross 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. It is important that impoundments do not preclude the use of such areas of refuge.

Loss of routes may also lead to an increased distance of travel. This has environmental implications for powered craft and safety implications for all craft.

Recreational routes, general sailing areas, racing areas and access to boating facilities and anchorages must be considered when examining the impacts of tidal impoundments and their associated infrastructure. Access to harbours and rivers used by recreational craft must be preserved.

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 tidal impoundments; recreational boating must also be taken into account when assessing the impact on navigational risk. This may require certain routes for smaller craft to be safeguarded. The cumulative impact of all marine developments is becoming increasingly important when assessing these issues of squeeze.

Poorly sited tidal impoundments may increase the risk to Safety of Navigation 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 where tidal streams can be readily predicted. The Netherlands and Germany have already excluded any development within 12nm of the shore in order to retain 'open space' for its amenity and recreational value. Recreational activity is important to the health and wellbeing of the community as well as providing economic support for the local coastal economies. As has already been stated, the RYA recognises that tidal impoundments can contribute significantly to recreational amenity; however, it is also important to recognise that retaining the undisturbed remoteness of some waters is also important in terms of its wilderness and amenity value for recreation.

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.

Any interference or adverse impact on tidal streams and navigation routes created by a tidal impoundment in a sailing or racing area would create a significant negative impact on the site and diminish its value for recreation. However the RYA recognises the potential benefit for many forms of recreational boating that may arise from an impoundment that is sympathetically designed.

Cumulative and 'in-combination' effects

As a result of the large increase in the number and scale of offshore renewable energy projects, it has been recognised that the cumulative effects of these 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 effects.

There is an awareness that the development of tidal impoundments could also lead to in-combination effects (effects arising from these developments in combination with other activities; e.g. wind, tidal and wave 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.

Currently it is common practice for developers to provide site plans that show their proposed development in isolation. Examples of this are readily available in application documents for developments in the Irish Sea and in the southern North Sea. 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 navigation 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, 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 Regional Planning and Environmental Co-ordinators (RPECs) who are able to provide more detailed site specific

information for developments that fall within an RPEC's 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 RPECs do for England.

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