



Dinghy Racing, Clevedon Bay © Clevedon Sailing Club

# Recreational Boating in the Severn Estuary

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*Association of Severn Estuary Relevant Authorities (ASERA)*

This report provides an overview of what is known by ASERA about recreational boating in the Severn Estuary, including its key potential environmental impacts, existing management measures and recommended Good Practice Guidance.

November 2016

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## Summary

### Recreational boating activity

- Recreational boating is a popular activity that occurs throughout the waters of the Severn Estuary European Marine Site (EMS). It has grown in popularity over past decades bringing social and economic benefits to the region. A wide range of recreational craft and boating activities take place, including dinghies, yachts, motor cruisers, power boats, water-skiing, personal water craft (jet-skiing), rowing/paddle boats (e.g. canoes and kayaks) and recreational fishing boats.
- There are 5 marinas, 20 boat clubs, 26 mooring areas and around 2,440 moorings/berths and 40 slipways in the vicinity of the Severn Estuary. Of the 5 marinas, 4 are located outside, but close to, the EMS, including Cardiff, Penarth, Portishead and Sharpness Marinas. Uphill Boat Centre is partially within the EMS. The vast majority of boats around the Estuary are kept within these marinas.
- Cardiff Bay is the main location for recreational boating in the Severn Estuary, with up to 200 boats per day passing inbound through the barrage during the busiest weekends and between 9,000 and 10,000 boats over a year. Considerable boating infrastructure and facilities are located in the Bay supporting 1,500 moorings (two thirds of all moorings in the study area), with 1,300 resident vessels. The Bay has a target capacity of 2,000 moorings. Levels of boating are high all year round. Portishead Quays Marina also attracts relatively high numbers of boats, with up to 60 boats a day and over 4,000 boats a year entering the Estuary. It holds the second highest concentration of boats in the Estuary, with berths for around 300 boats. Cruising routes between Cardiff Bay and Portishead are used heavily in the summer.
- Smaller numbers of boats are based at boat clubs and mooring areas around the Estuary or are kept ashore, entering the Estuary via slipways. These clubs are primarily located within sheltered areas such as river mouths, pills/creeks and bays. Sites with medium levels of boating in the summer include Penarth seafront, River Usk/Ebbw, River Avon, Weston-super-Mare, River Axe, Burnham-on-Sea and River Brue. In general, all other locations have low or very low levels of activity in the summer.
- In total there are around 370 moorings and 19 slipways in the EMS. Mooring areas include St. Pierre Pill, the River Ebbw, Oldbury Pill, Knightstone Harbour, River Axe, Uphill, River Brue and Combwich. Only 4 of these sites have moderate numbers of moorings (50+), namely Weston Bay Yacht Club (100) and Uphill Boat Centre (53) in the River Axe, Burnham-on-Sea Motor Boat and Sailing Club in the River Brue (69) and Thornbury Sailing Club in Oldbury Pill (40). Not all moorings in the EMS are currently in use, with demand for moorings over the past decade declining in favour of berths in Cardiff Bay and the Estuary's marinas.
- There are around 35 key boating access points into the Estuary, around 34 slipways and 4 locks. Access is restricted at most access points by tidal state to only a few hours either side of high water, with the exception of the locks in Cardiff Bay Barrage and the slipways at Penarth, which provide unrestricted access at all states of the tide.
- The intensity of boating activity in the Estuary is seasonal and influenced by the weather, tides and sea conditions, daylight hours, holidays and events. Levels of boating are highest during the spring, summer and autumn months, particularly during weekends and holidays. Generally, boating occurs during the winter at lower levels with smaller boat numbers, less frequent activity and fewer events. In all locations the levels of winter boating are low to very low. The exception is at Cardiff Bay and Portishead Quays Marina which have high and moderate boat movements in the winter respectively. These higher levels of winter boating are related to increased numbers of fishing boats.
- The Severn Estuary has significantly lower levels of recreational boating activity and infrastructure than the Solent Maritime EMS, with its 29 marinas and around 26,000 moorings, and has similar levels of boating to the Humber EMS. Overall this is considered to be a moderate level of boating activity.
- The data presented here was the best data available at the time of publication. This information on the intensity of boating in the Estuary was reviewed by boat clubs and Relevant Authorities and the overall

response confirmed that the report represented a good reflection of the Estuary's current level of activity in 2016.

### Management of recreational boating

- Recreational boating in the Severn Estuary is a well-managed activity, primarily for the purposes of protecting public and navigation safety, but also encouraging enjoyment of the water in a responsible and sustainable way. Management of boating in the Estuary takes many forms, both voluntary and regulatory. Respect for the marine environment and self-management are key principles of recreational boating. The RYA, British Marine, boat clubs, marinas, water sport organisations and individual boat users all play an important role in ensuring responsible boating and have a vested interest in protecting the marine environment that they operate within, value and enjoy. Harbour Authorities and some Local Authorities are also actively involved in the management of recreational boating in Severn Estuary.
- There are a number of existing management measures in the Severn Estuary that help to avoid or minimise potential environmental effects of recreational boating, including codes of conduct, speed restrictions, control of access and moorings, including permitting systems, zoning of activities and compliance with legislation and consenting regimes.
- The education of boat users by providing information on the importance of the marine environment, the potential impacts of their activities and practical means of minimising and avoiding them, proves an effective management tool. RYA clubs and training centres play a key role in educating boat users. The Green Blue (RYA and British Marine) takes an active role in educating and advising recreational users and has created a series of informative guides and factsheets on a range of topics to encourage users to reduce their environmental impact.
- Mooring areas, slipways, jetties and other access points for recreational craft around the Estuary are managed to ensure that they are used safely and responsibly. Recreational boat clubs manage the majority of mooring areas and slipways within the EMS, usually under lease or license from the seabed owner, and with permission from the Local Authority and/or the Harbour Authority. Use of club slipways is often restricted to club members or requires prior permission from the club for use by non-members. Boat clubs may also implement other voluntary measures to promote safe and environmentally responsible activities. For example, the Weston Bay Yacht Club recommends speed restrictions within the River Axe to reduce boat wash.
- Harbour Authorities have a duty to ensure safe navigation. Byelaws are in place to control the use, movement, mooring and anchoring of recreational boats, including speed limits. Prior notice and consent is often required from Harbour Authorities for boating events within harbour areas, including regattas and races. Cardiff Harbour Authority has developed a Water Use and Moorings Strategy to resolve conflict between different recreational activities and to minimise disturbance to habitats and species. Many Harbour Authorities have developed guidance and codes of conduct for recreational boat users to promote safe and responsible navigation; many recommend good practice for careful navigation and minimising environmental effects.
- A number of Local Authorities play an important role in managing safe access at public slipways. Some Local Authorities operate permit systems to manage access at popular public slipways, often supported by byelaws to ensure the safe use of slipways and to protect the public. Local Authority permit systems operating in the Estuary include North Somerset Council at Knightstone Harbour slipway; Sedgemoor District Council at the slipway at Burnham; Vale of Glamorgan County Council at the Penarth slipways and Cardiff Harbour Authority at public slipways within Cardiff Bay. Sedgemoor District Council also has a resort officer and beach wardens at Berrow Beach in the summer.

## Bird disturbance

- The Nature Conservation Agencies' review of activities in 2010 identified disturbance to feeding and roosting birds by recreational boating as a key concern in the EMS. There was insufficient information available to determine whether an impact was occurring, concluding that impacts were unknown throughout a large proportion of the estuary. Boating activity in the upper Estuary and within Gloucester Harbour Trustees' and South Gloucestershire Council's areas were thought to have no known effect on SPA features.
- The following findings of this report are helpful in considering the potential for boating to cause disturbance to overwintering feeding or roosting birds within sensitive areas of the Severn Estuary EMS:
  - Vessels under sail or motor in estuaries cause little noise and disturbance (i.e. boats on the open water in the Estuary are generally not a concern). The main risk of bird disturbance is associated with the activity of people and boats in close proximity to intertidal habitats, such as around boat clubs, moorings and slipways in sheltered creeks and river mouths within the EMS, which are favoured areas used by feeding and roosting birds in the winter;
  - All boat clubs, mooring areas and slipways located within the EMS have relatively low or very low levels of boating activity in the winter, with little or no activity in some locations such as St. Pierre Pill, River Rhymney and Combwich. Some clubs are active all year round, with dinghy/small yacht racing in winter (typically less than 10 dinghies launching via slipways over the high tide on one day a weekend or every other weekend), with lower and less frequent cruising activity. There are low/very low levels of boating activity around mooring areas and/or slipways in the EMS at Penarth, Portishead and Clevedon seafronts, Oldbury Pill, the Rivers Axe and Brue and in Uskmouth.
  - In general, boat movements to and from locks and moorings in the EMS mostly occur over a few hours around high water when intertidal habitats are largely covered in water. At high water, the stretch of shallow waters over the intertidal provides some separation between boats in the navigation channels and birds in high tide roosts.
  - Moorings and drying boats exposed at low tide have a restricted footprint with no activity around them, with the possible exception of occasional maintenance activities likely to be of very low intensity in the EMS in winter, leaving large expanses of undisturbed feeding areas available.
  - Some sites in the EMS are likely to experience disturbance from a variety of activities during the winter months, such as coastal walkers, wildfowling, agricultural activities or port and shipping operations. This is particularly the case for relatively busy areas of the Estuary which are subject to a wide range of activities near major cities, residential areas and ports such as Cardiff Bay, Newport and Avonmouth/Portishead;
  - There is little or no water-skiing and jet-skiing in winter months, as this activity is highly weather dependant. Any occasional activity in winter will be restricted to localised areas off the Penarth seafront, Knightstone Harbour in Weston Bay and within Cardiff Bay.
- It is considered unlikely that recreational boating is causing significant disturbance to overwintering feeding or roosting birds in the Severn Estuary EMS, under current levels of activity and with existing management measures in place. Whilst there are no known reports or observations of significant bird disturbance from recreational boating, there is potential for there to be disturbance in some sensitive locations on occasion where boats are active in winter months in close proximity to important roosting habitats. The risks of disturbing overwintering birds in the vicinity of important roost sites can be minimised by handling boats with sensitivity and observing good practice.
- There are management measures in place to minimise the risk of bird disturbance in certain sensitive areas. For example, there is a zoning agreement in the River Axe which places seasonal restrictions on the mooring of boats. Weston Bay Yacht Club restricts moorings in the inner Axe Estuary to summer months

only (Mar-Sep) and there is little or no boating in the vicinity of roost sites in winter. In the Axe and Brue, many boats are taken off their moorings in the winter months and taken ashore over winter.

- It is recommended that ASERA review the findings of this report together with NE and NRW when information on the location of important bird roost sites is available for the whole Estuary.

### Habitats

- The Nature Conservation Agencies' review of activities in 2010 identified that there were no known significant impacts on habitats as a result of recreational boating in the EMS, including impacts of existing levels of moorings and anchoring on the habitat features of the SAC, Ramsar and supporting habitats for birds. The exception to this were concerns regarding possible impacts on habitats in the vicinity of Newport, where impacts were unknown;
- The findings of this report support NE and NRW's initial assessment. Recreational boating is unlikely to be causing significant disturbance or deterioration of habitats within the Severn Estuary EMS for the following key reasons:
  - The footprint of moorings and anchoring within the EMS is very small, particularly in the context of the extensive areas of intertidal and Estuary habitat;
  - These activities primarily take place within localised areas of muddy and sandy sediments relatively near to the shore, which naturally have very high levels of sediment disturbance, smothering and scour due to the Estuary's strong tidal currents and extremely dynamic environment. Communities typical of these areas are generally tolerant to such natural disturbance, including marine worms, amphipods and molluscs.
  - There is no known mooring or anchoring activity in the vicinity of particularly sensitive habitats and species in the Estuary, such as eel grass beds off the Welsh Coast or the subtidal *Sabellaria* reefs primarily in the hard substrate areas of the outer Estuary.
- Erosion of habitats due to boat wash is not a significant concern in the Severn Estuary. The intertidal habitats along the Estuary's shores and in the mouths of its tributary rivers are generally less vulnerable to the effects of boat wash than many other estuaries due to the extreme tidal regime, background wave conditions and natural erosion processes at work.
- Although it is unlikely that mooring, anchoring and boat wash is causing significant disturbance or damage to designated habitats in the Severn Estuary, careful boat handling and observance of existing management measures, such as speed limits, and good practice can minimise risks of environmental impacts occurring in sensitive areas.
- The placement of new moorings requires a number of consents and permissions, including a marine licence, landowner consent, and possibly planning permission or Harbour Authority consent depending on location. This consenting process requires the consideration of potential environmental effects on habitats and species of the EMS.
- There are one or two sites around the EMS, including in the River Ebbw in Newport, where the regulation and control over the development of moorings or landing jetties is unknown and there is potential for disturbance and damage to very small, localised areas of intertidal flats and saltmarsh should "unregulated moorings" continue to spread. It is recommended that Relevant Authorities investigate any areas where there are possible unregulated moorings to ensure that any potential disturbance and damage to intertidal habitats is considered and, where appropriate, addressed.



## Contamination and Pollution

- The Nature Conservation Agencies' review of activities in 2010 identified that there were no known significant impacts on habitats, birds and fish as a result of contamination or pollution from recreational boating in the Severn Estuary, including from boat maintenance activities.
- The findings of this report support NE and NRW's initial assessment. Recreational boating is unlikely to be causing significant disturbance or deterioration to the EMS as a result of oil and fuel discharges, litter, sewage and waste water discharges or cleaning and maintenance activities.
- Recreational boating is a minor contributor to oil pollution in the marine environment. Spillages and discharges of oil and fuel do occur from boating, mostly during everyday activities such as re-fuelling, bilge pumping, handling of waste oil and as a result of engine leaks and emissions. Any oil and fuel spills from boating in the Estuary quickly evaporate and are dispersed by the tides. Repeated spillages of small amounts of oils are most likely to occur in marinas (outside the EMS), where they disperse in the water column and may contribute to contaminants in the seabed sediments. There is much that can be done to avoid and minimise accidental spills and operational discharges of fuels and oils from boats, including careful refuelling, regular engine maintenance and good housekeeping.
- Litter is a widespread problem in the marine environment. Typical items of litter from recreational boating include food and drink packaging, although it is generally considered unacceptable to throw overboard. In addition, loose articles or equipment might get accidentally blown overboard. Recreational boat users are provided with reception facilities for litter onshore at harbours, marinas and boat clubs. Although a small contributor, every effort should be made by boat users to avoid littering by following good practice.
- The input and effects of sewage discharges from boats in the open waters of the Estuary is considered negligible, particularly in the context of inputs of sewage and nutrients from other sources, such as water treatment plants. Any discharges will be rapidly diluted and dispersed by the tides. However, there is potential for localised water quality issues in sheltered or enclosed waters. Since 2006, all new boats are required to have provision for sewage holding tanks to be fitted. Publicity campaigns by The Green Blue encourage reductions in sewage discharges from boats. Although there are unlikely to be significant effects from sewage discharges from boats in the Severn Estuary, the risks are increased in enclosed or sheltered waters with large numbers of boats. These environmental risks can be avoided or minimised by following good practice.
- Cleaning and maintaining a boat on the water or on land can lead to detergents, paints, varnishes, solvents, degreasers, antifouling paints and other products entering the marine environment, together with the harmful and toxic chemicals within them. Contaminants include phosphates, chlorine, potassium hydroxide, ammonia and, in the case of antifouling paints, biocides containing copper or other toxic substances. Good housekeeping, such as selecting environmentally sensitive or biodegradable cleaning products and the control of wastes from hull maintenance activities, minimises the contaminants entering the water from recreational boating. All boat users are encouraged to follow good practice guidelines and the Environment Agency's Pollution Prevention Guidance 14 (Marinas & Craft) which provides advice to boat owners to minimise pollution from their activities.

## Recommendations

- ASERA should produce Good Practice Guidelines (e.g. Table 1) for recreational boating specific to the Severn Estuary EMS, together with representatives of local boat clubs, marinas and recreational boating interests.
- Boat clubs and boat users should be provided with local information on the importance of designated habitats and species in the Severn Estuary EMS to help raise awareness of specific sensitivities, such as the location of key roost sites or habitats sensitive to anchoring, such as eel grass beds.

- The information in this report should be reviewed by NRW and NE who will advise on any concerns regarding impacts of recreational boating in certain locations of the Severn Estuary EMS.
- Certain Relevant Authorities' Action Plans should include a measure to investigate any areas of potentially unregulated moorings to ensure that there is no further spread within the EMS and that any potential disturbance and damage to intertidal habitats is fully considered in the future.
- The potential spread of non-native species by recreational boating should also be covered in ASERA's good practice guidelines. Cardiff Harbour Authority implements measures to address the risk of introducing or spreading non-native species and would be well placed to advise ASERA on good practice.

**Table 1 Summary of potential impacts and examples of good practice.**

Potential Impacts	Examples of Good Practice Guidelines	
<b>Disturbance to feeding and roosting birds</b>	<ul style="list-style-type: none"> <li>• Keep noise and disturbance to a minimum when on the water or when moored or anchored near intertidal areas, particularly within the sheltered creeks, pills and rivers around the Severn Estuary over winter month as birds can be very sensitive to noise disturbance;</li> <li>• Avoid disturbing wildlife by keeping your distance where possible, particularly near important roost sites in sheltered creeks and rivers where large numbers of birds gather at high water over the winter months;</li> <li>• Be aware that certain areas around the estuary, such as Bridgwater Bay, are an important area for breeding waders and moulting shelduck in the summer months which are vulnerable to disturbance during this sensitive time;</li> <li>• Small craft, such as canoes, personal water craft, and ribs/tenders can reach shallower waters, getting closer to sensitive intertidal areas and should take extra care to avoid disturbing birds and other wildlife;</li> <li>• Keep maintenance activities within the EMS to a minimum in the winter months, where possible and safety allows;</li> <li>• Enjoy watching birds and other wildlife from a distance using binoculars.</li> </ul>	
<b>Erosion/damage of habitats</b>	<ul style="list-style-type: none"> <li>• Anchor with care and consideration and be aware that inappropriate anchoring can damage marine wildlife and vegetation, particularly in shallow waters and over intertidal habitats;</li> <li>• Choose anchoring sites carefully, away from the most sensitive areas of the Estuary where possible, including eelgrass beds and reefs, and use recognised landing places when going ashore. Take note of any anchoring restrictions in place;</li> <li>• Follow RYA advice on anchoring, including using your anchor correctly to avoid drag, periodically checking that your anchor is not dragging and raising your anchor correctly when leaving;</li> <li>• Observe speed limits and slow down to keep your wake to a minimum near to the shore, particularly in the sheltered waters of pills, creeks and rivers and in the vicinity of mooring areas. Excessive wash in sheltered areas can erode banks, disturb birds, damage sensitive vegetation and cause a nuisance to other boat users.</li> </ul>	
<b>Pollution: Introduction of synthetic materials, contamination of mud/sand sediments and</b>	<b>Oil and fuel discharges</b>	<ul style="list-style-type: none"> <li>• Use shore-side toilet facilities when berthed at marinas around the Estuary;</li> <li>• Give consideration to the environmental sensitivity of your surrounding area before using sea toilets, only use as far offshore as possible;</li> <li>• Empty holding tanks at pump-out facilities in marinas where available. Chemical toilets must also be emptied ashore into pump-out facilities or into the sewage system; and</li> </ul>



<b>damage to habitats and birds</b>		<ul style="list-style-type: none"> <li>• If necessary to empty holding tanks at sea, only do so when more than three miles offshore i.e. beyond the Estuary in the open waters of the Bristol Channel where waste will be diluted and dispersed (The Green Blue, 2008).</li> </ul>
	<b>Litter</b>	<ul style="list-style-type: none"> <li>• Never throw rubbish overboard, including food and cigarette ends. Bag it and take it home;</li> <li>• Prevent litter and loose items from blowing into the Estuary; and</li> <li>• Reduce, reuse and recycle waste wherever possible. Segregate your recyclable wastes onboard and use recycling facilities wherever provided at marinas and boat clubs.</li> </ul>
	<b>Sewage and waste water discharges</b>	<ul style="list-style-type: none"> <li>• Use shore-side toilet facilities when berthed at marinas around the Estuary;</li> <li>• Give consideration to the environmental sensitivity of your surrounding area before using sea toilets, only use as far offshore as possible;</li> <li>• Empty holding tanks at pump-out facilities in marinas where available. Chemical toilets must also be emptied ashore into pump-out facilities or into the sewage system; and</li> <li>• If necessary to empty holding tanks at sea, only do so when more than three miles offshore i.e. beyond the Estuary in the open waters of the Bristol Channel where waste will be diluted and dispersed (The Green Blue, 2008).</li> </ul>
	<b>Cleaning and maintenance activities</b>	<ul style="list-style-type: none"> <li>• Use environmentally friendly cleaning and maintenance products, such as phosphate-free detergents, and avoid products containing chlorine and bleach;</li> <li>• Prevent any antifouling paint from entering the marine environment, using a ground sheet when undertaking hull maintenance activities (scrubbing down and repainting), in order to catch any scrapings, drips, spills and other debris;</li> <li>• When cleaning boat hulls care should be taken to remove fouling growth only and not the paint itself. If washing down on a slipway care should be taken to collect and brush up any paint particles preventing them from entering the water;</li> <li>• Use close-looped boat wash/scrub down facilities, which collect antifouling residues from the waste water runoff, where provided by marinas and boat clubs;</li> <li>• Remember that paints, varnishes and antifouling paints, and any used brushes, rollers, trays and empty paint tins, are all hazardous waste and must be disposed of appropriately and not mixed with other waste streams; and</li> <li>• Choose antifouling paints with the lowest levels of biocides to suit your needs and consider the use of more environmentally friendly bottom paints such as silicone, Teflon or vinyl based products, where effective and possible.</li> </ul>

## 1 Introduction

The Association of Severn Estuary Relevant Authorities (ASERA) is made up of the statutory organisations (Relevant Authorities) around the Severn Estuary that collectively manage their activities on the Severn Estuary European Marine Site (EMS) through a Management Scheme. The Management Scheme sets the framework within which activities (governed by Competent or Relevant Authorities) are managed in ways compatible with the nature conservation objectives.

The Severn Estuary EMS was designated with many activities taking place. The aim of the Management Scheme is to ensure that these activities are undertaken in a manner that does not threaten the nature conservation interest of the site.

In order to consider whether activities are likely to have significant effect on the conservation features of the designated sites, the activities themselves need to be understood. This report focuses specifically on recreational boating and presents information on the distribution and intensity of water based recreation in the Severn Estuary and existing management practices.

## 2 Aims

This report provides an overview of what is currently known about the level of water based recreation and its management in the Severn Estuary. The report has been produced by ASERA for three main purposes:

- To inform ASERA member Relevant Authorities about activities in their area and seek their feedback about these activities or any additional activities that may be carried out, any relevant management measures that are in place and whether there are any concerns regarding possible impacts on the EMS.
- To seek the views of key recreational organisations and clubs in the Estuary to check that information collated in this report about the location and intensity of water based recreation is correct and to identify whether further information is available, including information on existing management measures and good practice guidelines implemented by the recreational boating sector.
- To provide Natural England (NE) and Natural Resources Wales (NRW) with information to enable them to consider whether water based recreation within the Severn Estuary is likely to be having a significant effect on the EMS in certain areas; and if necessary, to advise whether any known impacts may require additional management measures.

It is accompanied by a short questionnaire to verify the information in this report, ensuring it is correct and identifying if there is additional available information and any important gaps in our understanding of boating activities in the Estuary. This is an important step in informing the work to finalise the current draft of the Severn Estuary Management Scheme and update the Relevant Authority Action Plans.

## 3 Background

### 3.1 Severn Estuary European Marine Site

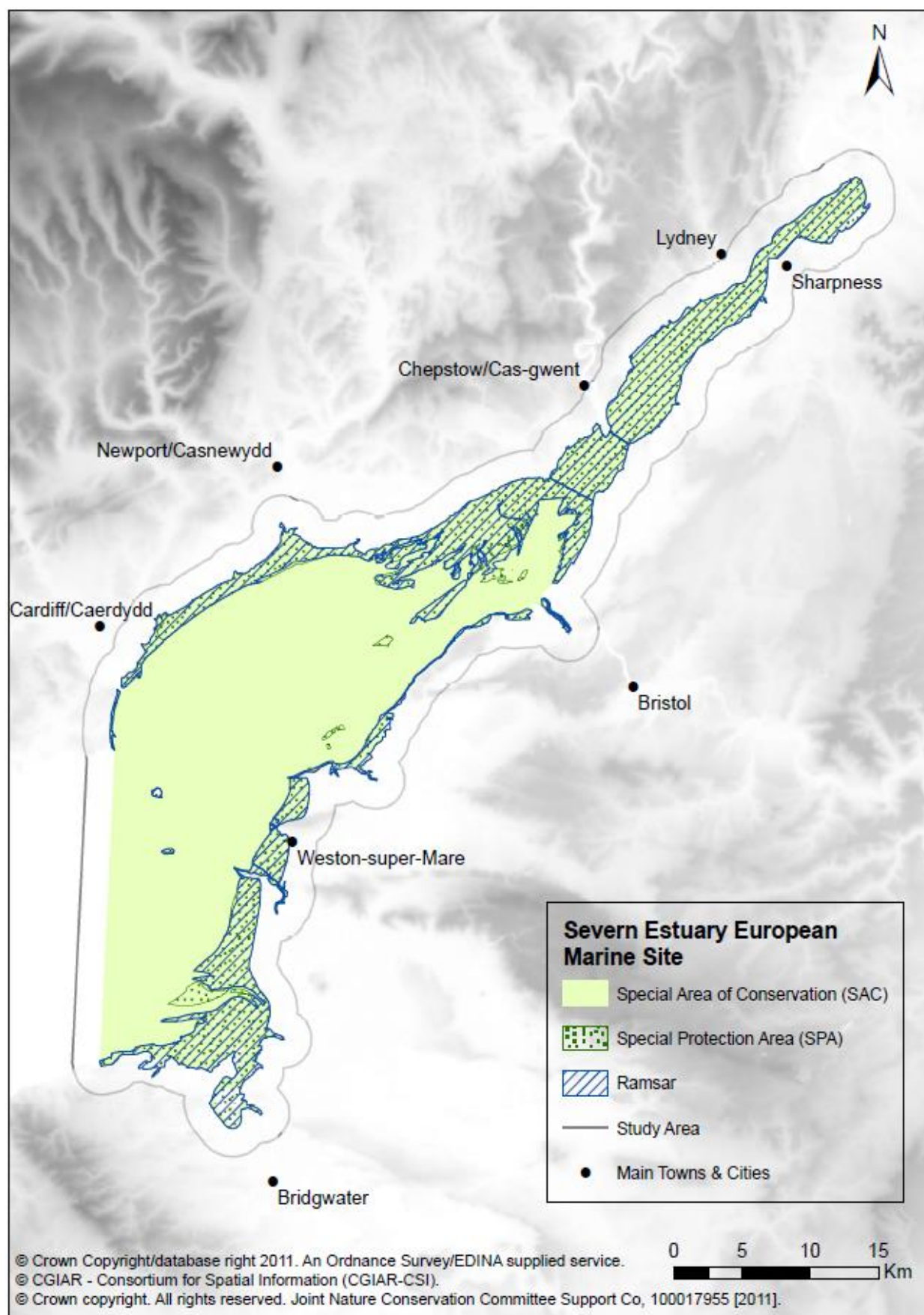
The Severn Estuary covers the upper reaches of the Bristol Channel on the west coast of Britain, between south Wales and the south west of England. It is one of the largest coastal plain estuaries in the UK and is managed and used by a wide range of organisations and individuals. The Estuary supports populations of wild birds that are of European importance and, in recognition of this, the Estuary was classified under the EC Directive of the Conservation of Wild Birds as a Special Protection Area (SPA) in 1995. This European Directive was transposed into UK law with the Conservation of Habitats and Species Regulations (2010). In 1995 the Severn Estuary was designated as a Ramsar wetland of International Importance due to populations of birds, particularly waterfowl, which in winter gather in the UK. In December 2009 the Severn Estuary was designated as a Special Area of Conservation (SAC) to provide European protection for a variety of habitats and species. Where a SPA or SAC incorporates subtidal and/or intertidal areas, they are referred to as a European Marine Site (EMS). Figure 1 shows the extent and relationships of the SAC, SPA and Ramsar designations in the Severn Estuary and Table 2 outlines the key features for which the Severn Estuary is designated. The distribution of the designated habitat features within the Severn Estuary SAC is shown in Figure 2 below. Data is not currently available of the distribution of migratory fish or the wider fish or bird assemblage within the Severn Estuary EMS.

**Table 2 Designated features of the Severn Estuary European Marine Site.**

Features		Designation		
		SAC	SPA	RAMSAR
<b>Habitats</b>	Estuaries	x	<i>Supporting habitat</i>	x
	Atlantic saltmeadow (saltmarsh)	x	<i>Supporting habitat</i>	x
	Intertidal mudflats and sandflats	x	<i>Supporting habitat</i>	x
	Reefs	x		x
	Subtidal sandbanks	x		
	Hard substrate habitats (rocky shores)	<i>sub feature</i>	<i>Supporting habitat</i>	x
<b>Fish Species</b>	Migratory fish (river & sea lamprey & twaite shad)	x		x
	Migratory fish (salmon, eel, sea trout & allis shad)	<i>sub feature</i>		x
<b>Birds</b>	Bewick's swan (Tundra swan)		x	x
	Curlew		x	x
	Dunlin		x	x
	Pintail		x	x
	Redshank		x	x
	Ringed plover		x	x
	Shelduck		x	x
	European white-fronted goose		x	x
	Gadwall		x	x
<b>Assemblages</b>	Fish species	<i>sub feature</i>		x
	Waterfowl	<i>sub feature</i>	x	x
	Vascular plant species	<i>sub feature</i>		x

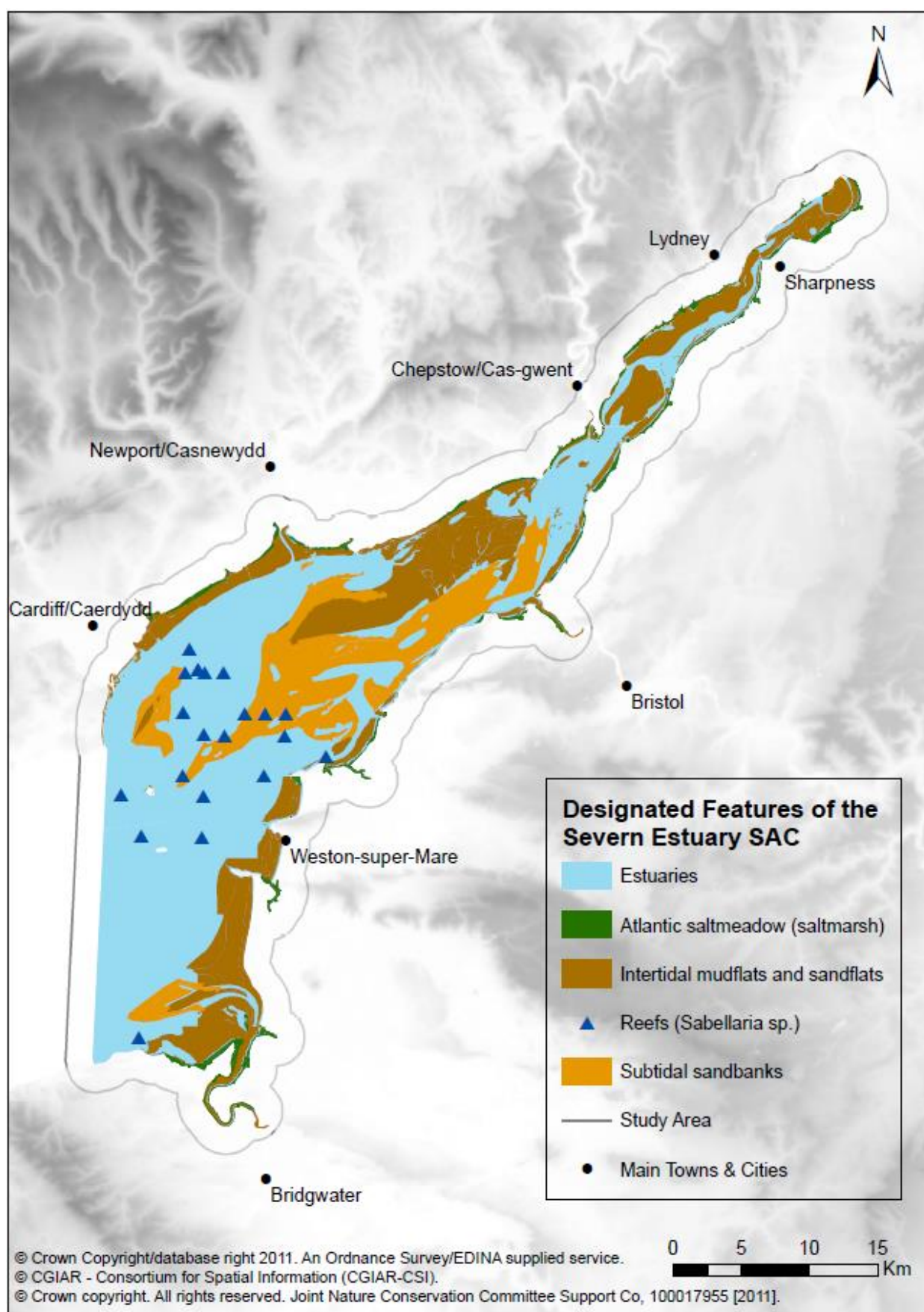
Further information on the habitats and species of the Severn Estuary SAC, SPA and Ramsar sites can be found in the [Regulation 33 Advice](#) (2009) and the [ASERA guide to habitats and species](#). Natural England and Natural Resources Wales are currently revising and updating their Advice packages (2016/17).

**Figure 1** Extent and relationships of the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar wetland of international importance.





**Figure 2** Distribution of designated habitat features of the Severn Estuary SAC.



### 3.2 Severn Estuary Management Scheme

The Habitats Regulations state that Relevant Authorities may establish a Management Scheme for a European Marine Site (EMS) (Regulation 36). The Management Scheme is intended to provide a mechanism for Relevant Authorities to set the framework within which their activities will be managed, either voluntarily or through legislation, to achieve the nature conservation objectives of the site. The Management Scheme for the Severn Estuary EMS, launched in 2004, encourages the wise use of the area without detriment to the environment, based on the principle of sustainability. It considers whether activities are causing adverse effects and, if so, how such activities can be regulated by Relevant Authorities to prevent damage to the site. The impact of an activity can depend upon its scale, location and frequency as well as the vulnerability of a feature. Activities that could cause deterioration or disturbance to the features of the site may be subject to restrictions.

The Management Scheme aids decision-making and evolves to take into account changing issues and legal obligations. Activities and operations undertaken by ASERA members were reported during the first iteration of the Management Scheme in 2004, and again in 2011. Data to inform the preparation of the Management Scheme came from a variety of sources including activity questionnaires (proformas) which were completed by all Relevant Authorities and reviewed by the Nature Conservation Agencies. These proformas identified activities and operations for which Relevant Authorities have responsibility for management. The aim of the proforma was to collate a summary of the type, location and frequency of activities throughout the Estuary and the associated existing management and monitoring of activities. Table 3 below identifies the ASERA member Relevant Authorities that have a role in the management of water based recreation activities in the Severn Estuary (Annex 1).

**Table 3 Member Relevant Authorities with a role managing activities associated with water based recreation as identified by responses to the 2004 and 2009 proformas.**

	Relevant Authorities																									
	Nature Conservation		Water	IDB's			Ports				County Councils					District Councils		City Councils		Other						
	NRW (previously CCW and EA Wales) *	Environment Agency Natural England	Welsh Water - Dŵr Cymru	Caldicot & Wentloogie IDB	Axe and brue IDB	Parrett IDB	North Somerset IDB	ABP (Cardiff and Newport)	Cardiff Harbour Authority (Cardiff Council)	Gloucester Harbour Trustees	Newport Harbour Commissioners	Port of Bridgewater (Sedgemoor Council)	The Bristol Port Company	Gloucester County Council	Monmouthshire County Council	North Somerset Council	Somerset County Council	South Gloucester Council	Vale of Glamorgan County Council	Forest of Dean District Council	Sedgemoor District Council	Stroud District Council	Cardiff Council	Newport City Council	Devon and Severn IFCA *	Trinity House Lighthouse Service
Water based recreation	♣						♣	♣	♣	♣	♣	♣		♣	♣	♣	♣	♣	♣	♣			♣			
Anchoring (recreational)									♣	♣		♣			♣					♣	♣		♣			♣
Boat repairs (recreational)	♣							♣						♣	♣								♣			♣
Moorings							♣	♣	♣		♣	♣			♣				♣				♣			
Navigation							♣		♣	♣	♣	♣														♣

♣ 2009 pro-forma completed indicating role in management of water based recreation

♣ no pro-forma completed 2009, but 2004 pro-forma completed indicating role in management of water based recreation

♣ pro-forma was completed for this activity and RA in 2004, this activity no longer takes place.

\* New organisation formed since 2009 proforma's completed - responsibility for water based recreation not known



The responses received to the 2009 proformas were reviewed by the Nature Conservation Agencies to identify the relationships between the activities, the sites nature conservation features and the relative vulnerabilities to impacts. This information was drawn from a combination of the Advice on Operations contained within the Regulation 33 advice and information obtained from the activity proformas. Following this, an assessment of the impact on every feature from every activity was undertaken by the Nature Conservation Agencies. This was carried out by assigning each activity an “F-code” for its impacts (see Annex 2 for further details on F-codes). The impact of an activity can depend upon its scale, location and frequency as well as the vulnerability of a feature. This means that an activity may have a different impact for different Relevant Authorities. Each activity for each Relevant Authority was given three codes; one for impact on the habitats, one for impacts on birds (including disturbance) and one for impacts on fish. The key relevant assessment codes used can be defined as follows:

- F2 **No possible impact** i.e. *There is no known mechanism(s) for the activity to cause deterioration or significant disturbance to a feature(s). Activity is not known by the Relevant Authority to have an effect in its area of jurisdiction.*
- F3 **Unknown Impact** i.e. *there is a known mechanism for the activity to cause deterioration or significant disturbance to a feature, but there is insufficient current information to determine whether or not an impact is occurring.*
- F4 **No impact identified / No known effect** i.e. *the activity has the potential to cause deterioration or significant disturbance to a feature(s), but current information indicates that it is not causing an impact at present. Activity is not known to have an effect within the Relevant Authority’s area of jurisdiction.*

The results of the assessment for water based recreation and associated boating activities are shown in Table 4. The key findings of the assessment of the potential impacts of water based recreation were as follows:

- No impacts (F4) were identified on habitats in the Severn Estuary (including the habitat features of the SAC, Ramsar and supporting habitats for birds), with the possible exception of activities in Newport City Council’s area where the impact on habitats were unknown (F3).
- The impact on SPA bird features was assessed as unknown (F3) throughout the Estuary and for all Relevant Authorities managing this activity, with the exception of within South Gloucestershire Council’s area where no known impacts were identified (F4);
- No impacts were identified on fish (F4) for all Relevant Authorities and all locations assessed in the Estuary; and
- Recreational anchoring, mooring and boat repair activities managed by Relevant Authorities were all assessed as having no possible impact (F2) or no known impact (F4) on habitats, birds and fish depending on their location within the Estuary; i.e. whether they were within or outside the EMS.

**Table 4 Natural England and Countryside Council for Wales' (now Natural Resources Wales) assessment of impacts from water based recreation on the features of the Severn Estuary EMS. Table adapted from the 2011 ASERA Management Scheme (see Annex 2 for further details on F-codes).**

	Relevant Authorities																												
	Nature Conservation			Water	IDB's				Ports						County Councils					District Councils			City Councils		Other				
	CCW (Natural Resources Wales)	Environment Agency	Natural England		Welsh Water - Dŵr Cymru	Caldicot & Wentlooge IDB	North Somerset IDB	Axe and Brue IDB	Parrellt IDB	ABP (Cardiff & Newport)	Cardiff Harbour Authority (part of Cardiff Council)	Gloucester Harbour Trustees	Newport Harbour Commissioners	Port of Bridgwater (part of Sedgemoor District Council)	The Bristol Port Company	Gloucester County Council	Monmouthshire County Council	North Somerset Council	Somerset County Council	South Gloucestershire Council	Vale of Glamorgan County Council	Forest of Dean District Council	Sedgemoor District Council	Stroud District Council	Cardiff Council	Newport City Council	Devon and Severn IFCA (WG in Welsh waters)	Trinity House Lighthouse Service	
Water based recreation		F4 F3 F4								F4 F3 F4	F4 F3 F4	F4 F3 F4	F4 F3 F4	F4 F3 F4		F4 F3 F4	F4 F3 F4	F4 F3 F4	F4 F4 F4	F4 F3 F4	F4 F3 F4	F4 F3 F4			F3 F3 F4			Water based recreation	
Anchoring (recreational)									F4 F2 F2		F4 F2 F2	F4 F2 F2		F4 F2 F2			F4 F2 F2				F4 F2 F2	F4 F2 F2			F4 F2 F2			F4 F2 F2	Anchoring (recreational)
Boat repairs (recreational)		F4 F4 F4								F4 F2 F4						F4 F4 F4	F4 F4 F4								F4 F2 F4				Boat repairs (recreational)
Moorings									F2 F2 F2	F2 F2 F2	F1		F4 F2 F2	F2 F2 F2											F4 F2 F2				Moorings
Navigation									F4 F4 F4		F4 F4 F4	F4 F4 F4	F4 F4 F4	F4 F4 F4														F4 F4 F4	Navigation

F1 – Plan or Project

F2 - No possible impact

F3 - Unknown impact

F4 - No impact Identified

Red - code for activity in respect of **habitat features** (of the SAC and Ramsar and of supporting habitats for birds)

Blue - code for activity in respect disturbance of the **bird features** (of the SPA and Ramsar and as a sub feature of the SAC)

Green - Code for activity in respect of the **fish features** (of the SAC and Ramsar)

Black - Activity is a plan or project requiring regulatory consent by competent authorities

A summary of the Conservation Agencies' overall assessment of water based recreation within the Severn Estuary EMS is provided in Table 5. This assessment highlighted a general lack of information available regarding the intensity and distribution of water based recreation within the Severn Estuary. Further information is required to understand whether or not water based recreation is causing disturbance to birds and damage to habitats in certain locations of the Estuary. Disturbance at key roosting and feeding areas from noisy motorised activities was identified as a particular concern. As such, the recommended management options identified in the 2011 draft ASERA Management Scheme was for Relevant Authorities to undertake surveillance of the extent of water based recreation activities and for ASERA to compile existing information or undertake research to better understand any possible cause and effect relationships, and other relevant information gaps.

To address the gap in knowledge of the impacts of water based recreation, and to improve the Severn Estuary Management Scheme, in March 2012 ASERA began a desk-based review of water based recreation activities in the Severn Estuary. The aim of this work was to provide the background information necessary to allow the potential impacts of water based recreation on the Severn Estuary EMS features (birds and habitat within the vicinity of Newport) to be reassessed by the Nature Conservation Agencies (Natural England and Natural Resources Wales), reducing uncertainty in the Management Scheme and, where necessary, allowing appropriate management options to be put in place.

**Table 5 Potential impacts and recommended management options for water based recreation (adapted from 2011 draft ASERA Management Scheme).**

Activity	Mechanism(s) for / and potential impact(s)	Location, Key Concerns and Current Management	Recommended Management Options
<p><b><u>Water based recreation</u></b></p> <p>Note: Any planned and formalised new facilities would require consents and authorisations. They would therefore be 'Plans and Projects' and would require a HRA under the Habitats Regulations rather than action under this Management Scheme.</p>	<p>Mechanism: Abrasion, Noise, Visual presence, introduction of non-synthetic materials.</p> <p>Potential impact:</p> <ol style="list-style-type: none"> <li>1. Disturbance to feeding and roosting birds in winter/passage. Birds can be sensitive to water based recreation and there can also be disturbance/damage if boat users go ashore in certain locations. Impact is dependent upon location and timing of activity.</li> <li>2. Possible erosion/damage of habitats.</li> <li>3. Possible contamination of mud/sand sediments.</li> <li>4. Litter and pollution damaging habitats and birds. Birds may become entangled/ingest plastic.</li> <li>5. Introduction of synthetic materials.</li> </ol>	<p><b>Location:</b> Widely reported activity by Councils and Harbour Authorities with relatively high use areas identified as Rhymney Estuary, Newport, Chepstow, Cardiff Bay, Bristol River Avon, Portishead, Port of Bridgwater, Sharpness, Burnham, Berrow, Brean, Lydney, Beachley and Thornbury.</p> <p><b>Key Concerns:</b> Physical impacts on habitats and disturbance of birds, particularly at key roosting and feeding areas, from noisy motorised activities on which research is required.</p> <p><b>Management:</b> There is some regulation through control of slipways and launch points, landing permits and resort officers, codes of practice, role of clubs and associations e.g. RYA and via Harbour authorities through byelaws, licences, codes and safety guidelines.</p> <p>There is some promotion through advice on availability of facilities and through EA strategy for water based recreation 2006-2011.</p>	<ul style="list-style-type: none"> <li>• Surveillance of the extent of activities.</li> <li>• Compile existing information or undertake research to better understand any possible cause and effect relationship and other relevant information gaps.</li> </ul>

## 4 Method/Approach

Recreational boating in this report primarily refers to the most popular boating activities that occur throughout the Severn Estuary for which information is available. This includes yachts/sail boats, dinghies, motor cruisers, narrow boats, row boats and power boats. There is less focus on other forms of water based recreation for which there is less information available, such as kayaking and hovercrafting. These activities are performed less frequently and/or within relatively localised areas of the Estuary. Beach based activities such as swimming, surfing, wind surfing and kite surfing are not considered in this report and will be covered in a separate investigation on land based recreation. Boat based angling is not a focus of this report as it is considered as a fishing activity by the IFCA/Welsh Government and is addressed by ASERA as a separate type of activity. However, where information has been provided by Relevant Authorities on these activities it has been included in this report for information.

The study area for this report is a 2km buffer around the boundary of the European Marine Site. This buffer was selected to capture the marinas and access points immediately outside of the EMS that provide a gateway for recreational vessels to the Estuary.

Data on recreational boating was assembled from a desk-based study to collate information on the location of slipways, yacht clubs and marinas. Data sources included Local Authority websites, Boatlaunch, Blue Book (9th Edition) and Google Earth (Table 6). The compiled datasets were fed into a Geographical Information System (GIS: ArcGIS10.3). The data sets were filtered and all remaining data was verified using OS OpenData, Blue Book (10<sup>th</sup> Edition), Google Earth, Boatlaunch, local yacht club/marina websites and by contacting the clubs and organisations directly. A further desk-based study was carried out to obtain information on additional features such as popular cruising routes, mooring facilities and anchorage areas. The data presented in this report was the best data available at the time of writing. During 2015 and 2016, the information on boat numbers at clubs and the intensity of boating in the Estuary was reviewed by many boat clubs, associations and Relevant Authorities. The overall response confirmed that the report represented a good reflection of the current level of activity in the Estuary in 2016. Further details on the methods of collection and results can be found in the document: ASERA Recreation Study Handover Report, v2.3, February 2014.

**Figure 3 Sailing at Lydney © Severn Estuary Partnership.**



**Table 6 Data sources for desk based research into water based recreation.**

Data Source	Reference
Boatlaunch	<a href="http://www.boatlaunch.co.uk/">http://www.boatlaunch.co.uk/</a>
Blue Book (9th and 10 <sup>th</sup> Edition)	The Blue Book Yachting and Cruising - Guide to the Bristol Channel, 9 <sup>th</sup> and 10 <sup>th</sup> editions, The Bristol Channel Royal yachting Association
Google Earth	<a href="https://www.google.com/earth/">https://www.google.com/earth/</a>
Admiralty Charts	<ul style="list-style-type: none"> <li>• 1179-0 Bristol Channel</li> <li>• 1152-0 Bristol Channel – Nash Point to Sand Point</li> <li>• 1176-0 Severn Estuary – Steep Holm to Avonmouth</li> <li>• 1166-1 Avonmouth to Severn Bridge</li> <li>• 1166-2 Severn Bridge to Sharpness</li> <li>• 1166-3 Sharpness to Hock Cliff</li> </ul>
Open Source Maps	OS Explorer maps
Relevant Authorities	Relevant Authority Activity Proformas <a href="http://www.severnuary.net/asera/consultation.html">http://www.severnuary.net/asera/consultation.html</a> (available to ASERA members only)
Local Authorities	North Somerset Council - <a href="http://www.n-somerset.gov.uk/Leisure/parks_and_open_spaces/Beaches-and-the-coast/">http://www.n-somerset.gov.uk/Leisure/parks_and_open_spaces/Beaches-and-the-coast/</a> Sedgemoor District Council/Bridgwater Port - <a href="http://www.sedgemoor.gov.uk/index.aspx?articleid=6022">http://www.sedgemoor.gov.uk/index.aspx?articleid=6022</a>
Harbour Authorities	Data on boat numbers provided by: <ul style="list-style-type: none"> <li>• Cardiff Harbour Authority - <a href="http://www.cardiffharbour.com/content.asp?nav=10,15&amp;parent_directory_id=1">http://www.cardiffharbour.com/content.asp?nav=10,15&amp;parent_directory_id=1</a></li> <li>• The Bristol Port Company: <a href="http://www.bristolport.co.uk/">http://www.bristolport.co.uk/</a></li> <li>• Gloucester Harbour Trustees - <a href="http://www.gloucesterharbourtrustees.org.uk/">http://www.gloucesterharbourtrustees.org.uk/</a></li> <li>• Bristol City Docks - <a href="http://www.bristol.gov.uk/page/transport-and-streets/ports-and-harbours">http://www.bristol.gov.uk/page/transport-and-streets/ports-and-harbours</a></li> </ul>
Local Yacht Clubs and Marinas	<ul style="list-style-type: none"> <li>• Burnham on Sea Motor Boat &amp; Sailing Club: <a href="http://myweb.tiscali.co.uk/burnhamsailingclub/">http://myweb.tiscali.co.uk/burnhamsailingclub/</a></li> <li>• Cardiff Bay Yacht Club <a href="http://www.cbyc.co.uk/">http://www.cbyc.co.uk/</a></li> <li>• Cardiff Marina: <a href="http://www.themarinegroup.co.uk/cardiff/marina">http://www.themarinegroup.co.uk/cardiff/marina</a></li> <li>• Cardiff Yacht Club: <a href="http://www.cardiffyachtclub.co.uk/">http://www.cardiffyachtclub.co.uk/</a></li> <li>• Chepstow &amp; District Yacht Club: <a href="http://www.cdyc.co.uk/">http://www.cdyc.co.uk/</a></li> <li>• Chepstow Boat Club: <a href="http://www.chepstowboatclub.co.uk">www.chepstowboatclub.co.uk</a></li> <li>• Clevedon Sailing Club: <a href="http://www.clevedon-sailing-club.co.uk/">http://www.clevedon-sailing-club.co.uk/</a></li> <li>• Combe Motor Boat &amp; Sailing Club: <a href="http://www.combeboatclub.co.uk/">http://www.combeboatclub.co.uk/</a></li> <li>• Lydney Yacht Club: <a href="http://www.lydneyyachtclub.org">www.lydneyyachtclub.org</a></li> <li>• Newport Uskmouth Sailing Club (NUSC): <a href="http://nusc.co.uk/">http://nusc.co.uk/</a></li> <li>• Penarth Quays Marina: <a href="http://www.quaymarinas.com/our-marinas/penarth-quays/">http://www.quaymarinas.com/our-marinas/penarth-quays/</a></li> <li>• Penarth Yacht Club: <a href="http://www.penarthyachtclub.com/Home.aspx">http://www.penarthyachtclub.com/Home.aspx</a></li> <li>• Penarth Water Ski Club: <a href="http://penarthwaterski.co.uk/the-club/">http://penarthwaterski.co.uk/the-club/</a></li> <li>• Portishead Cruising Club: <a href="http://www.portisheadcruisingclub.org.uk">www.portisheadcruisingclub.org.uk</a></li> <li>• Portishead Quays Marina: <a href="http://www.quaymarinas.com/our-marinas/portishead-quays/">http://www.quaymarinas.com/our-marinas/portishead-quays/</a></li> <li>• Portishead Yacht &amp; Sailing Club: <a href="http://www.pysc.org.uk/">http://www.pysc.org.uk/</a></li> <li>• Rhymney River Motor Boat Sail &amp; Angling Club: <a href="http://rhymneyriverclub.co.uk/index.html">http://rhymneyriverclub.co.uk/index.html</a></li> <li>• Sharpness Marina: <a href="http://www.sharpnessmarina.co.uk/">http://www.sharpnessmarina.co.uk/</a></li> <li>• Shirehampton Sailing Club: <a href="http://www.shirehamptonclub.co.uk/">http://www.shirehamptonclub.co.uk/</a></li> <li>• Thornbury Sailing Club: <a href="http://www.thornburysc.org.uk/">http://www.thornburysc.org.uk/</a></li> <li>• Uphill Boat Centre: <a href="http://www.uphillboatservices.co.uk/index.html">http://www.uphillboatservices.co.uk/index.html</a></li> <li>• Weston Bay Water Sports Club: <a href="http://www.westonski.co.uk/">http://www.westonski.co.uk/</a></li> <li>• Weston Bay Yacht Club: <a href="http://www.wbyc.co.uk/">http://www.wbyc.co.uk/</a></li> </ul>
Other Organisations	<ul style="list-style-type: none"> <li>• Burnham-on-Sea Coastguard: <a href="http://www.burnham-on-sea.com/coastguard/">http://www.burnham-on-sea.com/coastguard/</a></li> <li>• Severn Area Rescue Association (SARA): <a href="http://www.sara-rescue.org.uk/">http://www.sara-rescue.org.uk/</a></li> <li>• Canal and River Trust: <a href="http://canalrivertrust.org.uk/sharpness-port">http://canalrivertrust.org.uk/sharpness-port</a></li> <li>• Bristol Channel Angling: <a href="http://bristolchannelangling.co.uk/">http://bristolchannelangling.co.uk/</a></li> <li>• RNLI <a href="http://rnli.org/Pages/default.aspx">http://rnli.org/Pages/default.aspx</a></li> <li>• BARB Search and Rescue: <a href="http://www.burnham-on-sea.com/barb/">http://www.burnham-on-sea.com/barb/</a></li> <li>• Weston RNLI: <a href="http://www.westonrnli.org.uk/page9.htm">http://www.westonrnli.org.uk/page9.htm</a></li> <li>• Ports and Harbours of the UK: <a href="http://www.ports.org.uk/port.asp?id=220">http://www.ports.org.uk/port.asp?id=220</a></li> </ul>

## 5 Severn Estuary Recreational Boating

### 5.1 Introduction

Recreational boating is a popular activity that occurs throughout the Severn Estuary, with boats found rowing, sailing, cruising and racing in the Estuary waters all year round. The Estuary provides a significant expanse of water for a range of boating activities, which have increased in popularity over the past few decades bringing social and economic benefits around the Estuary.

The Severn Estuary is regarded as formidable stretch of water. The extreme tidal range, very strong tidal currents and shifting sandbanks, mean that the waters must be navigated with great care. The large tidal range also causes many access points and mooring areas around the Estuary to dry out and to be accessible only a few hours either side of high water. Local boating clubs have members with many years' experience and considerable local knowledge of navigating safely in the Estuary.

The Estuary is used by both personal and for organised excursions. Types of recreational vessels or craft active in the Estuary include the following:

- Dinghies (small sail boats)
- Yachts (sail boats/cruisers)
- Motor cruisers (motor boats)
- Power boats (e.g. ribs, sports boats/speed boats, "sea safaris")
- Inland waterway boats (e.g. narrow boats)
- Rowing and paddle boats (e.g. tenders, gigs, canoes and kayaks)
- Personal water craft (e.g. jet-skis)
- Hovercraft
- Paddle steamers (e.g. Waverley) and cruise boats (e.g. MV Balmoral)
- Fishing boats (not a focus of this study, but referred to where information was made available)

In the 2004 and 2009 ASERA proformas, Councils and Harbour Authorities reported widespread boating activity along the English and Welsh coasts. Key locations for recreational boating include Cardiff Bay, Penarth, Newport, Chepstow, Lydney, Sharpness, Oldbury, River Avon, Portishead, Weston Bay, Burnham-on-Sea and Bridgwater Bay. Cardiff Bay, and a number of docks adjacent to the Estuary, house marinas with relatively large numbers of boats and there are a number of boat clubs, mooring areas and slipways along the shoreline often located within sheltered creeks or pills and tributary rivers, such as St. Pierre, Clevedon and Oldbury Pills and the Rivers Rhymney, Usk, Wye, Avon, Axe, Brue and Parrett.

Data was collected by ASERA during 2013-2015 to develop knowledge of the location, frequency and intensity of recreational boating investigated all of the above components. This research identified 5 marinas, 20 boat clubs, 25 mooring areas and around 39 slipways in the study area. Each of these components and their contribution to recreational boating in the Severn Estuary are looked at in more detail in the sections below.



## 5.2 Marinas and boat clubs

The majority of boats entering the Severn Estuary are moored in marinas or at boat clubs. Marinas are commercial companies that provide pontoons and moorings for boats in relatively sheltered environments with ease of access, security and a range of facilities, services and supplies for boat users and boat clubs are generally non-profit organisations. In the Severn Estuary marinas are mainly located within enclosed water bodies, in Cardiff Bay and a number of docks, which have relatively steady water levels protected by lock gates from the extreme rise and fall of the tide in the Estuary. Within the study area there are 5 marinas; Cardiff Marina, Penarth Quays Marina, Portishead Quays Marina, Sharpness Marina and Uphill Boat Centre (Figure 4). Of these, only Uphill Boat Centre is located outside an enclosed dock or basin, situated in a sheltered pill of the River Axe, which is partly located in the Severn Estuary EMS.

**Figure 4 Portishead Quays Marina (below left) © Channel Images and Uphill Boat Centre (below right) © Boatlaunch.**



Recreational boating in the Severn Estuary has increased in popularity over the last 20 years or so, largely due to improvements in facilities in the Estuary and wider Bristol Channel, including the development of the Cardiff Bay Barrage and marinas such as Portishead Quays Marina. The completion of the Cardiff Bay Barrage created a 200 hectare freshwater lake that provides a safe harbour environment for a wide range of water based recreation activities, marinas and sailing clubs, extensive moorings and waterside development opportunities.

**Figure 5 Portishead Cruising Club © Anne Hayes.**



In addition to these marinas, there are 20 boat clubs located in sheltered locations around the Estuary's shoreline (Figure 7).

Some general information about these clubs, their facilities and the activities that take place there are summarised in Table 7. The clubs in the Severn Estuary cater for a range of different recreational boating interests, primarily sailing boats, motor cruisers and dinghies, but also recreational fishing boats in some clubs. Two water-ski and power boating clubs are located in the Estuary, at Penarth/Cardiff Bay and Weston Bay. There are also rowing or gig clubs active in the Estuary, including at Penarth and Clevedon.

Boat clubs tend to have facilities for members, such as moorings, slipways and clubhouses, which vary from club to club. The majority of recreational clubs host a programme of events, including regattas, races, cruises, rallies, and away days, weekends or even weeks. These take place all year round although tend to be held in the spring, summer and autumn months and are generally focussed round existing membership rather than open public events.

The majority of sailing and cruising clubs are members of the Royal Yachting Association (RYA), the RYA Cymru Wales and the Bristol Channel Yachting Association (BCYA). The RYA is the governing body for all forms of recreational boating activity in the UK and RYA Cymru Wales is the national governing body in Wales (<http://www.rya.org.uk>; <http://www.welshsailing.org>). They work closely together and their purpose is to promote and protect safe, successful and rewarding British boating. The RYA currently has over 100,000 personal members and 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 sets and maintains an international standard for recreational boat training through a network of over 2,200 RYA Recognised Training Centres. On average, approximately 160,000 people per year complete RYA training courses. The BCYA is comprised of clubs that have a connection with sailing in the Bristol Channel. They encourage sailing and boating activities in the area, providing a forum for its members and representing their collective views and interests (<http://www.bristolchannel.co.uk>).

Both water-ski clubs in the Estuary are members of British Water Ski and Wakeboard which is the governing body and membership organisation for water-skiers and wakeboarders, acting in their interests to develop and serve the sport (<http://www.bwsw.org.uk/home/>). The organisation consists of a diverse network of around 150 affiliated members clubs and water-ski centres. Penarth Water Ski Club is also a member of the Welsh Water Ski Association.

**Figure 6 Lydney Yacht Club © Severn Estuary Partnership.**



**Figure 7 Marinas and boat clubs within the Severn Estuary study area.**





**Table 7 Marinas and boat clubs in the Severn Estuary study area (information obtained from marinas, boat clubs and their websites and the BCYA Handbook).**

Boat Club or Marina	Vessels / Activities	General summary information
<b>Burnham on Sea Motor Boat &amp; Sailing Club</b>	Yachts, motor cruisers and fishing boats.	Club located in the River Brue, in Bridgwater Bay. Facilities include a clubhouse, slipway, pontoon with mooring berths located in the river mouth and moorings in the river. Several visitor berths on drying pontoon. Peak activity March to October, most boats onshore in winter. Summer racing on Wednesdays, Saturdays and Sundays and cruises over weekends to other harbours and marinas in the Bristol Channel.
<b>Cardiff Bay Yacht Club</b>	Dinghies, power boats, motor cruisers, yachts and fishing boats.	Located within Cardiff Bay. Facilities include a clubhouse, RYA training centre, 2 slipways, pontoon berths and moorings, a visitor pontoon, a boat hoist and dinghy storage. Activities at the club include dinghy sailing and racing, sports boat races inside the Bay and around the Bristol Channel and a well-supported fishing section.
<b>Cardiff Marina</b>	Motor cruisers, yachts and dinghies.	Marina located within Cardiff Bay on the River Ely with 350 berths providing moorings for motorboats and yachts. The marina has a range of onsite facilities, including crane and boat lifting, marina office and storage ashore.
<b>Cardiff Yacht Club</b>	Yachts, motor cruisers, dinghies and fishing boats.	Club located within Cardiff Bay. The club has almost 400 members with over 280 yachts and motorboats permanently moored on either trot moorings or pontoons in the Bay and over 50 dinghies in the club. Facilities include a clubhouse, a fully equipped boat yard, 2 boat hoists, a slipway and visitor dock. There is activity throughout year, peak in spring/summer.
<b>Chepstow &amp; District Yacht Club</b>	Dinghies and yachts.	Located at St. Pierre Pill, on the Welsh coast between the Severn bridges. Club facilities include a clubhouse, pontoons (for visitor and temporary use only), slipway, wooden jetty and moorings. Activity is highly seasonal, peak during summer months at evenings and weekends and car park access is also only during summer. Events include cruises and some fun races.
<b>Chepstow Boat Club</b>	Motor cruisers, yachts and dinghies.	Small club located at Chepstow on the River Wye. Facilities include a landing pontoon, access to a slipway and moorings.
<b>Clevedon Sailing Club</b>	Dinghies and yachts.	Located in Clevedon Pill and on the Clevedon seafront. Facilities include a clubhouse and changing facilities at Clevedon seafront and club moorings, slipway, steps and stage at Clevedon Pill. Activities include cruising and dinghy sailing and racing, held predominantly on Sundays and some Friday evenings during the summer.
<b>Clevedon Pilot Gig Club</b>	Gigs/rowing boats.	The Clevedon Pilot Gig Club was founded in 2009 and operates from the slipway along the Clevedon seafront. The Club has a fleet of around 5 gigs and a training boat.
<b>Combwich Motor Boat &amp; Sailing Club</b>	Motor cruisers, yachts and dinghies.	Small club located in Combwich Pill in the River Parrett. Facilities include a clubhouse, moorings, a compound for dinghy storage and 2 slipways that run from the compound into the River Parrett. There is another, free public slipway on the opposite side of the pill. Village sailing club with no racing.
<b>Lydney Yacht Club</b>	Yachts, motor cruisers and dinghies.	Located adjacent to Lydney Dock, this club offers a clubhouse, boat storage ashore and use of a slipway for access to the Estuary. Activity is highly seasonal, with peaks during the summer season when there is a programme of races, cruises and events.
<b>Newport Uskmouth Sailing Club (NUSC)</b>	Yachts and dinghies.	Club located in St. Julian's Pill on the Usk, with facilities including a clubhouse, basic workshop facilities, 2 pontoons, a trot (row) of river moorings and a slipway which provides access to the Estuary for boats kept ashore in a compound. Cruiser and dinghy racing is held throughout the sailing season. There are a number of closed and open race series during the year and two weekend open events.
<b>Penarth Quays Marina</b>	Motor cruisers, yachts and dinghies.	Marina located within Cardiff Bay with 320 pontoon berths and a full range of amenities and services including boat hoist, boat and engine repair, chandlery, restaurant, shops and boat storage. Marina is open 24 hours, 7 days a week, all year round. Activity is weather dependant and seasonal, with peaks on summer weekends and low levels on winter weekdays.
<b>Penarth Rowing Club.</b>	Rowing boats.	Penarth Rowing Club is based at the Penarth Yacht Club, which launches from the slipway on the Penarth seafront. The Club has a long tradition of rowing in the Estuary and recently celebrated its 135 <sup>th</sup> anniversary.
<b>Penarth Water Ski Club</b>	Power boats.	Water-ski and wakeboarding club based in Cardiff Bay with a pontoon in the Bay and a slipway on Penarth seafront next to the Pier. Mainly active at weekends within Cardiff Bay. The Club is affiliated to both Welsh Waterski and British Water Ski and Wakeboard. Members take part in all kinds of water based sports in the Bay, including sailing, windsurfing and kayaking. Jet-skiing is prohibited in the Bay. Windsurfing takes place at certain times in agreement with the Harbour Authority.
<b>Penarth Yacht Club</b>	Dinghies, yachts and rowing boats.	Located along the promenade in Penarth. Boats are kept ashore on promenade or behind the clubhouse and access the Estuary via a slipway on the seafront. Sailing activity consists of an active sail training school and dinghy racing. Rowing takes

Boat Club or Marina	Vessels / Activities	General summary information
		place on the sea in coastal rowing boats and on Cardiff Bay in fine boats. Training occurs all year round, event/races take place outside winter.
<b>Portishead Cruising Club</b>	Yachts, motor cruisers and dinghies.	Located in Pill on the River Avon. Facilities include a clubhouse, slipway, drying grid and moorings located in Crockerne Pill and Chapel Pill. Club is a RYA approved training centre and hosts a range of sailing and social events throughout the year, with a full racing calendar. Visitor buoys available in the River Avon or dry mooring against jetty.
<b>Portishead Quays Marina</b>	Yachts, motor cruisers, dinghies and fishing boats.	Marina located within Portishead Dock. Around 300 pontoon berths and a full range of amenities and services at marina, including chandlery, boat hoist and storage, engine repairs, chandlery, restaurants, shops etc. Access to Estuary through lock gates. Marina open 24 hours, 7 days a week, all year round with peak activity in the summer months.
<b>Portishead Yacht &amp; Sailing Club</b>	Dinghies, sea kayaks.	Located at Sugar Loaf Beach, Portishead. A club and RYA training centre, with facilities including a clubhouse, compounds for the storage of boats ashore and access to the Estuary via a slipway. Dinghy cruising and racing take place throughout the year, mostly at weekends with peak activity in the Summer months. Club racing makes up the largest part of the sailing programme but open events are also run throughout the year. Small number of sea kayaks active on occasion from slipway. Visiting dinghies may be accommodated in dinghy compound for short periods.
<b>Rhymney River Motor Boat, Sail &amp; Angling Club</b>	Yachts, motor cruisers, dinghies and fishing boats.	Club located in the Rhymney River, to the north of Cardiff Bay. Facilities include a small clubhouse, slipway, wooden jetty/landing stage and walkway, and moorings. Members boats are generally under 25 feet and of shallow draught. The club has launch, retrieve and maintenance facilities for small boats.
<b>Sharpness Marina</b>	Yachts, motor cruisers, inland waterway boats (narrow boats) and dinghies.	Marina located within Sharpness Docks at the end of the Gloucester and Sharpness Canal. Facilities include around 180 pontoon berths and moorings for cruisers and narrow boats, chandlery, and on site crane. Access to the Estuary is via the tidal locks. Activity at the marina is seasonal, mostly taking place between April and September.
<b>Shirehampton Sailing Club</b>	Dinghies.	Small club in Shirehampton in the River Avon. Facilities include a clubhouse, boat storage parks and slipway. Boats are kept ashore and access the Estuary via the slipway. Key activities are dinghy cruising and racing in the River Avon in relatively small numbers with peak activity in March to October.
<b>Thornbury Sailing Club</b>	Yachts, motor cruisers and dinghies.	Located in Oldbury Pill in Oldbury on Severn. Club and RYA training centre with facilities including a clubhouse, moorings for larger dinghies and cruisers, slipway, floating jetty for cruiser access, dinghy compound and hard standing. Club active weekends all year round, with a full programme of races and events and peak activity spring, summer and autumn.
<b>Uphill Boat Centre</b>	Motor cruisers, yachts, power boats, jet-skis and dinghies.	A boat centre located in Uphill Pill off the River Axe, near Weston-super-Mare. Facilities include pontoon berths and moorings, boat storage facilities ashore, slipways, boat hoist, service workshops, chandlery, café, and a marine lake, with further pontoons, which is available for water sports.
<b>Weston Bay Water Sports Club</b>	Power boats.	Club located in Knightstone Harbour in Weston Bay and focuses on water-ski racing. Facilities include a clubhouse, slipway and boat launch vehicle. Water-skiing takes place in Weston Bay over the high tide (around 5 hour period), with water-ski racing occurring on a buoyed set course in the Bay. The club is a Sports Boat Driver Award test centre. Activity is seasonal (spring to autumn) and weather dependant with a full series of races and events. Use of the slipway is managed through permit system.
<b>Weston Bay Yacht Club</b>	Yachts, motor cruisers, dinghies and fishing boats.	Club located in the mouth of the River Axe, to the south of Weston Bay. Facilities include a clubhouse, river moorings for 100 yachts, a pontoon for launching, a slipway and dinghy/tender storage ashore. Pontoon and slipway are reserved for members only and provide easy access to the river's moorings via tenders. There is a further fisherman's slipway nearby. Club activities include cruising, dingy sailing and fishing, with a full racing programme for cruisers and dinghies generally taking place between April and the end of September, with little activity in the winter months. The club also caters for those undertaking all sorts of beach sports in Weston Bay, including windsurfing, canoeing, land sailing, jet-skiing and kite surfing.

### 5.3 Moorings

All recreational boats need to be safely attached or moored to something either on the shore (e.g. a fixed berth) or on the seabed (e.g. a mooring buoy or floating pontoon), unless they are kept ashore. The majority of boats in the Severn Estuary are moored in fixed pontoon berths within the enclosed waters of marinas, docks and harbours located outside the EMS. Smaller numbers of boats are moored on mooring buoys or pontoons within the EMS in creeks/pills, rivers and other sheltered areas of the Estuary.

Pontoons are floating platforms to which boats attach alongside; they are normally secured to piles in the Severn Estuary. A mooring is the fixed structure or tackle to which a boat is attached and usually comprises a heavy ground tackle (or sinker) from which a rope, cable or chain connects to a floating buoy. There are a variety of different mooring arrangements. The main type found in the Severn Estuary are fore and aft moorings (Figure 8), where the vessel is secured between a pair of mooring buoys fixing its position more precisely in alignment with the main direction of tidal flows. A line or row of fore and aft moorings are referred to as trot moorings. Swinging moorings are rarely found in the Estuary. These are single point moorings around which the vessel swings in a circle with the wind and tide. Also relatively rare in the Estuary are “mud berths” where boats rest directly on the upper intertidal held in place by stakes and ropes. These can be found, for example, in Uphill where small slots or channels have been dug in the bank within which the boats sit.

**Figure 8 Fore and aft mooring at Weston Bay Yacht Club © Lucy Taylor.**



The location, type and indicative numbers of moorings in the vicinity of the Severn Estuary EMS are summarised in Table 8 and shown in Figure 10. A total of around 350 berths/moorings are located within the Severn Estuary EMS and approximately 2,440 within the extended 2km study area. The largest numbers of moorings are located within Cardiff Bay which holds over 1,500 berths (around two thirds of the total moorings/berths identified in the study area). Portishead Quays Marina holds the second highest concentration of moorings in the Estuary with berths for around 300 boats and new pontoon berths planned in 2015 for up to 50 boats.

Locations where moorings and pontoons are within the EMS include St. Pierre Pill, the River Ebbw at Newport, Oldbury Pill, Knightstone Harbour in Weston Bay, River Axe and River Brue (Figure 10 below). The largest numbers of moorings and berths within the EMS are found in the River Axe, belonging to Uphill Boat Centre and Weston Bay Yacht Club, and Burnham on Sea Motor Boat & Sailing Club's moorings in the River Brue. The majority of moorings in the EMS are leased to and managed by boat clubs, although there are a number of locations with private moorings in the Estuary, where ownership is unknown, including the numerous pontoons in the River Ebbw at Newport and the moorings in the River Banwell near St. Thomas' Head.

The highly dynamic tidal regime in the Severn Estuary limits access to, and the use of, moorings located in creeks and rivers, and hence in general the demand for moorings within the EMS is relatively low. In general, over the past decade or so numbers of moorings used in the EMS has declined in favour of berths in Cardiff Bay and the Estuary's other marinas. Not all of the moorings within the EMS and



study area are currently in use. For example, of Weston Bay Yacht Club's 100 moorings in the River Axe, only around 70 are occupied. Many boat users will overwinter their boats ashore or in marina berths, returning to their Estuary moorings in the spring or early summer. Use of the moorings at St. Pierre Pill by the Chepstow & District Yacht Club is highly restricted by landside access arrangements. Vehicle access is only permitted on weekends in the summer months. Monthly use is typically just 1 or 2 boats on occasion.

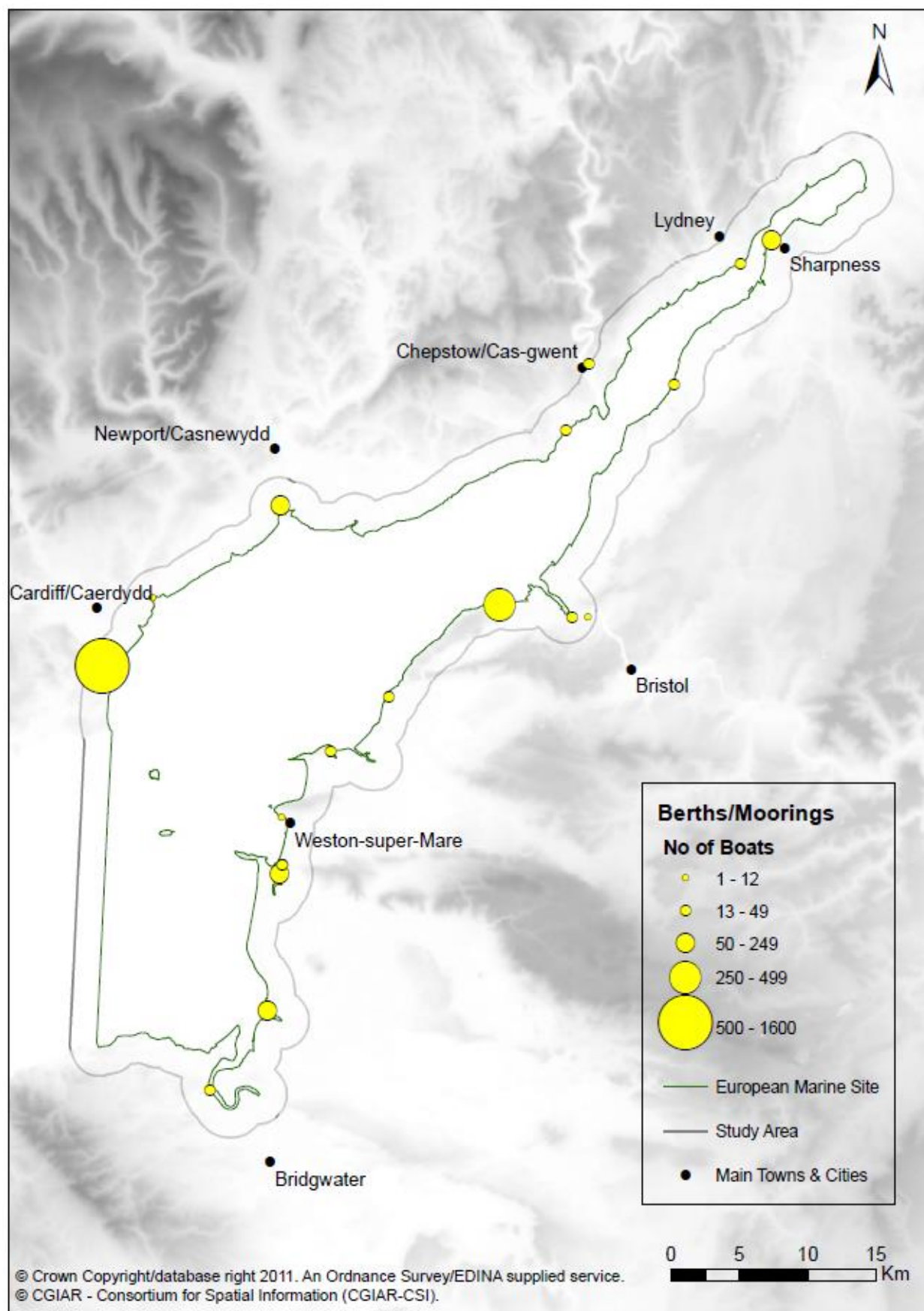
**Figure 9 Moorings in Cardiff Bay © Google Earth 2015.**



**Table 8 Indicative number and type of moorings located around the Severn Estuary EMS.**

Location	Area	Marina, club or affiliation	Type of moorings	Drying	Approx. number of moorings	% Severn Estuary moorings	In EMS?
<b>Penarth &amp; Cardiff Bay</b>	Cardiff Bay	Cardiff Bay Yacht Club	Pontoon berths, some swinging moorings	No	500	20.4	No
		Cardiff Marina	Pontoon berths	No	350	14.3	No
		Cardiff Yacht Club	Pontoon berths, trot (fore & aft) moorings	No	300	12.3	No
		Penarth Quays Marina	Pontoon berths	No	320	13.1	No
		General moorings in Graving Docks and Bay (Cardiff Harbour Authority)	Pontoon berths	No	40	1.6	No
	River Taff	General moorings (Cardiff Harbour Authority)	Fore & aft moorings	No	22	0.9	No
<b>Rhymney</b>	River Rhymney	Rhymney River Motor Boat, Sail and Angling Club	Fore & aft moorings	Yes	9	0.4	No
<b>Newport</b>	River Usk	Newport Uskmouth Sailing Club (NUSC)	Pontoon berths, trot or fore & aft moorings	Yes	48	2.0	No
		Private moorings	Pontoon berths	No	42	1.7	No
	River Ebbw	Private moorings	Pontoon berths	Yes	17	0.7	<b>Yes</b>
<b>Chepstow</b>	St. Pierre Pill	Chepstow and District Yacht Club	Fore & aft moorings, pontoon berths	Yes	15	0.6	<b>Yes</b>
	River Wye	Chepstow Boat Club	Fore & aft moorings, pontoon berths	Yes & No	19	0.8	No
<b>Beachley &amp; Oldbury</b>	Oldbury Pill	Thornbury Sailing Club	Fore & aft moorings	Yes	40	1.6	<b>Yes</b>
<b>Lydney</b>	Lydney Dock	Environment Agency are the Harbour Authority	Fore & aft moorings quay wall	No	32	1.3	No
<b>Sharpness</b>	Sharpness Dock	Sharpness Marina	Quay wall, fore & aft moorings, pontoon berths	No	80	3.3	No
<b>River Avon &amp; Portishead</b>	River Avon	Portishead Cruising Club (Chapel & Crockerne Pills)	Fore & aft moorings	Yes	30	1.2	No
	Portishead	Portishead Quays Marina	Pontoon berths	No	300	12.3	No
		Portishead Cruising Club (Moorings in Portishead Pool)	Fore & aft moorings	Yes	6	0.2	<b>Yes</b>
<b>Clevedon &amp; Woodspring Bay</b>	Clevedon Pill	Clevedon Sailing Club	Fore & aft moorings	Yes	17	0.7	<b>Yes</b>
	River Banwell	Private moorings	Fore & aft moorings	Yes	13	0.5	<b>Yes</b>
<b>Weston Bay</b>	Knightstone Harbour	Weston Bay Water Sports Club	Fore & aft moorings, swinging moorings	Yes	9	0.4	<b>Yes</b>
	River Axe	Weston Bay Yacht Club	Fore & aft moorings	Yes	100	4.1	<b>Yes</b>
	Uphill	Uphill Boat Centre	Pontoon berths, fore & aft moorings	Yes & No	28	1.1	<b>Yes</b>
		General Moorings (Uphill Boatmen)	Mud berths	Yes	25	1.0	<b>Yes</b>
<b>Bridgwater Bay</b>	River Brue	Burnham on Sea Motor Boat & Sailing Club	Pontoon berths, fore & aft moorings	Yes	69	2.8	<b>Yes</b>
	River Parrett	Combwich Motor Boat & Sailing Club	Fore & aft moorings, mud berths	Yes	17	0.7	No
<b>Approx. total moorings / berths</b>					<b>2,510</b>	<b>100</b>	

Figure 10 Mooring locations and indicative numbers within the Severn Estuary study area.



## 5.4 Anchoring

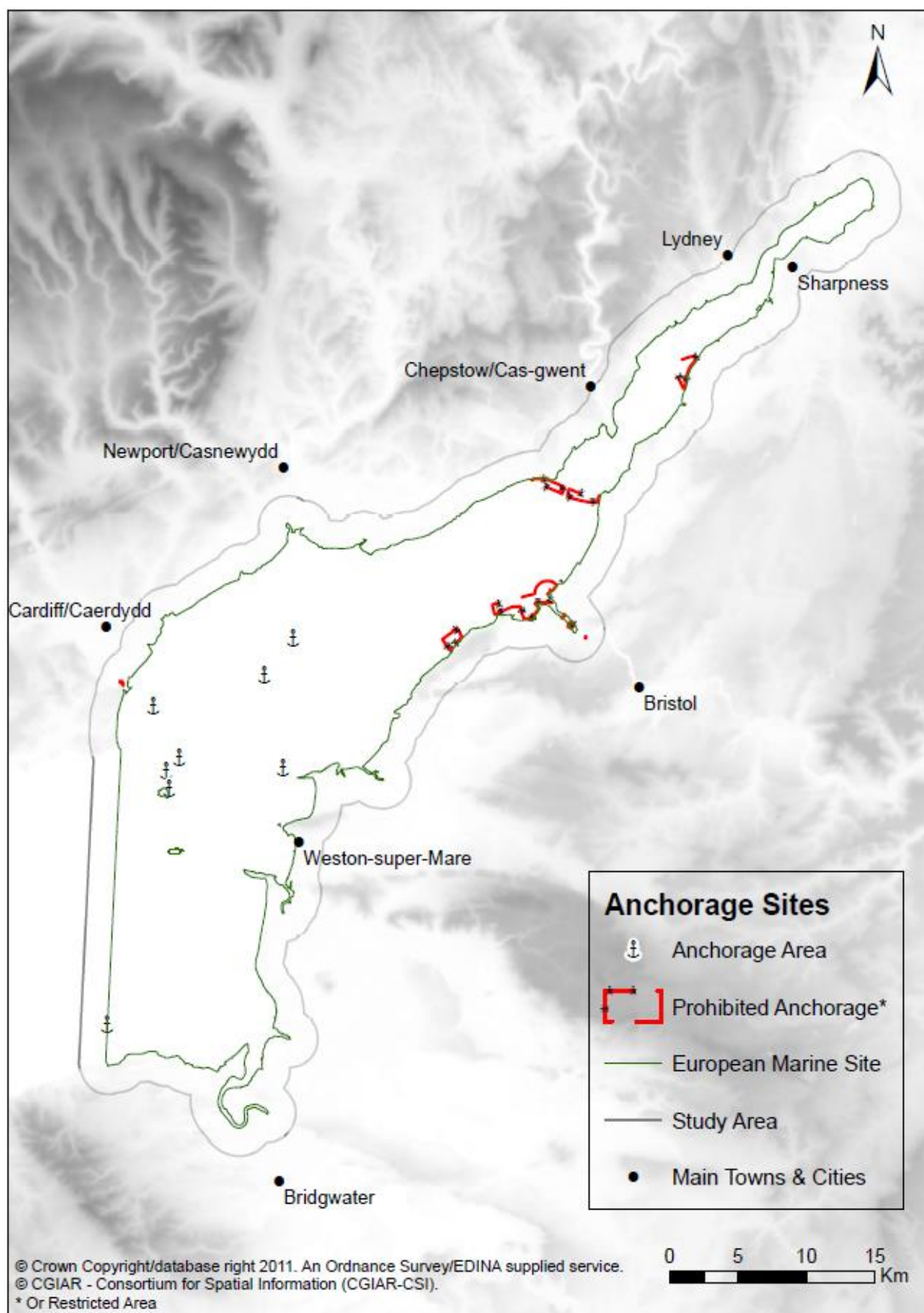
Anchoring occurs in the Estuary in order to secure boats in a safe position usually whilst awaiting entrance to a marina or harbour, resting, sheltering or when engaged in a recreational activity. Anchoring takes place in many locations throughout the Estuary, depending on suitable water depths and conditions. There are reported anchorage areas marked on Admiralty Charts, which can be used by commercial and recreational vessels. In the Severn Estuary these are located in the outer Estuary as shown in Figure 12. Anchoring is not restricted to these areas and boat owners are free to seek out their own sites to anchor within the Estuary.

Areas where anchoring is prohibited for reasons of ensuring safety of navigation are also identified on Admiralty Charts (see Figure 11). These include the approaches to Avonmouth and Royal Portbury Docks and in the vicinity of underground cables and other obstructions on the seabed. Navigation is prohibited in the Oldbury Tidal Reservoir and restricted in the vicinity of the Second Severn Crossing Bridge, unless authorised by Gloucester Harbour Trustees. Anchoring is not permitted within the outer harbour in Cardiff Bay without permission of the Harbour Authority. Occasionally, if anchored in the approaches to commercial ports, recreational boats may be advised by Harbour Authorities to weigh anchor and to move to a more appropriate location outside shipping lanes. However, in the case of an emergency (e.g. engine failure) anchoring may occur anywhere in the Estuary.

Recreational boats generally have light or medium weight anchors, depending on the vessel size, which are attached to a length of chain cable. Plough anchors are commonly used in the soft subtidal sediments of the Severn Estuary. Harbour Authorities report that anchoring occurs infrequently and at a very low/low intensity in the Severn Estuary EMS.



**Figure 11** Reported anchorage sites within the Severn Estuary study area as shown on Admiralty Charts.



## 5.5 Launching and access points around the Estuary

Boats generally access the waters of the Severn Estuary using around 35 launching and access points, including 4 sets of locks and 31 slipways (Table 8; Figure 14). In total, around 45 launching and access points for recreational boats have been identified in the study area, with 8 slipways and one set of locks located within Cardiff Bay and one slipway in Portishead Quays Marina. In addition, there are areas around the Estuary which provide access for small boats via beaches, such as at Weston-super-Mare and Burnham-on-Sea.

Boats navigate to and from the Estuary through locks located in the Cardiff Bay Barrage, Sharpness Docks, Lydney Docks and Portishead Quays Marina. Cardiff Barrage has three sets of locks which are each 40 metres long; two are 8 metres wide and one is 10.5 metres wide. During busy periods all three locks operate and can handle up to 400 boat movements in a day.

**Figure 12** Locks at Cardiff Bay © Gwilym Owen and Portishead Quays Marina © Portishead Quays Marina.



The majority of the slipways around the Estuary are owned, leased or managed by recreational boat clubs. Use of these slipways is often restricted to club members only or requires prior permission from the club for use by non-members. There are also a number of public slipways around the Estuary, including Knightstone Harbour in the north of Weston Bay, Burnham-on-Sea, Penarth and Clevedon. The use of the popular public slipways at Knightstone Harbour, Cardiff Bay, Penarth and Burnham are managed under permit systems. Some privately owned slipways are also used by the public, such as the old ferry crossing slipway under the Severn Bridge at Beachley which is owned by Forest of Dean District Council and the privately owned slipway in Combwich.

The window for access for boats into the Estuary via locks or slipways varies from location to location but is generally a few hours before to a few hours after high tide. A few locations around the Estuary provide unrestricted access at all states of the tide, including the locks in the Cardiff Bay Barrage and slipways at Penarth. Access is also sometimes limited from the landward side of slipways via locked gates, such as the locked flood defence gates at the Chepstow Town slipway, which can be opened by making arrangements with Chepstow Boat Club's mooring officer. Keys for the gates at the slipways along the Penarth Seafront are available from the Vale of Glamorgan Council and are held by the Penarth Water Ski Club and Penarth Yacht Club. All of the slipways in the vicinity of Combwich in the River Parrett are accessed via locked gates.



**Figure 13 Dinghies using the slipway at Clevedon Bay © Clevedon Sailing Club.**

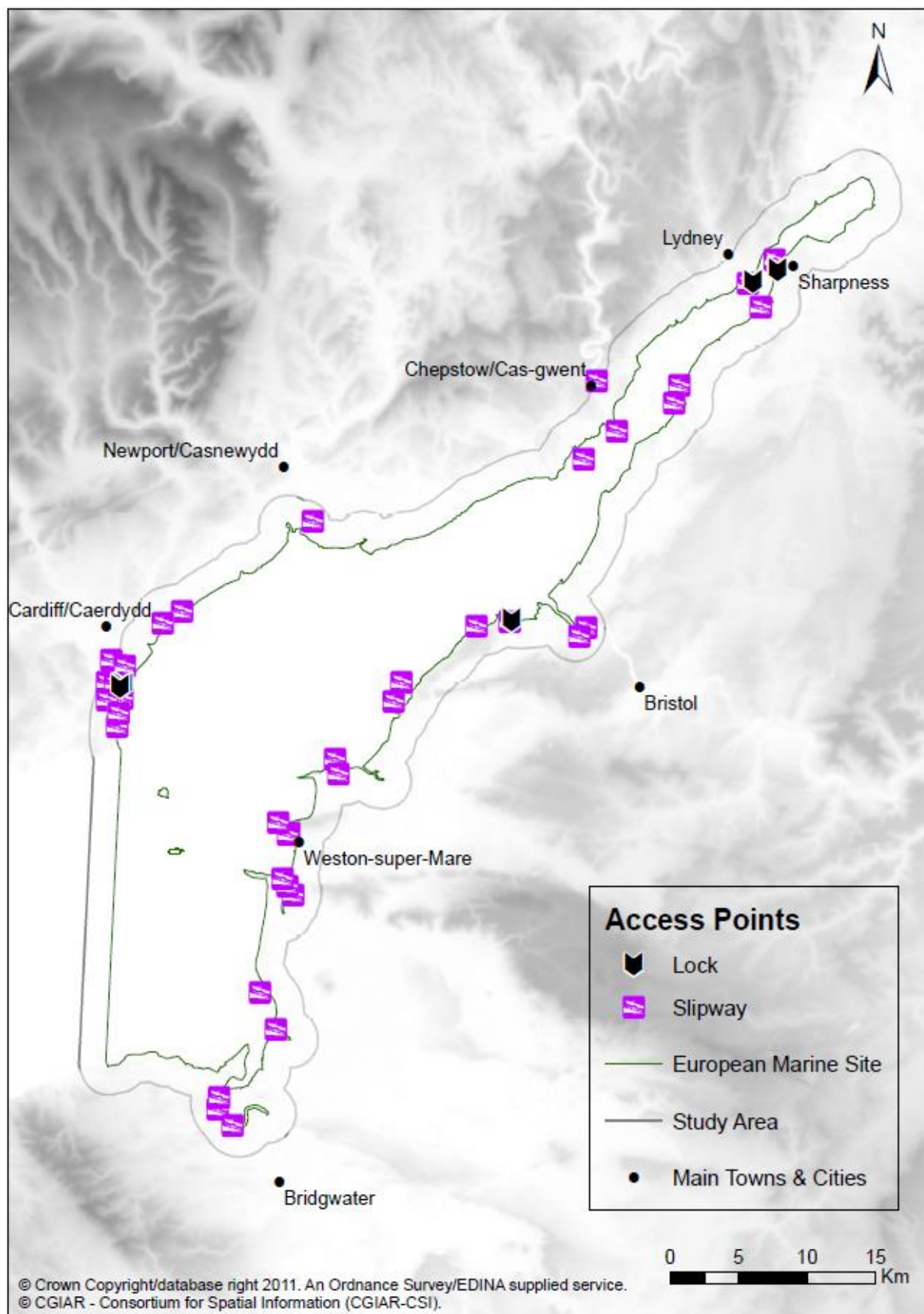


Figure 14 shows the location of access points around the Severn Estuary, which are listed in Table 9 together with information on the operator of the slipway and the approximate tidal windows of access.

**Table 9 Key access points for recreational boats around the Severn Estuary study area.**

Area	Location	Access Point to Estuary / EMS	Operator, marina/club or affiliation	Approx. window of access	In EMS?
<b>Penarth &amp; Cardiff Bay</b>	Penarth	3 slipways	Vale of Glamorgan Council Slipways used by Penarth Yacht Club, Penarth Water Ski Club & RNLI	ALL STATES	Yes
	Cardiff Bay Barrage	Locks in Barrage	Cardiff Harbour Authority	ALL STATES	No
	Cardiff Bay	8 slipways and 1 lock within Cardiff Bay	Cardiff Harbour Authority (2), Cardiff Bay Yacht Club (2), Cardiff Yacht Club (3), Cardiff Marina (1), Penarth Quays Marina (lock)	ALL STATES	No
<b>Rhymney</b>	River Rhymney	2 slipways	Rhymney River Motor Boat, Sail & Angling Club	HW+/-2hrs	No
<b>Newport</b>	River Usk	Slipway	Newport Uskmouth Sailing Club (NUSC)	HW+/-3hrs	No
<b>Chepstow</b>	St. Pierre Pill	Slipway	Chepstow and District Yacht Club	HW+/-3hrs	Yes
	Chepstow River Wye	Slipway	Chepstow Town Slipway Monmouthshire County Council / Chepstow Boat Club	HW+/-3hrs	No
<b>Beachley &amp; Oldbury</b>	Beachley	Slipway	Private slipway owned by Forest of Dean District Council and used by the public (ex. ferry crossing)	ALL STATES	Yes
	Oldbury Pill	2 Slipways (slipway & jetty)	Thornbury Sailing Club	HW+/-2.5hrs	Yes
<b>Lydney</b>	Lydney Dock	Slipway	Lydney Yacht Club	HW+/-3hrs	Yes
		Lock	Environment Agency	HW-1.5hrs to HW	Yes
<b>Sharpness</b>	Sharpness Dock	Lock & Slipway	Canal and Rivers Trust	HW-3 to +1hrs	No
<b>River Avon &amp; Portishead</b>	Shirehampton	Slipway	Shirehampton Sailing Club	HW-2 to +1hrs	No
	Pill	Slipway	Portishead Cruising Club	HW+/-3.5hrs	No
	Portishead Docks	Locks	Portishead Quays Marina	HW+/-3.5hrs	No
		Slipway	Portishead Quays Marina	ALL STATES	No
	Sugar Loaf Beach	Slipway	Portishead Yacht & Sailing Club	HW+/-2hrs	Yes
<b>Clevedon &amp; Woodspring Bay</b>	Clevedon Pill	Slipway	Clevedon Sailing Club	HW+/-3hrs	Yes
	Clevedon seafront	Slipway	Public slipway North Somerset Council used by Clevedon Sailing Club	HW+/-2.5hrs	Yes
	River Banwell	Slipway	Private slipway	Unknown	Yes
	St. Thomas' Head	Slipway	Private slipway (ex MOD site not known to be used for recreation)	Unknown	Yes
<b>Weston Bay</b>	Knightstone Harbour	2 slipways	Public slipway North Somerset Council used by Weston Bay Water Sports Club & lifeboat slipway on Birnbeck Island	HW+/-2hrs	Yes
	River Axe	Slipway	Weston Bay Yacht Club	HW+/-2hrs	Yes
	Uphill	2 slipways	Uphill Boat Centre	HW+/-3hrs	Yes
<b>Bridgwater Bay</b>	Burnham-on-Sea	Slipway	Public Slipway/Jetty Sedgemoor District Council	HW+/-3hrs	Yes
	River Brue	Slipway	Burnham on Sea Motor Boat & Sailing Club	HW+/-2hrs	Yes
	Combwich River Parrett	3 slipways	Combwich Motor Boat & Sailing Club slipway & private slipways	HW+/-1hr	No

Figure 14 Key boating access points (slipways and locks) into the Severn Estuary study area.



## 5.6 Levels of boating in the Severn Estuary

### Level of boating activity on key cruising routes

Recreational boating activities take place throughout the waters of the Estuary, with boat users having the freedom to choose their own routes, subject to the constraints of the tide. Popular indicative boating routes in the Severn Estuary are shown in Figure 16. These routes link together the main harbours, marinas, boat clubs, mooring areas and slipways within the Estuary, joining with popular routes in the Bristol Channel and further afield.

This Figure draws on information compiled by the RYA in their UK Coastal Atlas of Recreational Boating (2008), which identifies popular cruising routes and general sailing areas around the Severn Estuary. All of the waters of the EMS are identified as general sailing areas. The RYA considered the intensity of recreational use along these indicative boating routes, identifying the level of activity as heavy, medium and light as follows:

- Heavy recreational use – Very popular routes with around 6 or more boats at all times on summer days (e.g. routes to and from Cardiff Bay);
- Medium recreational use – Popular routes with some boats present most of the time on summer days (e.g. numerous routes in the Estuary criss-crossing between boat clubs at Burnham-on-Sea, the Axe, Newport and the clubs/harbours in the Bristol Channel); and
- Light recreational use – Common routes which are less used than medium routes, but can be locally important (e.g. the route between Cardiff Bay and Rhymney Sailing Club).

ASERA suggests that the RYA add the proposed routes and change the classifications of routes on the UK Coastal Atlas as per Figure 16, based on the information collected for this report:

- The cruising route between Cardiff Bay and Portishead Quays Marina is one of the most popular routes in the Estuary and has been changed to heavy use along its entire length. In summer months (June-August) an average of around 30 boats a day pass through the Cardiff Bay Barrage to locations throughout the Estuary, Bristol Channel and further afield.
- An additional recreational route has been identified for boats on their way to or from Bristol City Docks and other locations along the River Avon. These boats are primarily en-route to or from Portishead Quays Marina, Cardiff Bay, Sharpness and other areas around the Estuary and Bristol Channel, such as Watchet or Swansea Bay. This is a popular recreational route, particularly at weekends in the summer months and is considered to be of medium use.
- The route in the upper Estuary to and from Sharpness has been changed from heavy use to medium use. Discussion with Gloucester Harbour Trustees indicated that whilst there may be six or more boats at a time on some occasions during weekends in spring/summer months, typically there are fewer recreational vessels present here with average numbers of around 2 to 5 boats cruising in the upper Estuary route over the course of a day at weekends in the summer season. In the summer months of June to August, there is on average just one boat a day passing into the Estuary from Sharpness Docks.
- The route passing through The Bristol Port Company's Harbour area along the English coast between Weston and Portishead has also been changed from heavy to medium use based on observations of the Harbour Authority. It is confirmed that this is a popular route, particularly a few hours either side of the high water period at weekends between spring and autumn, but there are generally less than 6 boats present at all times on summer days.



- Locally important cruising routes have been added to the Figure including lightly used routes to boat clubs and mooring areas located at Combswich, River Banwell, Clevedon Pill, Oldbury Pill, Lydney Docks, St. Pierre Pill, and Chepstow in the River Wye).

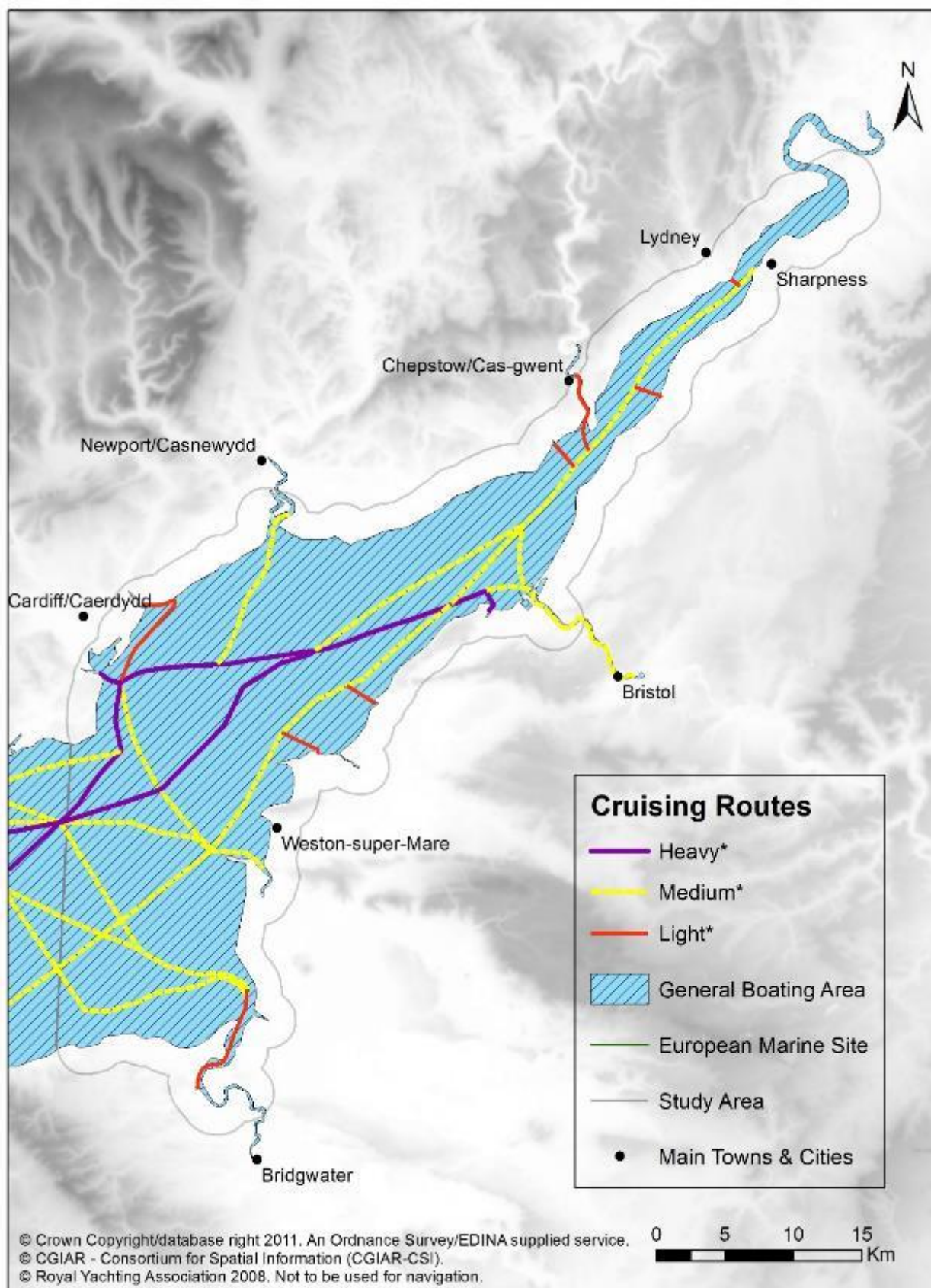
Figure 16 provides a picture of the general intensity of boating on indicative cruising or sailing routes used by yachts and motor cruisers from boat clubs around the Estuary in the summer months. In summary, during the summer there is generally low to moderate use in the upper Estuary, high use in the middle of the Estuary and moderate to high in outer Estuary. Discussion with Harbour Authorities and data collected for this report indicates that there are probably few, if any, locations within the Estuary where there are six or more boats at all times on summer days, given that most activity is focused at the weekends and subject to tidal restrictions, with the exception of Cardiff Bay. For example, although there are unlikely to be six boats at all times, there are on average more than six boats a day on the 45km long route between Cardiff and Portishead. However, it has been queried whether this would constitute heavy use in the large expanse of Estuary waters. The RYA Coastal Atlas is in the process of being reviewed and updated in consultation with RYA members and other key stakeholders. Information collected for this report has been made available to the RYA.

**Figure 15 RNLI racing on one of the busiest sailing days, near Penarth © Yachts & Yachting.**





**Figure 16** Popular recreational cruising routes within the Severn Estuary adapted from the RYA UK Coastal Atlas of Recreational Boating (2008).



\* Heavy - 6 or more vessels at all times during summer daylight hours

\* Medium - Popular routes on which some recreational craft will be seen at most times during summer daylight hours

\* Light - Routes known to be in common use but which do not qualify for medium or heavy classification.

As defined by RYA (2008).

### Level and seasonality of boating activity at key locations

The majority of boats around the Estuary are moored within marinas and docks where good records are kept of the number of boat movements in and out of the lock gates. Data on boat numbers at a number of key areas around the Estuary was provided for this report by Cardiff Harbour Authority, Gloucester Harbour Trustees/Canal and River Trust, Bristol City Docks and Portishead Quays Marina. Boating activity recorded at these locations in 2012 are shown in Table 10 and Figure 17, in addition to data provided for Lydney Dock in 2013. Typically each boat trip will consist of two boat movements (inbound and outbound). In order to give an indication of the total numbers of boats entering the Estuary from key locations, the numbers presented are records of one way boat movements only. These numbers represent total boats recorded through the locks, including multiple trips by individual boats (i.e. the same boats entering the Estuary time and time again over the course of the year).

The highest numbers of boats enter the Estuary from Cardiff Bay, where over 9,000 boats passed through the barrage in 2012 (i.e. over 18,000 boat movements in and out of the Bay); with peak numbers of almost 200 boats a day and mean numbers of around 25 boats a day. Boats pass through the barrage from the numerous marinas, boat clubs and mooring areas within the Bay, via three sets of locks.

Lower numbers of boats enter the Estuary from Portishead Quays Marina (4,221 boats in 2012), Bristol City Docks (1,255 boats) Sharpness (212 boats) and Lydney Docks (92 boats). The number of boats passing in to the upper Estuary from Sharpness Docks over a year is similar to the number passing through the Cardiff Bay Barrage on a single very busy day. The greatest number of boats recorded in a day at Sharpness Docks was 16, with typically much lower average (over 12 months) numbers per day of less than 1 boat.

**Table 10 Numbers of boats entering the Severn Estuary from key locations in 2012.**

Location	Total boat numbers per year	Peak boat numbers per month	Peak boat numbers per day	Mean boat numbers per day
<b>Cardiff Bay**</b>	9,136*	1,234 (Apr) *	195 (Nov) *	25*
<b>Portishead Quays Marina</b>	4,221*	559 (Jul) *	62 (Sep) *	11.6*
<b>Bristol City Docks</b>	1,255	247 (Aug)	47 (Jul)	3.4
<b>Sharpness Docks</b>	212	42 (Apr)	16 (Apr)	0.6
<b>Lydney Docks in 2013</b>	92	22 (June)	June	0.25

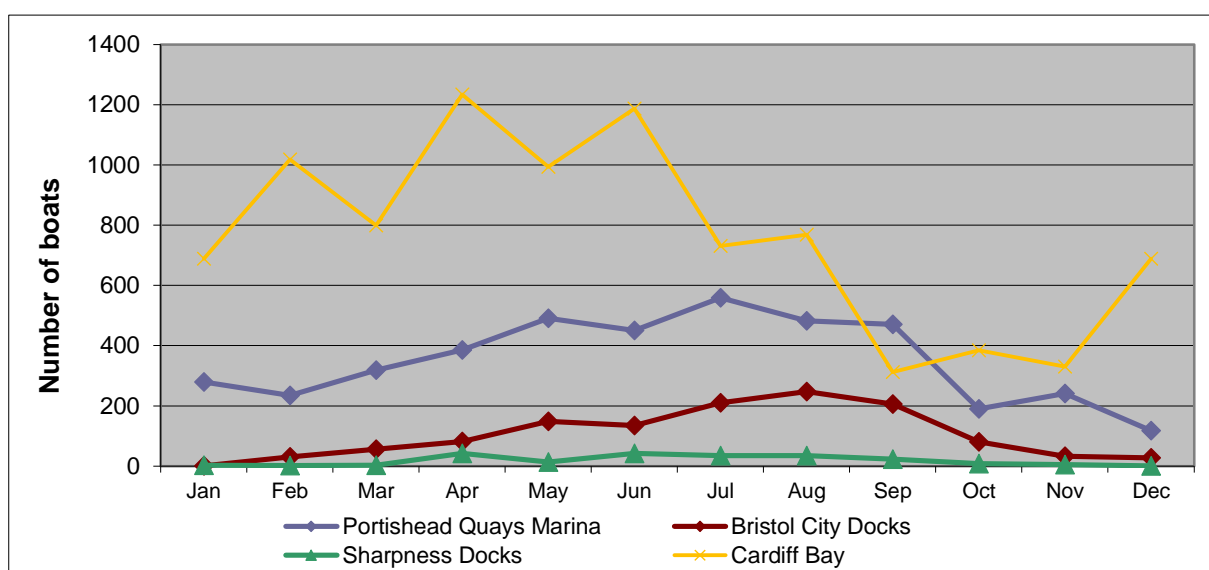
Notes: Data sources - Bristol City Docks, Canal & River Trust, Gloucester Harbour Trustees, Lydney Harbour Master, Portishead Quays Marina and Cardiff Harbour Authority.

Numbers of boats are records of one way boat movements (e.g. inbound or outbound movements only or total boat movements in and out divided by two)

\* Cardiff Bay and Portishead Quays Marina numbers include fishing boats

\*\* Cardiff Bay boat numbers also include commercial vessels which account for a minimal proportion of the overall boat movements (estimated at less than 5% of the total)

**Figure 17 Seasonal variation in recreational boat activity at key locations in the Severn Estuary during 2012.**



NB: Cardiff Bay and Portishead Quays Marina numbers include fishing boats (commercial and recreational). Overall patterns in the seasonality of levels of boating activity recorded in 2012 are typical of those recorded and observed by harbour authorities in 2011 and in more recent years.

The data provided by Harbour Authorities and marinas shows that the level of recreational boating activity in the Estuary is seasonal, with highest levels generally recorded during the spring, summer and autumn months, particularly during weekends and holiday periods (Table 10 and Figure 17). Overall, this seasonal pattern in the estuary is similar year after year, as indicated by the five years of data collected in Cardiff Harbour (Figure 18). Harbour Authorities indicate that levels of boating in the Estuary are unlikely to have changed markedly in more recent years.

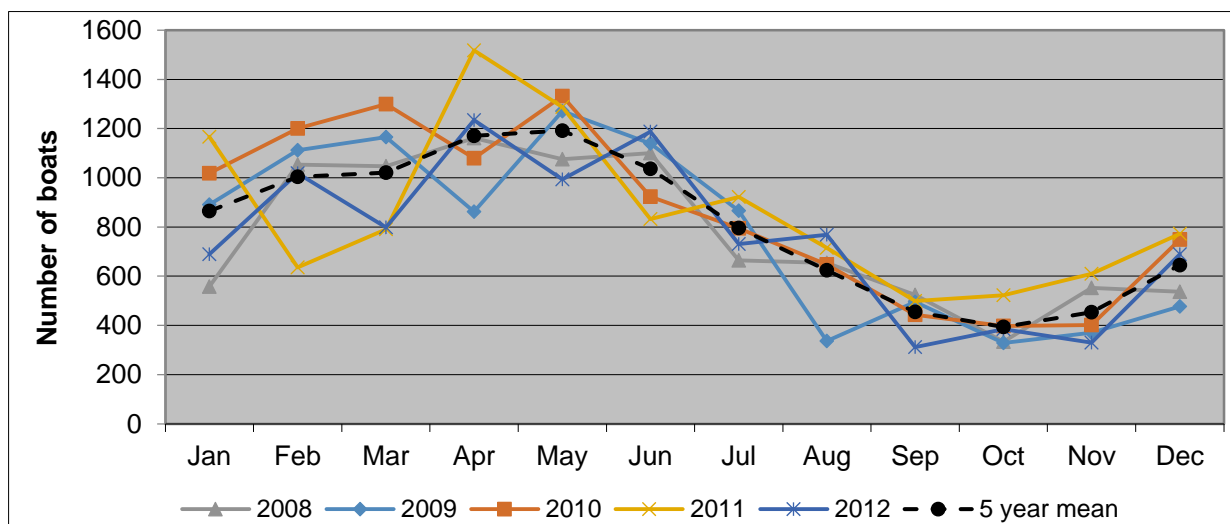
In 2012 peak months for recreational boating at different locations around the Estuary were April, July and August. Numbers are influenced by the weather, daylight hours, holidays and events organised by boat clubs and marinas. For example, the highest number of boats (62) entering the Estuary in a single day from Portishead Quays Marina in 2012 occurred in September when the Holms Race was held. Peak activity for boating in Bristol City Docks and the River Avon is during the Bristol Harbour Festival, which is usually held over a weekend in July. Higher than typical boat numbers visit Sharpness in April due to the annual visit from the Portishead Cruising Club. At Lydney Docks, occasional weekend events account for a large proportion of the boating activity, such as Octoberfest in October and Portishead Cruising Club rallies in June.

During the winter, boating in the Estuary generally occurs at much lower levels, primarily over the weekends. For example, in the months of January and December 2012 the numbers of boats entering the Estuary from Portishead Quays Marina is three times less than boats in the peak months of July and August, with mean numbers of around 5 boats a day in winter. Boats entering the River Avon and Estuary from Bristol City Docks in December and January are less than 10% of the peak summer months, with average numbers of just 1 boat a day. In the winter of 2011/12 (Dec-Feb), only 9 recreational boats entered the Estuary from Sharpness over a total of 6 days (average numbers of 0.1 boat/day). Only 5 boats entered the Estuary from Lydney Docks in January, February and December 2013.

Cardiff Bay is an exception to this general seasonal pattern, with relatively high numbers of boats entering the Estuary in the winter months. In the winter of 2011/12 (Dec-Feb), around 2,350 recreational boats passed through the Cardiff Bay Barrage (adjusting total boat numbers recorded to allow for approximately 5% commercial vessel movements). This equates to an average of around 26

boats per day. Elevated boat numbers during the winter here are largely due to fishing boats (private and charter). The busiest day in 2012 was Sunday 11<sup>th</sup> November when peak boat numbers passing through the Cardiff Bay Barrage of 195 boats was recorded. Weekends in October and November can be some of the busiest periods in the vicinity of Cardiff Bay, when yacht racing events (Shanghai Cup and Frostbite Series) coincide with the fishing season and competitions (Cardiff Harbour Authority). The lowest numbers of boats are recorded in the autumn months. The seasonal pattern of boating activity recorded by Cardiff Harbour Authority passing through the barrage is shown in Figure 18, which presents boat movements per month between 2008 and 2012 and a 5-year mean of the total monthly boat numbers.

**Figure 18 Seasonal variation in boat activity at Cardiff Bay Barrage 2008 - 2012 (Cardiff Harbour Authority).**



#### Levels and seasonality of boating activities at boat clubs

In comparison to Cardiff Bay and the main docks and marinas around the Estuary, lower levels of boating occur around boat clubs and their moorings and slipways. In general there is less formal recording of the numbers of boats active in these locations, although some Harbour Authorities and boat clubs may keep their own records and make informal observations.

For example, Gloucester Harbour Trustees advise that, in addition to the movements of boats to and from Sharpness Docks discussed above, there is on average around 20 to 30 small sailing boats active within their harbour area during weekend race days in the summer months. These boats are based at Oldbury Pill, St. Pierre Pill and Lydney. In addition, there is a limited amount of small motor boat activity (including personal water craft) in the vicinity of Chepstow and Beachley. In general, the nature of the Estuary to the north of the Severn Bridges generally restricts access to the water to a relatively short period around the time of high water and there is no activity at low water when the intertidal mudflats and sandflats are exposed. South Gloucestershire Council concur that boating activity in this area at the Thornbury Sailing Club is of moderate to low intensity.

Within the Bristol Port Company's Harbour Area, sailing boats, motor cruisers and dinghies from clubs in the River Avon and along the Somerset coast contribute to the numbers of boats sailing to and from Portishead Quays Marina and Bristol City Docks (described above). Relatively small numbers of dinghies sail and race locally in the mouth of the River Avon, off the Portishead seafront and in Clevedon Bay. On a busy weekend in the summer, peak numbers of dinghies would be around 5 at Shirehampton Sailing Club and around 20 dinghies each at Portishead Yacht & Sailing Club and Clevedon Sailing Club. In addition, between 10 to 15 Portishead Cruising Club boats based at Crockerne

Pill and Chapel Pill in the Avon may be cruising or racing in the harbour area. Boating activity in Bristol's harbour area is also limited to a few hours either side of high water.

The Vale of Glamorgan Pier Master observes up to 25 dinghies and small yachts sailing locally in the vicinity of the Penarth Yacht Club in the summer months. These dinghies launch from slipways to the south of Penarth Pier and join the numerous other yachts, motor boats and fishing boats passing to or from Cardiff Bay along the Penarth Seafront. The Penarth Water Ski Club launch from the slipway to the north of the Penarth Pier and there may be around 4 or 5 power boats in the area, particularly on Sundays. Activity here in the winter months is low, with some dinghy boating all year round with fewer boats on fewer occasions (estimated at around 10 boats a month).

The Port of Bridgwater describes the overall intensity of boating within the limits of their harbour area as low, but that it can be medium to high during summer weekends particularly in the vicinity of Burnham-on-Sea with boats from the boat club on the River Brue and the public slipway on the seafront.

There is much lower boating activity at clubs in the Estuary during the winter months. Some clubs are active at weekends all year round, such as the Newport Uskmouth Sailing Club (NUSC), Portishead Cruising Club and Thornbury Sailing Club. Winter activities generally involve fewer boats and less frequent events. Dinghy sailing and racing continues to take place on winter weekends at Cardiff, Newport, Penarth and Portishead, although generally in reduced numbers. For example, at Portishead boat numbers drop to peaks of less than 10 boats at the end of the season in December. Other clubs have little or no boating in the winter months, such as Chepstow & District Yacht Club, Lydney Yacht Club and Weston Bay Water Sports Club. Many boats are taken ashore in winter, including at Weston Bay Yacht Club and Burnham on Sea Motor Boat & Sailing Club, with relatively small numbers of boats remaining active at these locations at weekends over the winter months.

**Figure 19    Sailing at Sharpness © Mike Nash.**





## Levels and seasonality of other boating activities

It is extremely difficult to say with any degree of accuracy how many people participate in other water based recreation activities in, or adjacent to, the Severn Estuary EMS. The nature of many of these activities means that people do not have to belong to any kind of formal organisation in order to participate, and can canoe, kayak, row or jet-ski without the requirement to engage with any organisation that might keep records of how many people are on or in the water. However, as described 5.2 and 5.5, the majority of slipways in the Estuary are managed by boat clubs or Local Authorities, requiring permission or permits for access, and therefore local records may be available in some locations. For example, around 60 permit holders use North Somerset Council's public slipway at Knightstone Harbour in the north of Weston Bay. Seafront wardens have observed that between 10 and 20 boats may launch from the slipway over a high tide on a busy weekend in the summer and that there is little or no activity at the slipway in the winter.

The completed activity proformas from 2003 and 2009 provide limited information on other types of boating activity, but report that rowing, canoeing, sea kayaking, windsurfing, water-skiing, and jet-skiing all take place at some level either within or adjacent to the Severn Estuary EMS. The key locations for these activities are within Cardiff Bay, Weston Bay, Burnham and Berrow beaches in Bridgwater Bay and certain locations in the upper Estuary. Other boating activities in the Severn Estuary include the following:

- **Water-skiing and jet-skiing** (on personal water craft) takes place in certain locations of the Estuary, with the highest levels occurring during the summer season within Cardiff Bay and along the Penarth seafront and within Weston Bay. Activities in these areas are largely co-ordinated through the Penarth Water Ski Club and Weston Bay Water Sports Club. Around 10 to 20 craft can be found water-skiing and jet-skiing in a localised area in the north of Weston Bay over a high tide on a busy weekend in the summer. In general, this activity ceases at the end of the summer season and does not commence again until March/April. At Penarth, water-skiing occurs mostly on Sundays in the summer when there can be up to 10 powerboats and jet-skis along the seafront, with little activity in the Estuary in the winter. Jet skiing takes place along Burnham, Berrow and, to a lesser extent, Brean Beaches. In the past water-skiing events have been held in the vicinity of Burnham-on-Sea with the permission of the Bridgwater Harbour Master, although this is relatively rare and has not taken place in recent years. There is a limited amount of jet-skiing in the upper Estuary near Chepstow in the River Wye and Beachley, launching from the slipway under the Severn Bridge predominantly on weekends when the sun is out. Water-skiing occasionally takes place at low levels in the upper Estuary and River Wye, although mostly beyond the boundaries of the EMS, for example, in a six mile stretch of the upper Estuary in the vicinity of Minsterworth, Gloucestershire. Water-skiing and jet-skiing are highly weather dependent and generally not winter activities.
- **Canoeing and kayaking** is undertaken along both coasts of the Estuary at a low level by individual or small groups of boats largely in the spring, summer and autumn months, although it can take place during winter months. Launching points used in the Estuary include slipways at Portishead, Beachley and Lydney, beaches in Weston and Bridgwater Bays and also the Channel View and Water Activity Centre slipways within Cardiff Bay. Canoeing also takes place at a low level in the River Rhymney and within Bridgwater Bay and the Parrett. Upstream of the EMS, the Rivers Severn and Wye are popular canoeing areas providing some of the longest navigable canoe routes in the UK. Canoe England does not recommend canoeing in the tidal Severn Estuary.

- There are a few localised areas around the Estuary where **rowing and gig racing** takes place, including Clevedon, Penarth and within Cardiff Bay. The Clevedon Pilot Gig Club was founded in 2009 and operates from the slipway along the Clevedon seafront. The club operates 2 boats all year round. During the winter months there are 4 sessions per fortnight, with 3 to 4 times this during the summer season. The club now has an agreement with Portishead Sailing Club to launch and use their facilities during the 2015/16 winter as the area is more protected from the weather conditions. The Penarth Rowing Club is based at the Penarth Yacht Club launching from the slipway on the Penarth seafront. Activity of the rowing club highly weather dependant, they mainly row within Cardiff Bay and occasionally row in the Estuary during spring and summer. This club also operates all year round, but again with a lower intensity during the winter months. In the summer there are, on average, 1 to 2 boats on the water per week, dropping to one boat per month during the winter months. During their annual regatta at Penarth (Figure 20) around 4 boats may race at a time in the Estuary. The Burnham on Sea Motor Boat & Sailing Club also proposes to start gig racing.

**Figure 20 Rowing Regatta at Penarth Rowing Club © Tracey Dunford.**



- Cardiff Bay is a popular venue for **powerboat racing**, and has hosted major races such as the RYA national power boat championship, Formula 3 World Circuit Formula 500 Euro and Formula 4 Offshore races over the past 10 years. The P1 Powerboat Race (including jet-skis) is usually held annually in August and the British Water Ski Race held in September. The P1 Superstock Powerboat Racing event has now been running for 4 years. The Extreme Sailing Series has been running over the past few years and will continue until 2018. Annual triathlon events also take place in the Bay in June.
- **Recreational hovercrafts** have visited the upper Estuary in the vicinity of Berkeley on 3 occasions over the past 18 years with the permission of Gloucester Harbour Trustees. Up to a dozen hovercraft were present over one autumn weekend. This is a relatively rare event and there has been no hovercraft activity in recent years and there is none planned in the future.
- A wide range of other **water based recreation** activities take place off the beaches at Weston Bay, Burnham and Berrow in the north of Bridgwater Bay, including jet-skiing, wind-surfing, surfing and kite-surfing. Sedgemoor District Council describes all year round activity along their

coastline, increasing in level and frequency during the summer and is of overall low to medium intensity. The jet-skiing and wind-surfing at Burnham and Berrow beaches are generally not winter activities. Surfing of and canoeing the Severn Bore also occurs in the upper Estuary on extreme Spring tides. Wind-surfing, surfing and kite-surfing activities are classed as water based recreation but are not strictly boating activities and therefore not considered in detail in this report.

- **Narrow Boats** pass through the Estuary via Sharpness, Portishead (Figure 22) and the River Avon as they navigate between the Kennet and Avon and the Gloucester and Sharpness Canals. It is estimated by Gloucester Harbour Trustees that there are up to 70 narrow boat movements a year to and from Sharpness Docks (approximately 35 boats, although not all boats that go out of Sharpness come back in again, with a considerable number of one-way boat passages).
- Various **commercial boating activities** occur out on the Estuary. Two commercial ribs operate out in the Estuary from Cardiff Bay. One of the most popular trips is to Flat Holm island, with one of the boat trips running from Weston to Cardiff Bay to Flat Holm.
- **Paddle steamers** (e.g. Waverley) and **cruise boats** (e.g. MV Balmoral) use the estuary. [The Waverley](#) departure points are at Penarth, Minehead Harbour and Clevedon. Cruises around Flat Holm and Steep Holm are available. The [MV Balmoral](#) is berthed in Bristol City Docks, with departure points from Bristol, Clevedon, Sharpness, Portishead, Penarth, Minehead, Weston-super-Mare and Lydney in the summer months.

**Figure 21** Narrow Boat passing through Portishead Quays Marina © Channel Images.



## 6 Summary of Boating Activity in the Severn Estuary EMS

In summary, recreational boating occurs throughout the Severn Estuary EMS. The location of marinas, boat clubs, moorings, launching/access points and popular cruising routes in and around the Severn Estuary are shown together in Figure 22. The Figure demonstrates that there are a number of localised hubs for recreational boating activity along the English and Welsh coasts of the Estuary.

The intensity of boating activity is seasonal and influenced by the weather, tides and sea conditions, daylight hours, holidays and events. Levels of boating are highest during the spring, summer and autumn months, particularly during weekends and holidays. During these times activity on popular boating routes in the Estuary is generally considered to be moderate to high, with highest levels in the middle of the Estuary along the routes to and from Cardiff Bay and Portishead Quays Marina, linking them together and with harbours and marinas in the Bristol Channel and further afield. Generally recreational boating occurs during the winter at much lower levels, with the exception of boat movements through Cardiff Bay Barrage which remains relatively high during the winter months due to fishing boats (recreational and charter vessels).

Drawing on Section 5, key information about boating sites around the Severn Estuary is summarised in Table 11 on the page below. This includes a number of indicators of the relative levels of boating activity in the Estuary, including the numbers of moorings/berths present at each location and actual numbers of recreational boats (in the few locations where known). For the purposes of this report, relative levels of moorings/berths in the Estuary are defined as follows:

- Very low: <0.5% of total moorings/berths in the study area ( $\leq 12$  moorings),
- Low: 0.5-2% of total moorings/berths (13-49 moorings),
- Medium: 2-10% of total moorings/berths (50 – 249 moorings), and
- High: >10% of total moorings/berths (>250 moorings).

Where records are not available on actual boat numbers, information on estimated peak or typical boat numbers and the general intensity of boating activities provided by Relevant Authorities and some boat clubs has been considered. All of the information in Table 12 has been considered together to provide an overall indicative classification of the relative level of boating activity in areas of the Estuary (Table 11). For this report the relative level of boating in the Estuary is defined as follows:

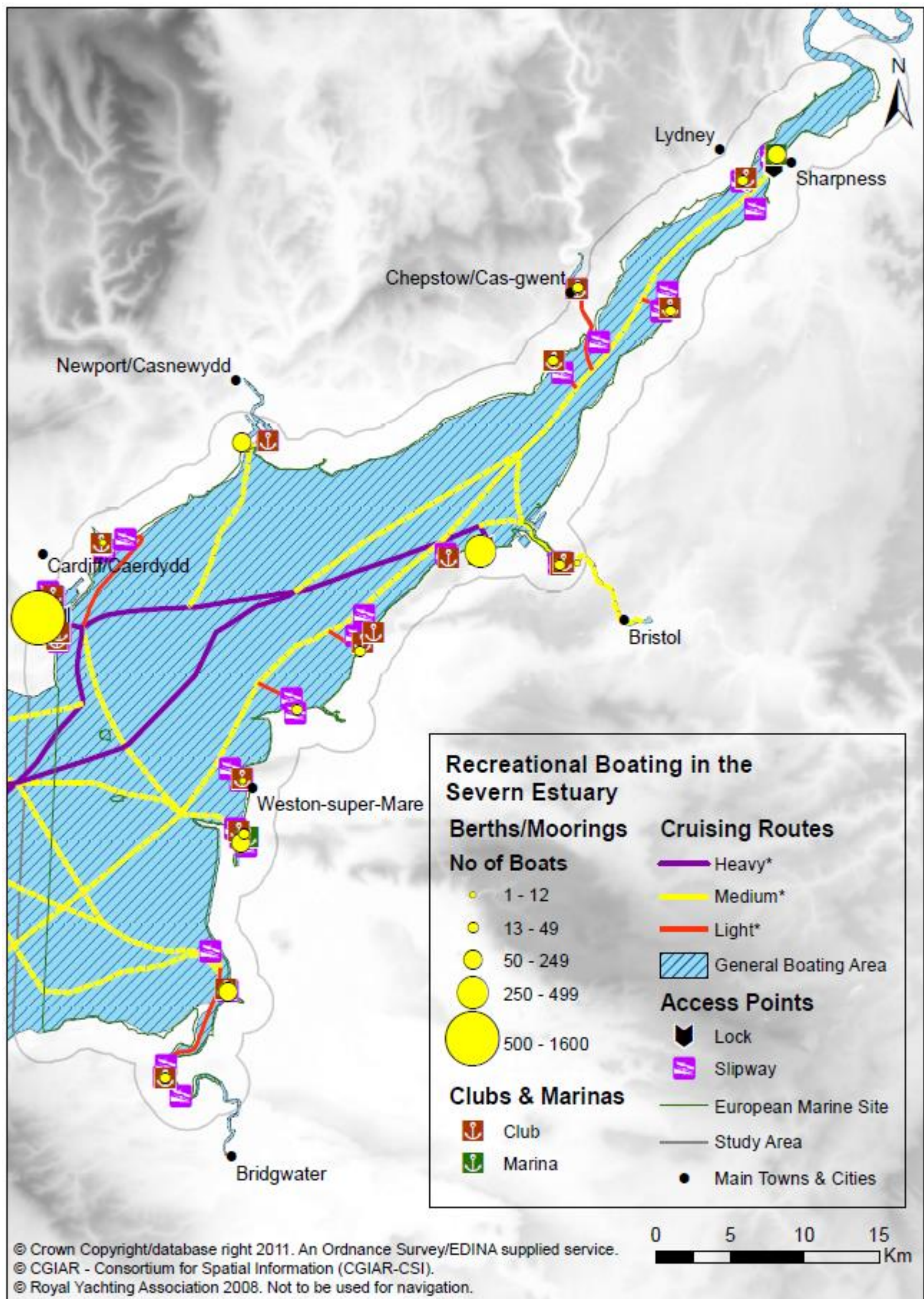
**Table 11 Classification of boating activity in the Severn Estuary.**

	Actual records of boat movements	Estimated peak boat movements	General description of relative level and frequency of boating
<b>High</b>	>300 boats / month >3,600 boats / year	Peaks of >100 boats / day	Large numbers of boats most of the time
<b>Medium</b>	101-300 boats / month 1,201–3,600 boats / year	Peaks of 31-100 boats / day	Moderate number of boats regularly
<b>Low</b>	10-100 boats / month 120-1,200 boats / year	Peaks of 5-30 boats / day	Small numbers of boats (e.g. a dozen) on some days
<b>Very Low</b>	<10 boats / month <120 boats / year	Peaks of <5 boats / day	A few boats on occasion / Little or no boating

Table 12 also indicates whether the boating facilities (e.g. clubs, marinas, moorings and slipways) are located within or outside the Severn Estuary EMS and identifies the Relevant Authorities in each area of the Estuary. The information in Table 12 is largely a collection of existing available data provided by various Relevant Authorities, which has been reviewed and corrected through consultation with boat clubs, marinas and other key recreational interests around the Estuary.



Figure 22 Overview of recreational boating within the Severn Estuary EMS and 2 km study area.



\* Heavy - 6 or more vessels at all times during summer daylight hours

\* Medium - Popular routes on which some recreational craft will be seen at most times during summer daylight hours

\* Light - Routes known to be in common use but which do not qualify for medium or heavy classification.

As defined by RYA (2008).



**Table 12 Summary of recreational boating within the Severn Estuary study area.**

Area	Location	Boat clubs, marinas, and other mooring or slipway sites	Boating activities	Key access & launching points to Estuary	Moorings/berths		Relative level of boating			Overall relative level of boating activity in area	Boating activity in the Severn Estuary European Marine Site (EMS)	Relevant Authorities
					Approx. number	% of Estuary moorings & relative level of moorings	Summary of the intensity of boating activity – Actual boat numbers where known, estimated boats numbers or indicative level, frequency and seasonality of boating (Note: reference is made to meteorological seasons for purposes of comparison i.e. summer Jun-Aug and winter Dec-Feb inclusive)	Indicative level of boating in summer	Indicative level of boating in winter			
Penarth & Cardiff Bay	Penarth seafront	Penarth Yacht Club Penarth Water Ski Club Penarth Rowing Club	Dinghy & yacht sailing, power boats, water-skiing, jet-skiing & rowing	3 slipways no tidal restrictions	0	0	Yacht club active all year round, training mainly weekday evenings and weekends, dinghy racing every weekend, around 9 times a month in summer and 4 times a month in winter. Estimated peaks of up to 30 boats/day on summer weekends and 8-9 boat/day in winter. Regular water-skiing & jet-skiing over summer (estimated peaks of up to 4-5 water-ski and 10 jet-ski), with little activity in winter. Rowing in the Estuary in spring/summer, highly weather dependant. Annual regatta with around 4 boats racing at a time.	Medium	Low	High	Slipways & boating in EMS	ABP Cardiff Vale of Glamorgan Council
	Cardiff Bay	Cardiff Bay Yacht Club Cardiff Marina Cardiff Yacht Club Penarth Quays Marina General moorings in River Taff, graving dock and Bay	Dinghy & yacht sailing, motor cruising, water-skiing, power boating, rowing, canoeing/ kayaking, wind surfing & fishing	Locks in Cardiff Bay Barrage no tidal restrictions	1532	64% High	More than 300 boat movements a month into the estuary all year round, including fishing boats, leisure boats, commercial craft (estimated at <5% of boats) and privately owned craft. Peaks of around 1,000 to 1,500 boats/month in April (heavy cruising route RYA). Total of 9,000-10,000 boats/year, mean of around 25 boats/day and peak of around 200 boats/day (relate to outbound journeys; related to access into EMS). Some busiest days on Oct/Nov weekends with yacht racing and sea angling events.	High	High		Boating in EMS Marinas, moorings & slipways within enclosed Bay outside EMS (around 400m to 1,600m away).	ABP Cardiff Cardiff Council Cardiff Harbour Authority
Rhymney	Rhymney Estuary	Rhymney River Motor Boat, Sail & Angling Club	Dinghy & yacht sailing, motor cruising, canoeing/ kayaking & fishing	2 slipway HW±2.0hrs)	9	0.4% Very low	No record of numbers - small numbers of boats in summer months (light cruising route RYA) and little or no activity in winter. Estimated peaks of up to 5/6 boats per weekend in the summer months. During the winter (October – March), around 12 fishing boats are active per fortnight.	Low	Very low	Low	Boating in EMS Moorings & slipway outside, but very close to, EMS (around 20m away)	Cardiff Council
Newport	River Usk	Newport Uskmouth Sailing Club (NUSC) Private pontoons/jetties	Dinghy & yacht sailing motor cruising	Slipway HW±3.0hrs Pontoons/jetties	90	3.7% Medium	Sailing Club active all year round, peak cruising/racing activity in summer/autumn season with estimated peaks of up to 50-60 boats/day during a weekend club event, and around 20 boats a day on average every other weekend (medium cruising route RYA). Restricted to River Usk Oct to Mar upriver of Docks entrance. 12 boats at regattas in May and Sep. Yacht cruising/racing every other Sunday Apr to Oct (typically around 10 boats/day), out of water in winter. 20 boats at regattas in May and Sep. No record of boat numbers and activity at private pontoons/wooden jetties.	Medium	Low	Medium	Boating in EMS Moorings & pontoons outside EMS (around 300m and 1,400m away)	ABP Newport Newport City Council Newport Harbour Commissioners
	River Ebbw	Private pontoons	Dinghy & yacht sailing motor cruising	Pontoons/jetties	17	0.7% Low					Pontoons/jetties and boating in EMS	
Chepstow	St. Pierre Pill	Chepstow & District Yacht Club	Dinghy & yacht sailing	Slipway HW±3.0hrs	15	0.6% Low	Estimated peaks of up to 6 boats during the annual club regatta. Typically around 4 boats active per summer, with occasional trips of 1-2 boats to Chepstow and Clone Pill, tide and weather permitting. No activity in winter.	Very low	Very low	Low	Moorings, slipway & boating in EMS	Gloucester Harbour Trustees Monmouthshire County Council
	Chepstow, River Wye	Chepstow Boat Club	Dinghy & yacht sailing motor cruising canoeing/ kayaking water-skiing & jet-skiing	Slipway HW±3.0hrs	19	0.8% Low	On average, 4 to 6 boats use the river during the summer months. The occasional cruiser visits from Portishead (3/4 times during the summer). The larger boats are laid up for the winter but a few small boats may go out from time to time in nice weather. Estimated around 50 boats a year involved in water-skiing and jet-skiing. Visiting canoes (6 per week in summer; occasional during winter) coming downstream to exit the river at Chepstow.	Low	Very low		Boating in EMS Moorings & slipway outside EMS (almost 2km away)	Forest of Dean District Council Gloucester Harbour Trustees Monmouthshire County Council
Oldbury & Beachley	Beachley	Private slipway used by public	Motor boating, jet-skiing canoeing/kayaking	Slipway no tidal restrictions	0	0	No record of boat numbers - Limited amount of boating/low intensity in summer, little or no activity in winter (GHT).	Low	Very low	Low	Moorings, slipways and boating in EMS	Forest of Dean District Council Gloucester County Council Gloucester Harbour Trustees
	Oldbury Pill	Thornbury Sailing Club	Dinghy & yacht sailing motor cruising	Slipway HW±2.5hrs	40	2.1% Medium	Sailing club active all year round, peak cruising/racing activity in summer season of up to 30-50 boats/day during a regatta, typically up to 15 boats for dinghy races and around 6 boats for cruiser races. Estimated 60-70 boats/month on average in summer. Club racing on Sundays Mar-Oct. Annual regatta and 1 Open meeting per year. Saturday sail training until early Jun. Lower winter cruising levels and fewer racing events in winter (6-8 races with 8-10 yachts), with an estimated 25 boats/month on average in winter. Dinghy sailing weekly during Oct – Dec. No significant dinghy sailing from Jan-Mar, with cruiser racing weekly. Some racing in week in later spring/summer.	Low	Low			Gloucester County Council Gloucester Harbour Trustees South Gloucestershire Council
Sharpness & Lydney	Sharpness Docks	Sharpness Marina	Dinghy & yacht sailing motor cruising narrow boats	Lock HW-3hrs to +1hrs	80	3.3% Medium	Around 35 to 40 boats a month in summer and less than 5 boats a month in winter, mainly weekends. Total of around 212 boats/year, mean of less than 1 boat/day and peak of around 16 boats/day (Portishead Cruising Club visit in spring).	Low	Very low	Low	Boating in EMS Marina and moorings outside, but very close to, EMS (less than 10m away)	Canal and Rivers Trust Gloucester County Council Gloucester Harbour Trustees Stroud District Council
	Lydney Docks	Lydney Yacht Club	Dinghy & yacht sailing motor cruising	Lock HW-1.5 to HW Slipway HW±3.0hrs	32	1.3% Low	Around 10-20 boats/month in summer and around 2 boats/month in winter. Total of 92 boats/year in 2013, mean of less than 1 boat/day and peaks of around 15 to 20 boats/day during events such as Portishead Cruising Club visits in June and Lydney Octoberfest.	Low	Very low		Boating & slipway in EMS	Environment Agency Forest of Dean District Council Gloucester County Council Gloucester Harbour Trustees

Area	Location	Boat clubs, marinas, and other mooring or slipway sites	Boating activities	Key access & launching points to Estuary	Moorings/berths		Relative level of boating			Overall relative level of boating activity in area	Boating activity in the Severn Estuary European Marine Site (EMS)	Relevant Authorities
					Approx. number	% of Estuary moorings & relative level of moorings	Summary of the intensity of boating activity – Actual boat numbers where known, estimated boats numbers or indicative level, frequency and seasonality of boating (Note: reference is made to meteorological seasons for purposes of comparison i.e. summer Jun-Aug and winter Dec-Feb inclusive)		Indicative level of boating in summer			
River Avon	Mouth of the River Avon	Portishead Cruising Club Shirehampton Sailing Club	Dinghy & yacht sailing motor cruising	2 slipways HW±3.0hrs & HW-2 to +1hr	30	1.2% Low	Estimated peaks of up to 25 boats in summer and up to 7-8 boats on some weekend days in winter. Portishead Cruising Club active all year, mainly at weekends, cruising generally Mar to Oct and racing throughout year, including 1-3 times a month in winter. Dinghy sailing at Shirehampton mainly weekends and occasional evenings in Apr to Oct.	Low	Low	Medium	Boating in EMS  Moorings and slipways outside EMS (slipways over 400m away)	Bristol City Council North Somerset Council The Bristol Port Company
	Bristol City Docks	Outside study area but key source of boats entering the Severn Estuary from the River Avon	Dinghy & yacht sailing motor cruising narrow boats canoeing/kayaking	(outside study area)		Bristol City Docks = 200 to 250 boats/month in summer and less than 30 boats/month in winter, mainly at weekends. Total of around 1,250 boats/year, mean of around 3 boats/day and peak of around 47 boats/day in 2012 during the Bristol Harbour Festival.	Medium	Low	Boating in EMS  Bristol City Docks & Marina around 9km away			
Portishead	Portishead Quays Marina	Portishead Quays Marina General moorings in Portishead Pool	Dinghy & yacht sailing motor cruising fishing boats	Lock HW±3.5hrs	300  6	10.2% High  0.2% Very low	400-500 boats/month in summer (heavy cruising route RYA), between 100 and 300 boats/month in winter including fishing boats. Total of around 4,200 boats/year, mean of around 12 boats/day and peak of around 60 boats/day in Sep 2012. Up to 3/4 boats on moorings in Portishead Pool in summer, little or no activity in winter.	High	Medium	High	Boating & 6 moorings in EMS  Marina moorings in enclosed docks outside EMS (around 200m away)	
	Portishead frontage	Portishead Yacht and Sailing Club	Dinghy & yacht sailing canoeing/kayaking	Slipway HW±2.0hrs	0	0	Estimated peaks of up to 20 boats in summer and less than 10 boats at end of season in Dec. Dinghy sailing mainly weekends Apr-Oct and fortnightly weekends Nov-Dec, occasionally 2 or 3 kayaks.	Low	Low		Slipways, moorings & boating in EMS	
Clevedon & Woodspring Bay	Clevedon Seafront	Clevedon Sailing Club Clevedon Pilot Gig Club	Dinghy & yacht sailing, gig rowing	Slipway HW±2.5hrs	0	0	Estimated peaks of up to 20 boats in summer. Dinghy sailing and racing mainly weekends Mar-Dec, with up to 11 days racing/month in summer and up to 4 days/month in Oct-Dec. A few boats involved in gig racing.	Low	Low	Low	Slipways, moorings & boating in EMS	North Somerset Council
	Clevedon Pill	Clevedon Sailing Club	Dinghy & yacht sailing	Slipway HW±3.0hrs	17	0.7% Low	Typically 2 or 3 boats at a time in summer. Infrequent, mainly weekends and occasional evenings, with little or no activity in winter.	Very low	Very low			
	River Banwell	Private moorings/ slipways in River Banwell & St. Thomas’ Head	Dinghy & yacht sailing Fishing	2 slipways Unknown	13	0.5% Low	No record of boat numbers at private moorings. Estimates of up to ten boats in summer weekends and 2 or 3 boats at a time in winter weekends.	Low	Very low			
Weston Bay	Knightstone Harbour & Weston Beach	Weston Bay Water Sports Club Public slipway	Powerboating water-skiing, jet-skiing & wind surfing	2 slipways HW±2.0hrs	9	0.4% Very low	Estimated peaks of up to 20 boats (water-ski boats & jet-skis) in summer in Knightstone Harbour. All year round, but mainly operate Apr-Oct, with peaks of 12 boats/day in summer (every weekend and some evenings) and 2/3 boats on sunny weekends in winter. Peaks of up to 38 boats. Around 60 permit holders for slipway. Designated water-ski and power boat area in north of Weston Bay. Jet-skiing, wind-surfing, surfing and other beach based activity along Weston.	Low/ Medium	Very low	Medium?	Slipways, moorings & boating in EMS	North Somerset Council
	River Axe	Weston Bay Yacht Club	Dinghy & yacht sailing motor cruising fishing	Slipway HW±2hrs	100	4.0% Medium	Typically 10 to 15 boats in summer (medium cruising route RYA). Little activity in the winter with peaks of 2 or 3 boats from moorings in mouth of the River and typically less than 10 boats a month, generally inner moorings not active in winter months with many boats overwintering ashore at Uphill.	Low/ Medium	Very low			North Somerset Council Port of Bridgwater Sedgemoor District Council Somerset County Council
	Uphill	Uphill Boat Centre General moorings for Uphill Boatmen	Dinghy & yacht sailing motor boats/ cruising fishing boats	2 Slipway HW±3hrs	53	2.2% Medium	Generally 2-3 boats a tide during peak periods in spring and autumn when boats travel between the moorings in the Axe and the boat centre where they overwinter ashore. Little/no activity in winter.	Low	Very low			
Bridgwater Bay	Burnham & Berrow	Burnham-on-Sea Public Slipway and beaches	Jet-skiing, wind surfing, small boats, including fishing boats	Slipway HW±3hrs	0	0	Overall, boats from Burnham slipway, Burnham beach and the boat club in the River Brue contribute to medium levels of boating activity in this area on weekends in summer months. 70 annual permits available for the public slipway, which are primarily used by ~35 fishing boats in winter and visiting jet-ski users in the summer. Local boat owners launch from slipway mainly during winter months (~30 boats, 12 fishing boats). Peaks of 5 boats at any one time. Wind surfing to north of beach. Very occasional kayaking/canoeing. The boat club’s main sailing season between Apr and Oct with estimated peaks of up to 30 to 40 boats on a club event in the summer (medium cruising route RYA). Little boat activity at weekends in winter months, with many boats overwintering ashore. There are around 5 fishing boats which go out 1-2 times/fortnight during the winter months, again weather dependent. Gig rowing is a new club activity, with one pilot gig boat proposed.	Medium	Low/very low	Medium	Slipways, moorings & boating in EMS	Port of Bridgwater Sedgemoor District Council Somerset County Council
	River Brue	Burnham on Sea Motor Boat and Sailing Club	Dinghy & yacht sailing motor cruising, fishing, wind surfing & gig rowing	Slipway HW±2hrs	69	2.8% Medium						
		River Parrett	Combwich Motor Boat & Sailing Club Private slipways	Dinghy & yacht sailing motor boats/cruising, fishing	3 slipway HW±1hr	17	0.7% Low	No record of numbers - small numbers of Combwich Club boats active in summer months with little or no activity in winter. Also local use of private slipways at Combwich, including some small fishing boats in winter.	Low			

Using these indicative classifications (Table 11), it can be seen from Figure 22 and Table 12 that Cardiff Bay and the Portishead areas have relatively high levels of recreational boating in the summer. Cardiff Bay is the major location for recreational boating within the study area with up to 200 boats a day passing through the Cardiff Bay Barrage in to the Estuary during the busiest weekends and between 9,000 and 10,000 boats over the course of a year. Approximately two thirds of all recreational berths/moorings in the study area and a significant amount of boating infrastructure and facilities are located behind the Barrage, including at Cardiff Marina, Penarth Quays Marina, Cardiff Bay Yacht Club, Cardiff Yacht Club, general moorings; and private and public slipways (Figure 24).

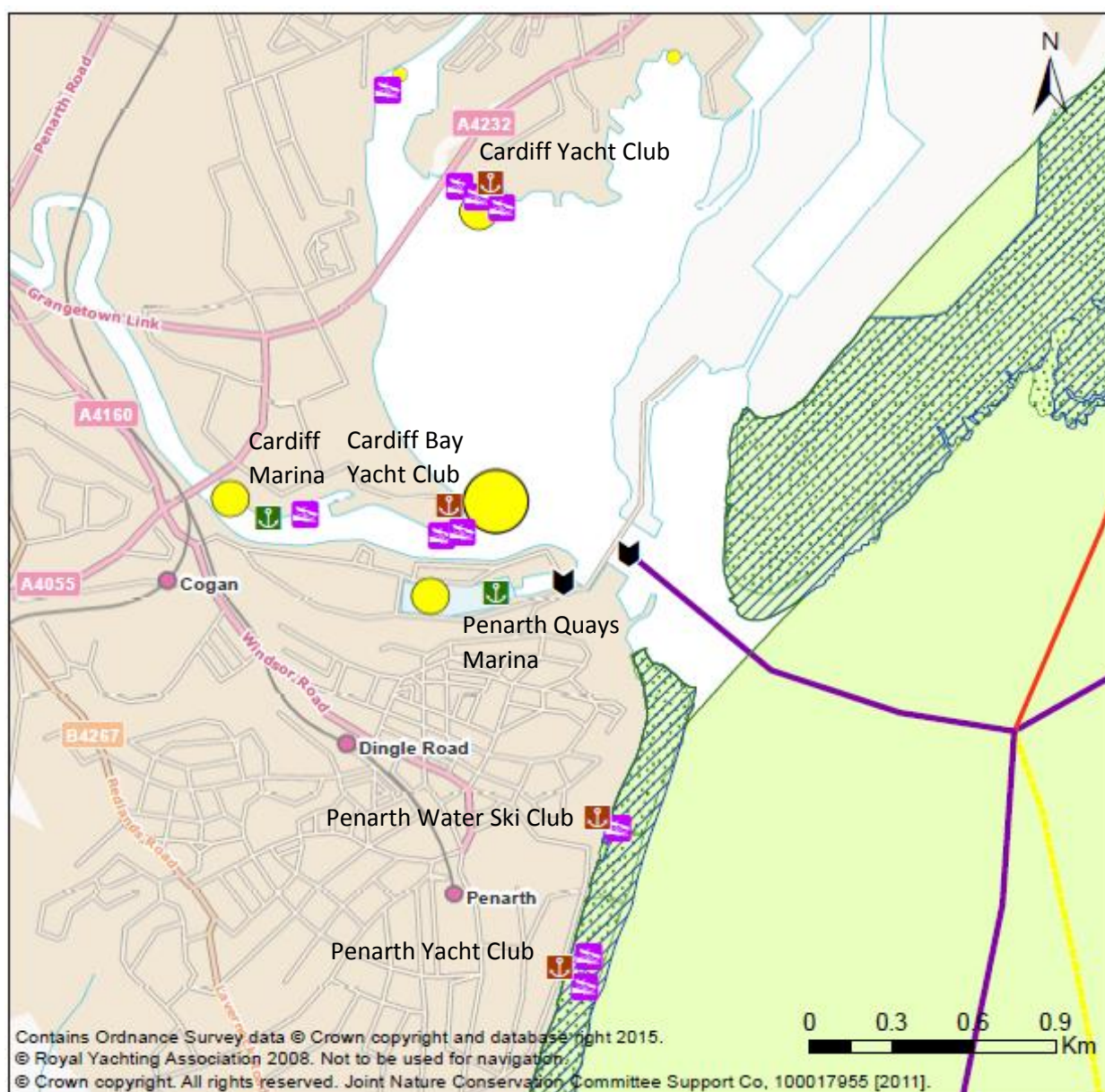
Portishead Quays Marina also attracts relatively high numbers of recreational vessels with up to 60 boats a day and over 4,000 boats a year entering the Estuary. Over 10% of the Estuary's total berths/moorings are found within Portishead Quays Marina (Figure 25). Cruising routes between Cardiff Bay and Portishead Quays Marina are identified as heavy use in the summer. Both Cardiff Bay and Portishead Quays Marina are located outside the Severn Estuary EMS.

**Figure 23** Portishead Quays Marina (top) © Zoe Whitlock; Cardiff Bay (bottom) © Gwilym Owen.





**Figure 24** Recreational boating within Cardiff Bay and along the Penarth Seafront.



## Recreational Boating in the Severn Estuary: Cardiff Bay/Penarth

### Berths/Moorings

#### No of Boats

- 6 - 12
- 13 - 49
- 50 - 249
- 250 - 399
- 400 - 500

### Clubs & Marinas

- Club
- Marina

### Cruising Routes

- Heavy\*
- Medium\*
- Light\*

### Access Points

- Lock
- Slipway

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar

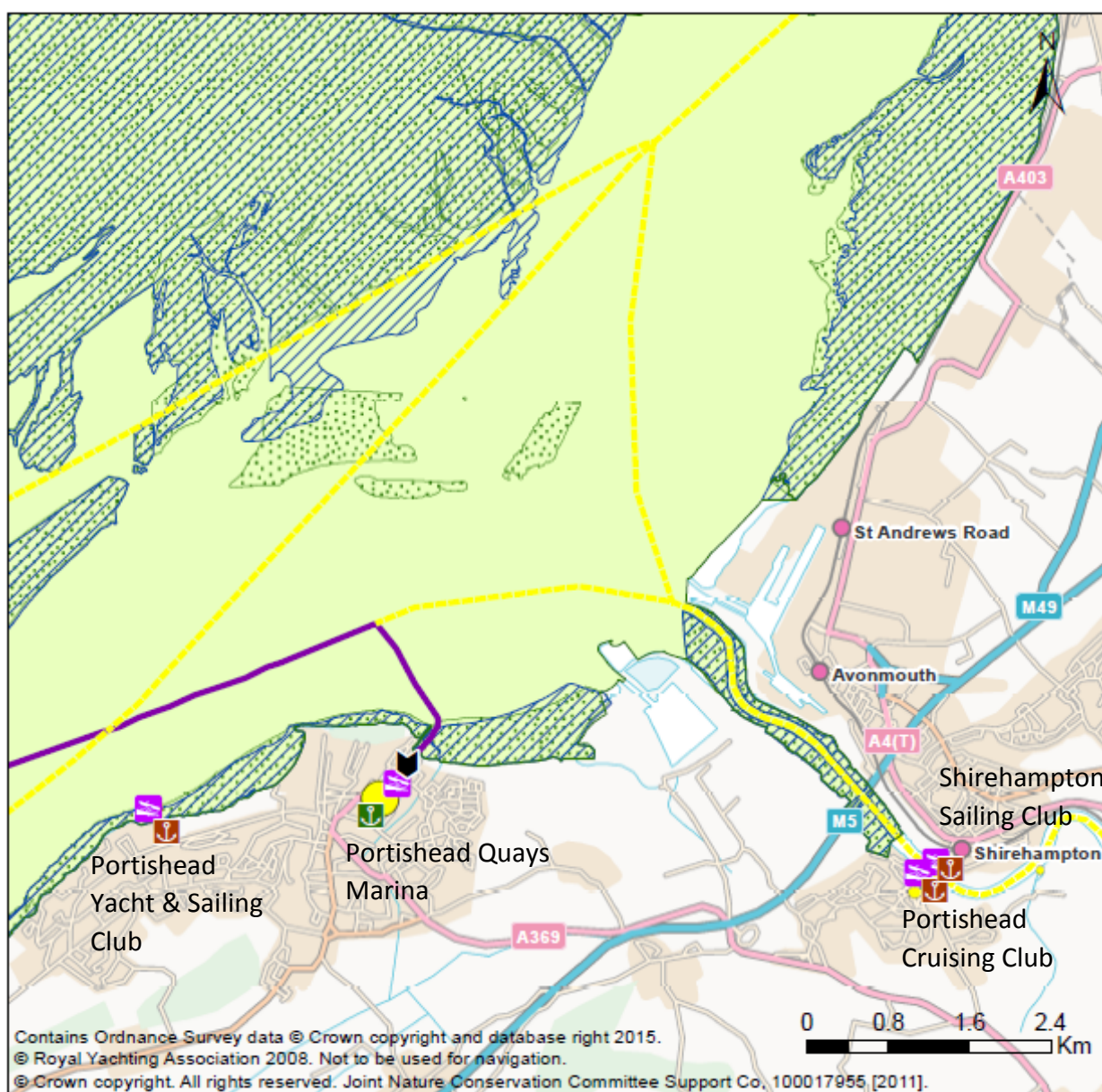
\* Heavy - 6 or more vessels at all times during summer daylight hours

\* Medium - Popular routes on which some recreational craft will be seen at most times during summer daylight hours

\* Light - Routes known to be in common use but which do not qualify for medium or heavy classification.

As defined by RYA (2008).

Figure 25 Recreational boating in the vicinity of Portishead and mouth of the River Avon.



## Recreational Boating in the Severn Estuary: Portishead

### Berths/Moorings

#### No of Boats

- 6 - 12
- 13 - 49
- 50 - 249
- 250 - 399
- 400 - 500

### Clubs & Marinas

- Club
- Marina

### Cruising Routes

- Heavy\*
- Medium\*
- Light\*

### Access Points

- Lock
- Slipway

- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar

\* Heavy - 6 or more vessels at all times during summer daylight hours

\* Medium - Popular routes on which some recreational craft will be seen at most times during summer daylight hours

\* Light - Routes known to be in common use but which do not qualify for medium or heavy classification.

As defined by RYA (2008).



Locations of relatively medium levels of recreational boating in the summer months include Knightstone Harbour/Weston Beach, River Axe, Newport (River Ebbw and River Usk), River Avon (including boats from Bristol City Docks), Penarth seafront and Burnham-on-Sea/River Brue (Figure 26).

**Figure 26** Satellite images of locations with medium levels of recreational boating in the summer: Knightstone Harbour/Weston Bay, River Axe, Newport (River Ebbw), Penarth seafront, River Avon and Burnham-on-Sea/River Brue © Google Maps 2014.

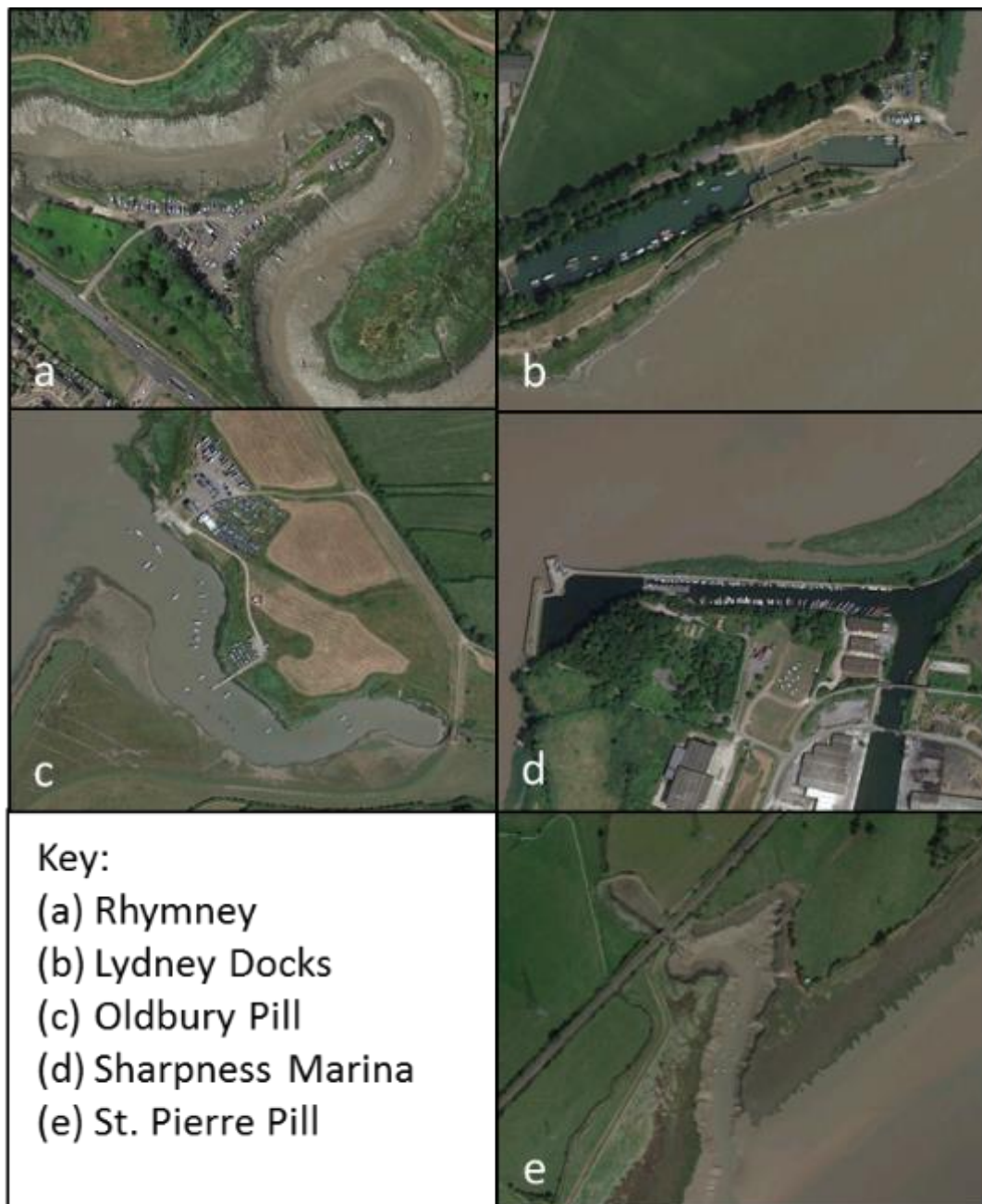


All other locations in the study area are considered to have relatively low or very low levels of boating in the summer including Rhymney, St. Pierre Pill, Lydney Docks, Chepstow, Beachley slipway, Oldbury Pill, Sharpness Docks, Portishead seafront, Clevedon seafront, River Banwell, Uphill & Combwich (Figure 27 and Figure 28).

**Figure 27** Satellite images of locations with low or very low levels of recreational boating activity in the summer: Clevedon seafront, Clevedon Pill, Combwich, Portishead frontage and River Banwell © Google Maps 2014.



**Figure 28** Satellite images of locations with low or very low levels of recreational boating activity in the summer: Rhymney, Lydney Docks, Oldbury Pill, Sharpness Marina and St. Pierre Pill © Google Maps 2014.



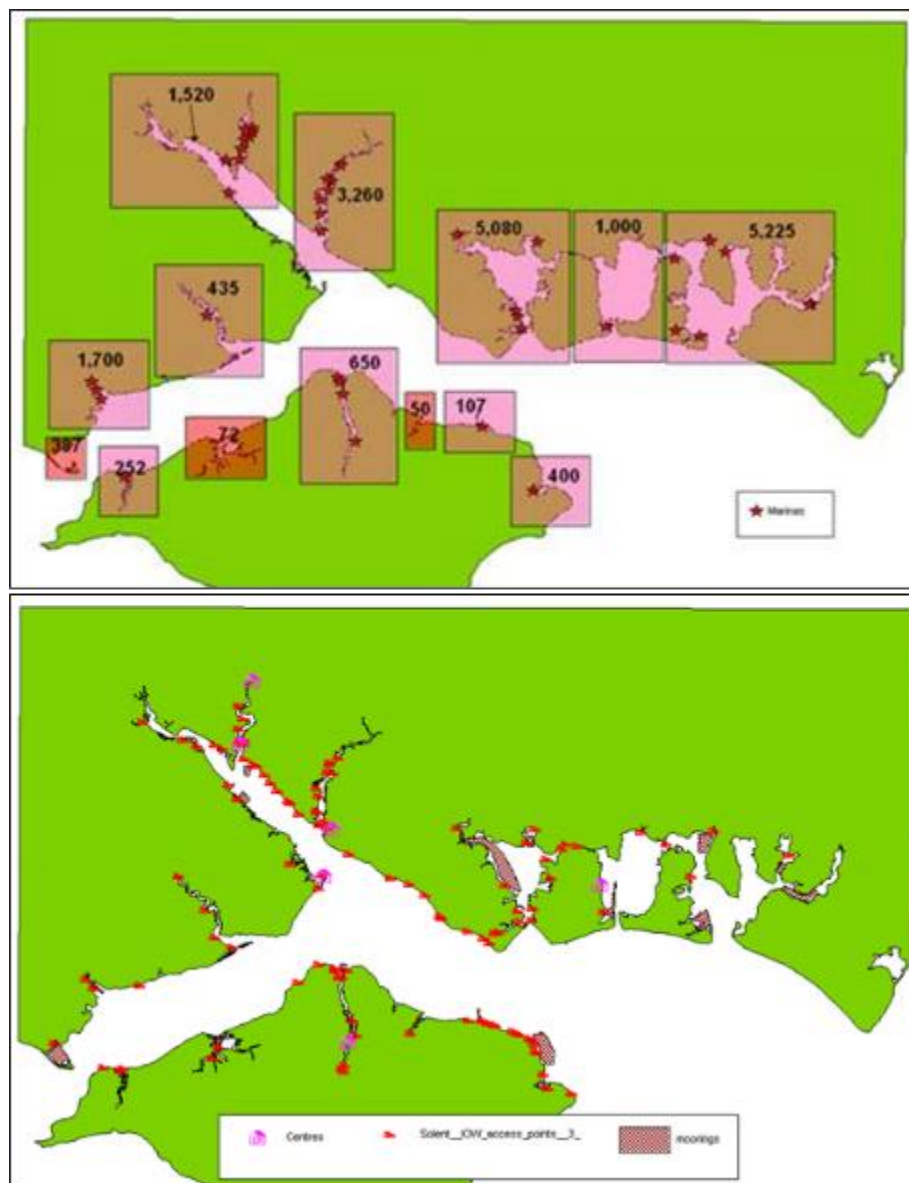


## 7 Recreational Boating in a National Context

The Severn Estuary is one of a number of estuaries in the UK which are designated as internationally important sites for their habitats and species. Other UK estuaries with similar levels of protection (both SAC and SPA) include the Solent Maritime EMS and the Humber Estuary EMS.

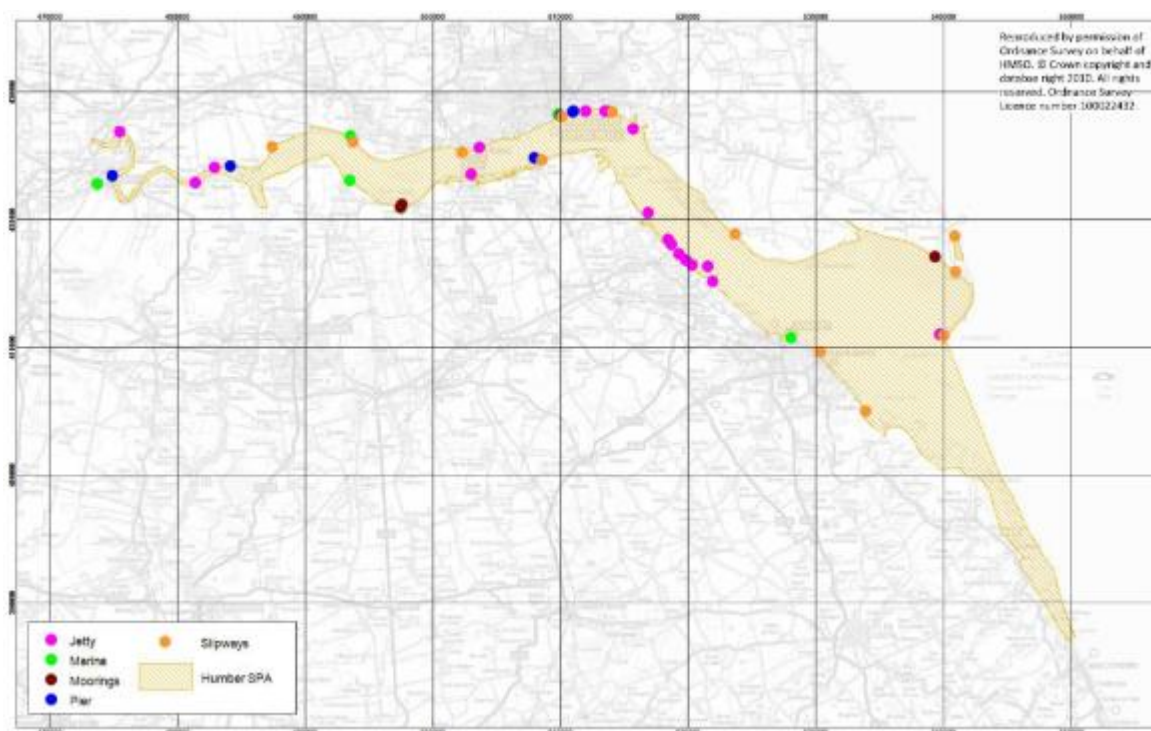
The Solent coastline provides feeding grounds for internationally protected populations of overwintering waders and wildfowl and is also extensively used for recreation. Many industries have flourished to serve the recreation market, clubs have been formed to enable organised participation and there is a substantial range of facilities and support infrastructure to allow recreation to be available to large numbers of people (Solent Forum, 2011). The Solent has over 26,000 moorings (swinging, pontoon, pile, mud-berth and marina berths), many of which are within the European Marine Site, and 117 locations for accessing the Solent for recreational purposes; these include slipways, hards and steps (Figure 29).

**Figure 29** Total number of berths in the main port areas of the Solent and access points to Solent EMS (sourced from Solent Recreation Audit (Burton et al., 2010)).



The Humber EMS is designated for a range of breeding, overwintering and passing bird species, along with a variety of habitats. The Humber is a busy commercial waterway with a large amount of housing along its shores making it a popular site for recreation. Confirmed numbers of berths and access points within the Humber EMS are not available but it can be seen from Figure 30 that there is a significant amount of infrastructure (five marinas and 34 access points) that support recreational boating activity.

**Figure 30** Marinas, slipways and other boating infrastructure within the Humber EMS (Cruickshanks et al., 2010).



A comparison of the numbers of marinas, moorings and access points at these three sites (Table 13) suggests that the Severn Estuary supports similar levels of recreational boating activity as the Humber Estuary and significantly lower levels than the Solent Maritime EMS. This suggests that in a national context, the level of recreational boating in the Severn Estuary is moderate.

**Table 13** Comparison of recreational boating infrastructure at three large UK European Marine Sites.

	Number of Marinas	Number of Moorings	Number of Access Points	Area of EMS
Severn Estuary EMS	5	2,440	48	73,715 ha
Solent Maritime EMS	29	26,000	117	11,325 ha
Humber Estuary EMS	5	-	34	36,657 ha



## 8 Possible Environmental Impacts

The 2011 Draft ASERA Management Scheme identified the following key pressures that could result from boating recreation and have an impact on the bird species and habitats of the Severn Estuary EMS:

1. Disturbance to feeding and roosting birds
2. Erosion/damage of habitats
3. Introduction of synthetic materials
4. Contamination of mud/sand sediments
5. Damage to habitats and birds by litter
6. Invasive non-native species

The Nature Conservation Agencies' review of impacts in 2010, which drew on Advice on Operations contained within the Regulation 33 Advice and information obtained from the activity proformas, identified disturbance to feeding and roosting birds as the primary concern categorising this pressure as an 'unknown impact' at all locations. Exceptions to this categorisation were Gloucester Harbour Trustees and South Gloucestershire Council, where there was 'no known effect' on SPA features. Bird disturbance therefore forms a focus for the following discussion of potential effects.

At most locations within the Estuary, pressures 2-5 listed above were categorised as 'no known impact' for fish and habitats, however the area of Newport City Council was classified as 'unknown impact' for habitat features. The impact of an activity can depend upon its scale, location and frequency, as well as the sensitivity and vulnerability of a feature. This means that an activity may have a different impact in different locations and for different Relevant Authorities. These pressures are reviewed in more detail below and supplemented with information about recreational boating in the Severn Estuary.

**No possible impact** i.e. *There is no known mechanism(s) for the activity to cause deterioration or significant disturbance to a feature(s). Activity is not known by the Relevant Authority to have an effect in its area of jurisdiction.*

**Unknown Impact** i.e. *there is a known mechanism for the activity to cause deterioration or significant disturbance to a feature, but there is insufficient current information to determine whether or not an impact is occurring.*

**No impact identified / No known effect** i.e. *the activity has the potential to cause deterioration or significant disturbance to a feature(s), but current information indicates that it is not causing an impact at present. Activity is not known to have an effect within the Relevant Authority's area of jurisdiction.*

**Figure 31** Dunlin at Newport Wetlands © John Coleman.



## 8.1 Disturbance to feeding and roosting birds

The Severn Estuary is one of the most important estuaries in the UK for its large populations of wildfowl and wading birds. Over 80,000 birds visit the Estuary every winter from all over the world, feeding and roosting on the Estuary's extensive mudflats, sandflats, saltmarshes and coastal grazing marshes. The birds that visit the Estuary are generally shy and do not like being disturbed. In general, the birds of the Severn Estuary SPA are most vulnerable to disturbance over the winter months (October to March), particularly during the coldest months of December to February inclusive.

### Response to disturbance

Birds respond to disturbance in a variety of ways, such as modifying their behaviour and feeding cycles, including taking flight to less disturbed areas. Generally, disturbance is likely to be temporary in nature, but where there are prolonged impacts on feeding and energy consumption, it may result in their permanent relocation. The potential for disturbance will depend on the nature of the activity and its proximity to important feeding, roosting or breeding grounds. The magnitude of the impact will vary depending on the species of bird, the size and characteristic of the water body, and availability of alternative sites nearby for roosting or feeding. The time of year will also have implications on the potential for disturbance, as breeding and overwintering birds are particularly sensitive. Severe disturbance at these times of year could also cause reduced breeding success with potential for wider implications on particular species populations (The Green Blue, 2008).

Recreational boating activities have the potential to disturb birds including:

- Movement of boats across the water;
- Clubhouse activities;
- Activities around slipways, launching and recovery of boats; and,
- Activities around moorings, such as maintenance of boats or moorings.

### Movement of boats across the water

The level of disturbance on the water may be related to the type of boating activity. In general, the rapid movement of boats across the water accompanied by loud noises, such as with powerboating, water-skiing and jet-skiing, can have higher potential for bird disturbance than boats moving across the water with little noise, like sailing and rowing boats. Sailing has been identified as a low disturbance activity in a recreational study in the Solent (Burton *et al.*, 2010). A study in the Stour and Orwell SPA demonstrated that vessels under sail and motor in the estuaries caused relatively little bird disturbance with no difference in the scale of disturbance from different types of recreational boating (The Green Blue, 2008).

The movement of sail and motor boats across the large expanse of water in the Severn Estuary is likely to cause little noise and disturbance i.e. boats in navigation channels and on the open water in the Estuary are generally not a concern. The possible exceptions are noisy motorised boating activities if occurring near sensitive roost sites in winter. However, there is little or no water-skiing and jet-skiing in the estuary in winter months, as this activity is highly weather dependant. Occasional winter activity is restricted to localised areas off the Penarth seafront, within Cardiff Bay and possibly, although rare, in Knightstone Harbour. There are no known important bird roosts within or adjacent to the EMS in these locations.

### Clubhouse activities

People at clubhouses could potentially cause disturbance if large numbers of people were present on, or near, the intertidal habitat in winter months. However, where facilities exist they are generally low key, on land away from the habitats used by birds, generally have low levels of use in the winter months and, in many respects, are no different from another waterside property.

### Activities around moorings and slipways in sensitive areas

The main risk of noise and visual disturbance to birds is likely to be associated with the intermittent activity of people and boats in close proximity to intertidal habitats, such as at slipways and other landing/launching places or activities around moorings within the EMS. Many boating clubs, access points (slipways) and fixed moorings/pontoons are located in sheltered pills, creeks and river mouths within the EMS. Sites with moderate levels of moorings located within the EMS are Weston Bay Yacht Club in the River Axe, Burnham on Sea Motor Boat & Sailing Club in the River Brue (around 70 moorings); and Thornbury Sailing Club in Oldbury Pill (around 40 moorings).

These are favoured areas used by overwintering birds, which can be found feeding on exposed mud and saltmarsh edges at falling and low tides, roosting on saltmarshes at high tides and sheltering from poor weather conditions on occasion. Examples of important overwintering bird roosts identified by NRW and NE to date include areas in the mouth of the Rivers Banwell, Axe, Rhymney, Wye, Usk and Ebbw (Hyder Consulting (UK) Limited, 2011; *Pers. comm. Natural England*, 2015). The work to identify roost sites on the English side of the Estuary is still in progress.

The following findings of this report are helpful in considering the potential for boating to cause disturbance to overwintering feeding or roosting birds within sensitive areas of the Severn Estuary EMS:

- **Relatively low/very low levels of boating in the EMS in winter:** At most locations within the EMS, peak boat numbers and boating events generally occur at weekends during summer months, with the majority of boating activity taking place between April and October. This provides seasonal separation between peak recreational boating use and peak bird use during the critical overwintering period. Generally, boating within the EMS in winter occurs at lower levels with smaller boat numbers, less frequent activity and fewer events. All boat clubs, mooring areas and slipways located within the EMS have relatively low/very low levels of boating activity in the winter (including Penarth, Portishead and Clevedon seafronts, Oldbury Pill, the Rivers Axe and Brue and Uskmouth). Little or no winter activity takes place in locations such as St. Pierre Pill, River Rhymney and Combwich. Typical winter activity may involve dinghy/small yacht sailing or racing (typically less than 10 dinghies) launching via slipways over the high tide on one day a weekend or every other weekend), with lower and less frequent cruising activity from moorings.
- **Some tidal separation of boating and birds:** The large tidal range of the Severn Estuary imposes restrictions on the time that boats from most locations can enter the Estuary from locks, moorings or slipways (with the exception of locks in Cardiff Bay Barrage and Penarth slipways). Boat movements at most access points in the estuary generally occur over a few hours around high water when much of the intertidal mudflats are underwater and unavailable to feeding birds. This is particularly the case in the upper estuary and other locations with very small access windows. At high tide, a stretch of shallow water over the intertidal gives some spatial separation between the boating activity in deeper water and the critical roosting habitats used by birds. However, in close vicinity of

important, sensitive roost sites in the estuary there remains a risk of disturbing birds over the high water period. For example, concerns over potential disturbance to important bird roosts in the River Axe resulted in the introduction of management measures to minimise disturbance (see Section 9.4 below).

- **Infrequent and temporary exposure to boating:** Winter boating activity, in particular events and races, occur infrequently. A typical low level winter activity is dinghy/yacht racing with boats launching from sites including Oldbury Pill, Penarth, Cardiff, Newport and Portishead. Activity generally occurs in daylight hours over a high tide on one day per weekend or every other weekend. Therefore, it is estimated that there is likely to be around 4 hours of boating activity in the EMS in any 24 hour period, with no activity or risk of disturbance during the majority of the week (i.e. boating activity occurs over less than 4% of the week). The racing activity itself consists of sailing in the open water of the estuary with little noise or disturbance.
- **Little or no activity around moorings and slipways at low tide:** Moorings exposed at low tide and drying boats have a restricted footprint with no activity around them, with the possible exception of occasional maintenance activities (likely to be of low intensity in winter) leaving large expanses of undisturbed feeding areas available.
- **Other disturbing activities:** Disturbance at some sites in the EMS are likely experience disturbance from a range of activities, such as coastal walkers, wildfowling, agricultural activities or port and shipping operations. This is particularly the case for relatively busy areas of the Estuary near major cities, residential areas and ports such as Cardiff, Newport and Avonmouth and Portbury. In such locations birds are more likely to have become habituated to ongoing activities and potential disturbance. There are large expanses of contiguous intertidal flats for birds to relocate to should disturbance occur in these locations.

On the basis of the above it is considered that recreational boating is unlikely to be causing significant disturbance to feeding and roosting birds within the Severn Estuary EMS. However, it is recommended that ASERA review the findings of this appraisal together with NE and NRW when information on the location of important bird roost sites is available for the whole Estuary.

### **Good practice**

Whilst there are no known reports or observations of significant disturbance to birds from recreational boating in the Severn there is potential for there to be disturbance on occasion where boats are active in the winter months in close proximity to important roosting habitats. The risk of disturbance to birds from boating activities in these sensitive locations can be minimised by observing good practice and implementing appropriate management measures where relevant, as described in Section 8. If recreational boats are handled with sensitivity and care, only minimal disturbance to over wintering birds will be caused. Examples of good practice to avoid or minimise disturbance to birds include the following:

- Keep noise to a minimum, both on the shore and on the water, as birds are very sensitive to noise disturbance;
- Avoid disturbing wildlife by keeping your distance where possible, particularly in locations where birds gather at high water over the winter months;
- Small craft, such as canoes, personal water craft, and ribs/tenders can reach shallower waters, getting closer to sensitive intertidal areas and should take extra care to avoid disturbing birds and other wildlife;
- Keep maintenance activities within the EMS to a minimum in the winter months, where possible and safety allows;
- Enjoy watching birds and other wildlife from a distance using binoculars.

## 8.2 Erosion/damage of habitats

The Severn Estuary is designated for its important estuarine and coastal habitats, including its extensive intertidal mudflats and sandflats, saltmarsh, subtidal sandbanks and *Sabellaria sp.* reefs. These intertidal flats and fringing marshes provide important feeding habitats for wading birds, wildfowl and estuarine fish, with abundant prey species including marine worms, amphipods and bivalves. These habitats, and the animal and plant communities that they support, can be disturbed or damaged by recreational boating activities as follows:

- Loss of seabed habitats and species within the footprint of moorings/pontoons or through smothering under moorings and boats as they lay on the seabed;
- Damage of seabed habitats and species through abrasion and disturbance by anchors, mooring tackle and boats; and
- Erosion of habitat as a result of boat wash.

### Moorings and anchoring

Boats and mooring chains may scour or temporarily smother the seabed around drying moorings as they slacken and move with tide, potentially resulting in damage to the surface of the intertidal habitats and disturbance of the sediments and benthic animals that live within them. In the Severn Estuary there are relatively low numbers of moorings (around 370) present within the EMS, the majority of these fore and aft moorings which reduce the footprint of potential disturbance in comparison to swinging moorings by securing the boat between two mooring buoys. Locations where moorings and/or pontoons are present in the vicinity of designated habitats include St. Pierre Pill, the River Ebbw at Newport, Oldbury Pill, Portishead Pool, Clevedon Pill, Knightstone Harbour in Weston Bay, Uphill and the Rivers Banwell, Axe and Brue. The number of moorings at each site varies from around 6 to 100, although in many cases a smaller proportion of these moorings are actually in use.

Anchoring unavoidably causes localised damage as it contacts and digs in to the seabed and there may also be secondary impacts arising from the dragging of the anchor across the bottom. Greater impacts from physical damage may arise in areas where the seabed supports species or habitats that are sensitive to disturbance. An anchor dragging across the sea bed can disturb the upper layers of the seabed sediment and cause damage to seabed habitats and species by cutting or breaking up plants and disturbing marine wildlife (The Green Blue, 2008). Anchoring occurs infrequently and at a very low/low intensity within the Severn Estuary EMS.

The footprint of mooring and anchoring within the Severn Estuary EMS is very small, particularly in terms of the total area of the EMS. These activities primarily take place within localised areas of muddy and sandy seabed sediments relatively near to the shore, which naturally have very high levels of sediment disturbance, mobility, smothering and scour due to the Estuary's strong tidal currents and extremely dynamic environment. Generally within the Estuary there is high tolerance of benthic communities of the mud and sand habitats to natural disturbance, including the typical communities comprising marine worms, amphipods and molluscs. There is no known mooring activity in the vicinity of particularly sensitive habitats and species in the Estuary, such as the eel grass beds off the Welsh Coast at Magor or the subtidal *Sabellaria* reefs located primarily in the hard substrate areas of the outer Estuary. Studies in Medina Estuary EMS and in New South Wales, Australia, have shown that large numbers of moorings or marinas in estuary sites are unlikely to have significant impacts on diversity or biomass of benthic communities (The Green Blue, 2008).



## Boat wash

Boat wash can be a significant issue in many estuaries in sheltered locations where the wake generated by boats is greater than the natural background wave conditions, accelerating and accentuating the natural erosion processes at work in intertidal areas. The extreme tidal regime of the Severn Estuary, with its high degree of natural variability in water levels, currents, waves, erosion and sediment deposition patterns ensure that the habitats along the Estuary shores and in the mouths of its tributary rivers are generally less vulnerable to the effects of boat wash than intertidal habitats in other UK estuaries. It is considered that the contribution of boat wash to erosion in the Severn Estuary is likely to be insignificant in comparison to these natural processes, in all but the most sheltered of areas of the Estuary. The potential for boat wash impacts in very sheltered areas depends on the characteristics and speed of the boat, boat numbers and nature and sensitivity of the habitats and communities along the shoreline.

## Recommendations

There are one or two sites around the EMS, including in the River Ebbw in Newport, where the regulation and control over the development of moorings or landing jetties is unknown and there is potential for disturbance and damage to very small, localised areas of intertidal flats and saltmarsh should these “unregulated moorings” continue to spread. It is recommended that Relevant Authorities investigate any areas where there are possible unregulated moorings to ensure that any potential disturbance and damage to intertidal habitats is considered and where appropriate addressed.

It is also recommended that user-friendly mapped information showing sensitive seabed areas around the Estuary would be helpful in enabling recreational users to make informed decisions on anchoring in the Estuary. Although it is unlikely that mooring, anchoring and boat wash is causing significant disturbance or damage to designated habitats in the Severn Estuary, careful boat handling and observance of existing management measures and good practice can minimise risks of environmental impacts occurring. Examples of good practice relating to mooring, anchoring and boat wash, from a number of sources including importantly The Green Blue guidance and fact sheets, are as follows:

- Keep noise and disturbance to a minimum when moored or anchored near intertidal areas, particularly within the sheltered creeks, pills and rivers around the Severn Estuary over winter month;
- Anchor with care and consideration and be aware that inappropriate anchoring can damage marine wildlife and vegetation, particularly in shallow waters and over intertidal habitats;
- Choose anchoring sites carefully, away from the most sensitive areas of the Estuary where possible, including eelgrass beds and reefs, and use recognised landing places when going ashore. Take note of any anchoring restrictions in place;
- Follow RYA advice on anchoring, including using your anchor correctly to avoid drag, periodically checking that your anchor is not dragging and raising your anchor correctly when leaving;
- Observe speed limits and slow down to keep your wake to a minimum near to the shore, particularly in the sheltered waters of pills, creeks and rivers and in the vicinity of mooring areas. Excessive wash in sheltered areas can erode banks, disturb birds, damage sensitive vegetation and cause a nuisance to other boat users.

### 8.3 Pollution: Introduction of synthetic materials, contamination of mud/sand sediments and damage to habitats and birds

Recreational boating can contribute to pollution in the marine environment in a number of ways including:

- Oil and fuel spills and discharges;
- Litter;
- Sewage and waste water discharges; and
- Cleaning and maintenance activities.

#### Oil and fuel discharges

Recreational boating is a minor contributor to oil pollution in the marine environment. Spillages and discharges of oil and fuel do occur from boating, mostly as result of everyday activities such as during re-fuelling, bilge pumping, handling of waste oil and as a result of engine leaks and emissions. Repeated spillages of small amounts of oils are most likely to occur in marinas, where they disperse in the water column and may contribute to contaminants in the seabed sediments.

The Green Blue Guide on oil and fuel spills (The Green Blue, 2008) explains that recreational boat fuels and oils are relatively light petroleum products that often quickly evaporate and disperse assisted by waves and tides. They do not have the smothering effect of large, crude oil spills but are generally more toxic and can accumulate in the sediments of confined waters. The primary chemicals of environmental concern in pleasure craft oil and fuel are polycyclic aromatic hydrocarbons (PAHs). PAHs have a particular association with fine sediment particles and can persist in elevated levels in muddy sediments, producing toxic chemicals when they are broken down. PAHs have varying effects on different species and can cause behavioural changes, physiological and reproductive effects, reduced growth and feeding, deformity, cancers, mutations and ecological changes in marine species. Vertebrates including fish are able to break down low levels of PAHs but organisms further down the food chain, such as shellfish, take much longer to do so and contaminants can accumulate within them (The Green Blue, 2008d).

Hydrocarbons (including PAHs) enter the Severn Estuary from a wide variety of sources, including urban run-off, emissions from fuel combustion, industrial and sewage discharges and shipping, together with minor inputs from natural geological sources. Moderately high levels of PAHs are characteristic of muddy sediments in the Severn Estuary. It is likely that any oil and fuel spills from recreational boating within the Estuary will be very quickly dispersed by the large tides to levels that are not harmful or toxic. However, within enclosed areas where water is slower flowing and there are higher densities of boats and a greater frequency of refuelling activities, such as in marinas, spilled fuel and oil may contribute to an accumulation of contaminants in the sediments and potentially significant effects. Dispersal of spills within marinas is assisted by internal circulation of waters, moving boats and propeller wash. The main marinas in the Severn Estuary are located outside the EMS.

There is much that can be done to avoid and minimise accidental spills and operational discharges of fuels and oils from boats, including careful refuelling, regular engine maintenance and good housekeeping. Cardiff Harbour Authority have a bilge water disposal facility. The Green Blue Guides (2008) provide the following examples of good practice:

- Be aware that if the amounts of oil in water discharges exceed the legal limits of around one drop in two litres of water (15mg/l) then wildlife and habitats can be harmed;
- Check the bilge is free from oily contaminants before pumping, using an absorbent sock to clean up oily bilge water;
- Regularly maintain fuel lines, seals and connections to help prevent leaks;
- When refuelling, avoid overfilling the tank and allow room for fuel to expand. Avoid pouring fuel or oil on pontoons, other than dedicated refuelling pontoons. On shore try not to use oil and fuel within 10m of the water's edge. If pouring fuel or oil on board ensure you use a large enough funnel to minimise risk of spills;
- Mop up any spills ashore or on board and wherever possible prevent them entering the water. Do not treat spills with detergents which can be toxic in their own right;
- Take care when handling used oils or any oil contaminated material, transferring them in proper, sealed containers and disposing of them in appropriate oily waste/hazardous waste facilities; and
- Report any oil spill pollution incidents on the 24 hour Pollution Hotline on 0800 807060.

### Litter

Marine litter is a widespread problem. It can be dangerous to wildlife and people, pose a risk to navigation and have a significant visual impact on beaches and amenity areas, with considerable clean-up costs for Local Authorities and communities. The Green Blue guide to coastal boating (2008) explains that it is estimated that over a million birds and 100,000 marine mammals and turtles die every year from entanglement or ingestion of plastics. Certain types of plastics can also absorb chemicals from the surrounding environment, including heavy metals and PCBs. Ingestion of these toxins can lead to the impairment of the animal's immune system amongst other life threatening impacts (The Green Blue, 2008). Large items of litter may cause abrasion or smothering of intertidal areas as they are dragged along by the tides. The marine litter problem is particularly significant as plastics can persist in the environment for many years.

The Marine Conservation Society's Beachwatch reports that litter around the UK originates from a variety of sources, primarily beach visitors, fishing industry, sewage discharges and shipping, but the origin of the majority of litter along our coastlines is unknown. Much marine litter is from land-based sources, including litter washed into Estuary areas from urban areas and the rivers that feed into it. The amount of litter input from recreational boating sources into the Severn Estuary and wider marine environment is almost impossible to quantify, although is likely to be a relatively minor input compared to other sources. Typical items of litter that might arise from recreational boating includes food, food packaging and drinks containers, although it is generally considered unacceptable to throw these wastes overboard. In addition, loose articles or equipment are accidentally lost overboard on occasion during bad weather conditions.

Recreational boat users are provided with reception facilities for litter onshore at harbours, marinas and boat clubs, in order to meet the needs of boat users as required under the Port Waste Reception Regulations. Although a small contributor to litter in the marine environment, every effort should be made by boat users to avoid littering by continuing to follow good practice, such as follows:

- Never throw rubbish overboard, including food and cigarette ends. Bag it and take it home;

- Prevent litter and loose items from blowing into the Estuary; and
- Reduce, reuse and recycle waste wherever possible. Segregate your recyclable wastes onboard and use recycling facilities wherever provided at marinas and boat clubs.

### Sewage and waste water discharges

The discharge of sewage from boats can pose a risk to human health and the marine environment, particularly in enclosed or sheltered waters. Sewage and waste water discharges introduce harmful bacteria and viruses, nutrients and organic matter into the water column, which can increase levels of algae, cause the depletion of oxygen and may result in the localised suffocation of aquatic life. In addition, chemical toilets contain toxic substances, such as chlorine, ammonia and other chemical additives which can harm marine wildlife.

The effect of sewage discharges from boats in fast flushing coastal areas is considered negligible, particularly in the context of inputs from water treatment plants (UK CEED, 2000). This is likely to be the case over the majority of the Severn Estuary EMS due to dilution and dispersal by the highly energetic tidal regime. However, there is potential for localised water quality issues and damage to marine wildlife in sheltered or enclosed waters, predominantly in areas where there are already high levels of nutrients and low levels of dissolved oxygen.

Nutrient levels in the Estuary are high, with inputs from a variety of sources including sewage and industrial discharges and agricultural runoff from the around the Estuary and the many rivers that feed into it. However despite this, dissolved oxygen levels in the Estuary's waters are also generally high. The energetic tidal regime of the Estuary prevents high nutrient levels causing widespread eutrophication and environmental problems, such as those occasionally reported in the restricted upper Estuary beyond the boundaries of the EMS. Sewage and nutrient inputs in the Estuary and the rivers that feed it have reduced considerably over the past few decades, under environmental legislation including the Urban Waste Water Treatment Directive. Further improvements in reducing nutrient inputs from point and diffuse sources are in progress under the Water Framework Directive, with a great deal of investment addressing this issue particularly by water companies.

Levels of sewage input from recreational boating is likely to be reducing- since 2006 all new boats are required to have provision for holding tanks to be fitted under the Recreational Craft Directive. Publicity campaigns by the Green Blue have an important role in encouraging further reductions in sewage discharges from boats. The "Love Where You Sail" campaign explained that "one flush from a boat contains the same amount of bacteria as 250,000 flushes through the sewage treatment plant", offering simple advice for reducing sewage inputs. Although there are unlikely to be significant effects arising from sewage discharges from recreational boats in the Severn Estuary, the risks are increased in enclosed or sheltered waters with large numbers of boats. These environmental risks can be avoided or minimised by following good practice guidelines:

- Use shore-side toilet facilities when berthed at marinas around the Estuary;
- Give consideration to the environmental sensitivity of your surrounding area before using sea toilets, only use as far offshore as possible;
- Empty holding tanks at pump-out facilities in marinas where available. Chemical toilets must also be emptied ashore into pump-out facilities or into the sewage system; and
- If necessary to empty holding tanks at sea, only do so when more than three miles offshore i.e. beyond the Estuary in the open waters of the Bristol Channel where waste will be diluted and dispersed (The Green Blue, 2008).



### Cleaning and maintenance activities

Cleaning and maintaining a boat on the water or on land can cause detergents, paints, varnishes, solvents, degreasers, antifouling paints and other products to enter the marine environment. Many detergents, as well as waste water from sinks and showers, contain phosphates which can contribute to nutrient enrichment, potentially leading to algal blooms. In addition to phosphates, products used in the cleaning and maintenance of boats can contain a range of other toxic chemicals, including chlorine, potassium hydroxide and ammonia. Such substances are harmful in the marine environment, potentially affecting the feeding, breathing and reproduction of marine wildlife.

Further contamination of the marine environment can occur during maintenance activities on boat hulls, such as cleaning/washing down and the removal and re-application of antifouling paints. These antifouling paints slow down the growth of aquatic organisms such as microorganisms, barnacles, molluscs and algae, improving a boat's performance, fuel efficiency and durability. Modern antifouling paints commonly use copper compounds as the key biocide, together with zinc and other organic biocides, which are gradually released into the water surrounding the boat's hull, impeding the growth of fouling species. Biocides can also be released into the water and sediment when boat hulls are cleaned. Copper and other biocides are toxic not only to the fouling organisms, but also to other marine life such as bivalves and crustaceans. Copper-based antifouling paints generally need to be reapplied every two or three years.

The majority of copper biocides from boating enter the marine environment directly by leaching and only a small proportion is considered to enter from the removal and re-application of antifouling paints. UK CEED (2000) reports that despite elevated levels of copper in the vicinity of marina basins and areas with landside boat maintenance activities, there is no known evidence that this is having significant effects on the marine environment in those areas. However, The Green Blue Guide to Antifouling (2008) warns that the concentrated nature of biocides in paint scrapings can increase contaminant loadings locally and efforts should be made to prevent antifouling paints entering the water during cleaning and maintenance activities. Most users will naturally look to minimise loss of biocide during normal maintenance (other than when carrying out reapplication), as loss of paint is expensive and reduces efficacy.

**Figure 32 Maintenance Grid in Crockerne Pill © Anne Hayes.**



Non-toxic hull coatings that are smooth and slippery preventing fouling organisms from becoming firmly established (e.g. silicone, vinyl or Teflon-based products) have been developed which allow growth to be wiped off easily. These coatings are generally more durable than copper-based antifouling paints, but require more frequent cleaning to remove fouling growth. Whilst effective on motor boats, these coatings are currently less effective on slower moving sail boats. However, advances in developing non-toxic coatings continue.

### Summary

As identified above, in relation to sewage and waste water discharges, nutrient levels in the Estuary are generally high from a variety of sources, of which recreational boating is a minor contributor. Despite high nutrient levels, there are no known significant environmental impacts within the dynamic waters of the Severn Estuary EMS as a result nutrient enrichment.

Levels of copper and other heavy metals are also relatively high in the Severn Estuary. A legacy of historic contamination from heavy industry in Avonmouth, Cardiff, Newport and Bristol is still reflected today in slightly elevated levels of contaminants, including copper, in the muddy sediments of the Severn Estuary. Over the past few decades, the decline in heavy industry and introduction of stricter pollution controls has seen a reduction in contaminant inputs to the Estuary and overall sediment and water quality improvements. The concentrations of copper in the marine environment directly attributable to recreational boats is difficult to determine, however is considered to be negligible compared to that originating from landside industrial activities and shipping (UK CEED, 2000).

Any impacts from harmful and toxic chemicals due to cleaning and maintenance activities undertaken by recreational boating are likely to be localised and temporary in nature due to dilution and dispersal in the large expanse of the Estuary and the relatively low level of cleaning and maintenance activities taking place within the EMS. In enclosed areas or areas with low tidal flushing with relatively high densities of boats (such as marinas outside of the EMS), there may be greater risks as concentrations of nutrients and other contaminants could accumulate and potentially cause localised water quality and environmental issues. In Cardiff Bay (the location with the highest number and density of recreational boating in the Estuary) water quality is monitored both continuously and via spot sampling to identify and address any problems, such as reduced oxygen levels.

The Green Blue Guide (2008) highlights that potential impacts from boat cleaning and maintenance generally stem from the products themselves, not the practice of cleaning and maintenance of boats. Good practice, such as selecting environmentally sensitive or biodegradable cleaning products and the control of wastes from hull maintenance activities, minimises the contaminants entering the water from recreational boating. All boat users are encouraged to be aware of the Environment Agency Pollution Prevention Guidance 14 (Marinas & Craft) which provides advice to boat owners to minimise pollution from their activities. Good practice measures for cleaning and maintenance activities include the following:

- Use environmentally friendly cleaning and maintenance products, such as phosphate-free detergents, and avoid products containing chlorine and bleach;
- Prevent any antifouling paint from entering the marine environment, using a ground sheet when undertaking hull maintenance activities (scrubbing down and repainting), in order to catch any scrapings, drips, spills and other debris;
- When cleaning boat hulls care should be taken to remove fouling growth only and not the paint itself. If washing down on a slipway care should be taken to collect and brush up any paint particles preventing them from entering the water;

- Use close-looped boat wash/scrub down facilities, which collect antifouling residues from the waste water runoff, where provided by marinas and boat clubs;
- Remember that paints, varnishes and antifouling paints, and any used brushes, rollers, trays and empty paint tins, are all hazardous waste and must be disposed of appropriately and not mixed with other waste streams; and
- Choose antifouling paints with the lowest levels of biocides to suit your needs and consider the use of more environmentally friendly bottom paints such as silicone, Teflon or vinyl based products, where effective and possible.

**Figure 33** Sailing at Lydney © Severn Estuary Partnership.



## 9 Managing Recreation

Managing recreational boating in the Severn Estuary is important for the protection of public safety and the conservation features of the Severn Estuary European Marine Site. There are often challenges associated with the management of activities in the Estuary due to the added complexities of the cross-border nature of the site, its multiple community identities and marine-terrestrial connections.

Management of recreational boating in the Severn Estuary takes many forms, both voluntary and regulatory. Respect for the marine environment is an important aspect of recreational boating; upon which, self-management is a fundamental principle. The RYA, boat clubs, marinas, water sport organisations and individual boat users all play an important role in ensuring responsible boating and have a vested interest in protecting the marine environment that they operate within and enjoy. A number of Harbour Authorities and Local Authorities are also actively involved in the management of recreational boating in the Estuary.

A key purpose of RYA, British Water Ski and Wakeboard, other water sport associations and local boat clubs is to promote the enjoyment of recreation in a safe and sustainable way. In addition, there are strategic regional plans for water based sport and recreation in England and Wales encouraging organisations to provide for water based recreation, and encouraging people to take part in activities like sailing, canoeing, and rowing. These include the following:

- [Enjoying water in the South West: A strategy for water-based recreation in the South West](#) (2009 – 2014)
- A better place to play in Wales: Our strategy for water-based recreation in Wales (2008 – 2012).

These strategies explain how to use the waters safely and responsibly in a way that won't damage the environment and recognises the rights of fellow users.

There are a number of management measures implemented in the Severn Estuary that help to avoid or minimise environmental effects of recreational boating. These management measures include the following which are discussed further below:

- Education and codes of conduct;
- Local information and awareness of seasonal and geographical sensitivities;
- Managing safe navigation, including speed restrictions;
- Control of access and moorings, including permitting systems;
- Zoning of activities; and
- Compliance with legislation and consenting regimes.

In general, when deciding how best to minimise deterioration or disturbance of conservation features in the EMS, it is desirable to use voluntary measures and partnership approaches in the first instance, before considering statutory measures. Relevant Authorities should only need to use their statutory powers, such as the creation of byelaws, where it is clear that voluntary measures would be ineffective. Byelaws are primarily used for reasons of ensuring navigation and public safety; however certain Relevant Authorities have the power to create byelaws for nature conservation purposes. New mitigation measures should be implemented through current management mechanisms where they exist, in cooperation with the Relevant Authorities, recreational clubs and boat users who will be implementing those measures.

Consideration of any new management measures must also take into account the public rights to navigation that extend to all navigable and tidal waters, which can be exercised for any reasonable purpose including recreation. These rights extend to all tidal areas, including intertidal areas when the tide is out and vessels are resting on the seabed. Incidental to the



rights to navigate are the rights to anchor and moor vessels. However, this right to anchor or moor is only temporary, and there are no public rights to permanent or fixed moorings.

## 9.1 Information, education and codes of conduct

The education of boat users by providing information on the importance of the marine environment, the potential impacts of their activities and practical means of minimising and avoiding them, proves an effective management tool. RYA clubs and training centres play an important role in educating boat users. The RYAs' policy is that education is more effective than regulation and that "lessons learnt during their first RYA course are likely to become good habits throughout their boating life". On average, over 155,000 people complete RYA training courses every year. The RYA provides their members with resources and practical advice on a range of topics including caring for the environment and planning and licensing laws (<http://www.rya.org.uk/infoadvice/planningenvironment/Pages/default.aspx>).

In the spirit of self-management and education, numerous associations have developed environmental guidance for their members, including the RYA, British Marine and British Water Ski and Wakeboard. The Green Blue, a partnership project between the RYA and British Marine, promote a sustainable leisure marine sector in the UK by ensuring that clubs and boats users are issued with the best possible advice on how to protect the environment. Its key objectives are to raise environmental awareness amongst industry and users, reduce harmful discharges and environmental disturbance and to encourage sustainable choices. The Green Blue has created a series of informative guides and factsheets on a range of topics to encourage recreational users to reduce their environmental impact; a selection of which are listed in Table 13. The examples of good practice guidelines for recreational boating in Sections 8 and 9, draw extensively on these Green Blue publications.

**Table 13 Selection of guides, checklists and leaflets produced by the Green Blue for the boating community** (<http://www.thegreenblue.org.uk/>)

<b>Green Guides and Checklists:</b>	<b>Fact Sheets:</b>
The Green Guide to Coastal Boating	1: The Effects of Boating and Watersports on Wildlife
The Green Marine Wildlife Guide	2: Sewage and Waste Water Discharge from Boats
The Green Guide for Clubs	3: Oil and Fuel Spills from Recreational Craft
The Green Guide for Marinas	4: Boat Wash and Bank Erosion
The Green Guide to Outboard Efficiency	5: Closed Loop Boat Wash Down Systems
The Green Guide to Pump Out Systems	6: Anchoring and Mooring
The Green Guide to Boat Washdown	8: Litter in the Marine Environment
The Green Boat Checklist	9: Cleaning and Maintenance
Waste & Recycling Checklist	10: Antifouling and the Marine Environment
	11: Setting up a Recycling Scheme & 12 Recycling signage
	13: Fly Tipping

As part of the UK Marine SACs Project, good practice guidelines were developed for recreational activities (UK CEED, 2000) and ports and harbours (ABP Research 1999) in UK European Marine Sites, both covering recreational boating activities. These guidance documents aim to support the development of management schemes in the UK by providing information on the potential impacts of activities and proven good practice and guidance to Relevant Authorities and users.

Providing boat users with local information on the importance of designated habitats and species within an EMS, and the influence that their activities may have on them, helps to raise awareness and encourage good practice. This local guidance can be particularly helpful in raising awareness of specific geographical and seasonal sensitivities, such as key roost sites for overwintering wildfowl and waders. A number of coastal, Estuary and EMS Management

Groups in England and Wales have produced local codes of conduct for water based recreation, including the Pembrokeshire Marine Code, Exe Estuary Water Code, and the Ceredigion Recreational Boat Users' Code of Conduct.

In 2006, ASERA published a leaflet "[Sharing the Severn Estuary](#)" to raise awareness of the importance of the Severn Estuary EMS, particularly for overwintering birds, and to provide brief guidance for recreational users ashore and afloat. Also in 2006, the Severn Estuary Partnership produced a [guide on the habitats and species of the Severn Estuary for developers and decision makers](#). Some Harbour Authorities have their own individual guidance and codes of conduct for recreational boat users that cover specific parts of the Estuary (see section 9.2). The Bristol Channel Yachting Association Handbook, known as the "Blue Book", contains local information on member clubs, pilotage sketches and information on environmental designations, providing a valuable guide that promotes the enjoyment of the Bristol Channel and safe navigation.

Drawing on the wealth of information above it is recommended that ASERA produce *Good Practice Guidelines* for recreational boating in the Severn Estuary EMS, working in partnership with representatives of boating interests in the Estuary.

## 9.2 Management of recreational navigation

Harbour Authorities have a duty to ensure safe navigation and have powers to regulate the activities of vessels in their harbour areas, including recreational boats. They mainly do this by issuing directions and enforcing byelaws to control the safe movement of vessels and by providing advice and information to recreational users on matters relating to safe navigation.

Byelaws provide one of the primary methods of managing recreational navigation and can be put in place to control the use, movement, mooring and anchoring of recreational boats. Byelaws vary from harbour to harbour, generally focusing on promoting safe navigation and preventing danger to harbour users, although many byelaws also have environmental benefits. Local byelaws in harbour areas around the Severn Estuary cover a range of recreational activities, including the following examples:

- a requirement for all vessels to navigate with care to avoid disturbance, damage or danger to any other vessel, person or property in the harbour;
- speed limits to protect public safety and minimise boat wash in certain areas around the Estuary, including parts of the upper Estuary, Rivers Wye, Avon, Taff and Ely and along the coast at Burnham-on-Sea, Berrow and Brean. Reducing wash primarily safeguards other harbour users (moored or anchored boats, row boats, canoes, other small craft and beach users where relevant) and also provides some protection for sheltered intertidal habitats;
- restrictions on navigation, mooring and anchoring activities in certain locations in the approaches to commercial ports. For example, small vessels shall not make use of navigable channels in such a way as to cause an obstruction or impede the movement of other vessels;
- control of water-skiing, aquaplaning, water biking or other similar activities in specific locations in harbour areas (e.g. Cardiff Bay, Cardiff Dock and Harbour, River Avon, River Wye and the upper Estuary);
- prior notice and consent required for boating events within harbour areas, including regattas, races, processions, pageants or any other similar events; and
- consent from the Harbour Authority required for the laying down of any mooring, buoy or tackle for the use of recreational vessels.

In areas where there is potential for conflict between different harbour users, a number of voluntary initiatives have been developed including the use of zoning and additional

management controls. For example, Cardiff Harbour Authority has developed a Water Use and Moorings Strategy to reduce conflict between different recreational activities and to minimise disturbance to habitats and species (see section 9.4). Other voluntary schemes focus purely on navigational safety such as the voluntary recreational and commercial traffic separation scheme in operation in the approaches to Avonmouth and Portbury Docks. Many Harbour Authorities have developed guidance and codes of conduct for recreational boat users to promote safe and responsible navigation in the Estuary, including the following:

- [Canal & Rivers Trust - Safety Guidance For Small Boat Passage of The Severn Estuary](#)
- [Cardiff Harbour Authority - The Cardiff Bay User Guide](#)
- Gloucester Harbour Trustees - Marine Safety in the Severn Estuary & Lower Wye: A Guide to Safe Navigation for Small Craft and Notes for River Bank Users
- [Sedgemoor District Council - A Code of Practice & information for small Craft Users](#)
- [The Bristol Port Company - Recreational Craft Navigation Guide](#)

A number of these guides contain information on the environmental importance of the Severn Estuary and recommend summary good practice for navigating with care and minimising the effects of recreational boating.

### 9.3 Managing access and use of moorings

Mooring areas, slipways, jetties and other launching points for recreational craft around the Estuary are managed to ensure that they are used safely and responsibly. Boat clubs, marinas and a number of Relevant Authorities play an important role in managing safe access.

#### Moorings

Recreational boat clubs also manage and maintain the majority of moorings areas located within the Severn Estuary EMS, usually under lease or license from the seabed owner, and permission from the Local Authority and/or the Harbour Authority. For example, all boats moored in the River Brue require a mooring licence from the Burnham on Sea Motor Boat & Sailing Club, who issue them on behalf of Sedgemoor District Council and the Crown Estate. Boat moorings in Clevedon Pill are licenced by the Clevedon Estate to Clevedon Cruising Club and those in Crockerne Pill and Chapel Pill in the mouth of the River Avon are licenced by the Crown Estate to the Portishead Cruising Club. Boat clubs may also implement other voluntary measures to promote safe and environmentally responsible activities. For example, Weston Bay Yacht Club recommends speed restrictions within the River Axe to reduce boat wash (Figure 34).

**Figure 34 Speed restrictions of 7 knots at Weston Bay Yacht Club © Lucy Taylor.**



## Slipways

The majority of slipways and access points around the Estuary are managed by recreational boat clubs, as discussed in Section 5.6. Use of these slipways is often restricted to club members or requires prior permission from the club for use by non-members. For example, access to the two slipways off the Penarth seafront are via locked gates, which require permission and keys from Penarth Yacht Club and Penarth Water Ski Club who work with the Vale of Glamorgan Council to manage access. The slipways at Lydney Yacht Club, Weston Bay Yacht Club and Burnham on Sea Motor Boat & Sailing Club, amongst others, can also only be used by club members. The slipway at Uphill is owned and operated by the Uphill Boat Centre and available for use by a variety of types of recreational craft, including power boats, motor cruisers, personal water craft and sailing boats.

## Permit systems

A number of Local Authorities operate permit systems to manage access at popular public slipways, often supported by byelaws to ensure the safe use of slipways and to protect the public. All recreational vessels, including personal water craft, sail boats and power boats wishing to use these public slipways must first obtain a permit from the Council. Issuing permits allows the level of recreation in an area to be managed, encouraging the enjoyment of the Estuary's most popular recreational areas whilst ensuring that it remains within safe and sustainable limits. Local Authority Permit systems in operation in the Estuary include the following:

- North Somerset Council operates a permit scheme for the slipway at Knightstone Harbour in the northern part of Weston Bay. By joining up to the permit system recreational users agree to abide by North Somerset Council's byelaws, directions of Council Officers and RYA and British Water Ski and Wakeboard rules and codes of conduct. A penalty system is in place for breaches in the regulations and codes of conduct (also see zoning in Knightstone harbour below).
- Sedgemoor District Council issue permits to allow use of the slipway / main jetty at Burnham; and Berrow Beach is managed by a Resort Officer and Beach Wardens during the summer months;
- Vale of Glamorgan County Council issues permits and conditions for launching boats off the Penarth slipway via the Town Resort Manager;
- Cardiff Harbour Authority manages access to the slipway at Channel View on the River Taff by issuing an Annual Slipway License and keys.

## 9.4 Zoning of activities

Zoning is often used to manage recreational activities, keeping different types of users apart or outside particularly sensitive areas. Activities can be zoned spatially in specific geographical areas or temporally at specific times. This management method can be used to gain maximum potential for recreational activities whilst ensuring that sensitive species and habitats are protected. Many zoning schemes are voluntary and others are supported and enforced by local byelaws. The Marine Management Organisation, Natural Resources Wales and the Inshore Fisheries and Conservation Agency (IFCA) all have powers to create byelaws for the protection of a European Marine Site and its designated features. Natural England have the ability to issue consents for activities in SSSIs under their regulatory powers.

Zoning is mostly used in areas with high recreational use by a variety of boating activities, including power boats and water-skiing, personal watercraft, sailing boats, windsurfing and other activities, such as in Cardiff and Weston Bay (see below). Permissive zoning seeks to allow activities to take place within defined areas and allows the use of waters to be promoted in a

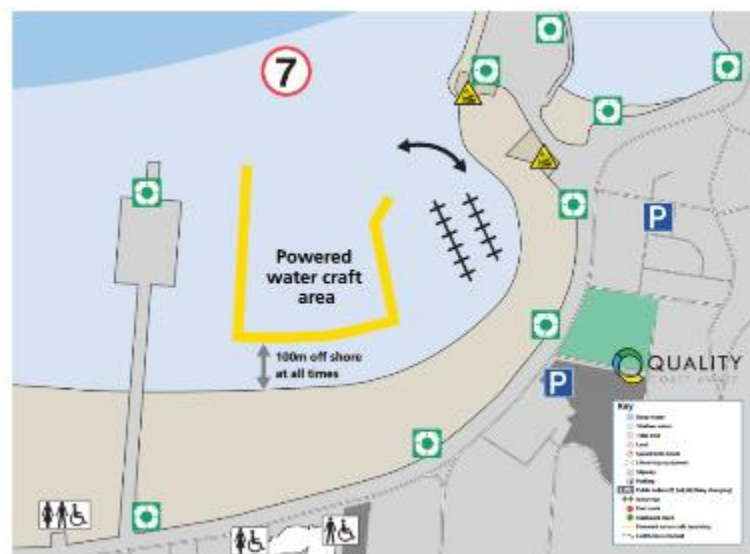


safe and environmentally sensitive way. Restrictive zoning seeks to prevent or control an activity in certain areas and is often imposed for reasons of public safety. Restrictive zoning can also be used to protect habitats and species in sensitive locations or times of year. Seasonal restriction of activities can be a useful management tool where there is concern for species that are only present at certain times of the year, such as around key roost sites for overwintering birds (see River Axe below).

It should be noted that restrictive zoning limits activities and public freedom, which can result in socio-economic effects on boat users and, in some cases, lead to resentment. However, zoning systems will usually gain widespread support from recreation users if the reasons and benefits behind them are clear and well understood. It is desirable that restrictive zoning systems are only used in areas where boating activities are known to be having a significant effect on sensitive designated features, and that existing and new voluntary management measures would not be effective in providing protection. Examples of zoning systems in and around the Severn Estuary include the following:

**Knightstone Harbour, Weston Bay:** A permissive power boating and water-ski area has been identified in Knightstone Harbour in Weston Bay (Figure 35). Boats must stay 100m from the shoreline and 50m from the Grand Pier whilst operating. There is also a 7 knot speed restriction on the approaches to the power boat area between the end of the Grand Pier and Knightstone Island.

**Figure 35 Power boat and water-ski area in Knightstone Harbour in Weston Bay**

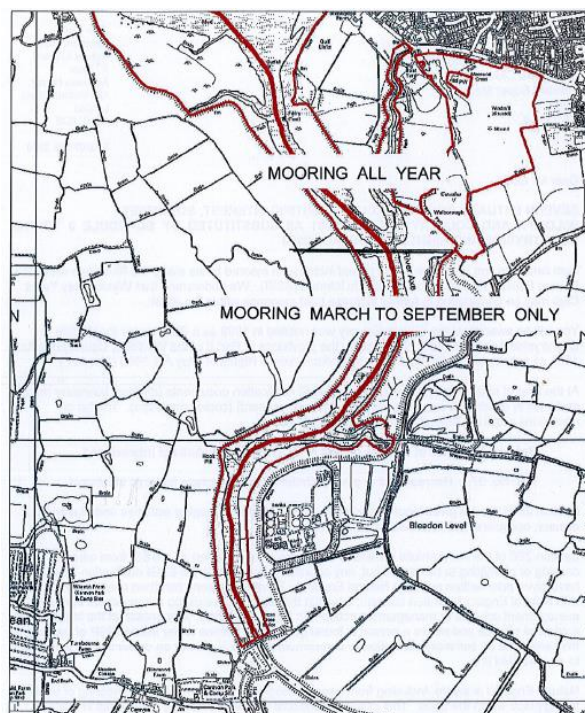


**Cardiff Bay Water Use and Moorings Strategy:** Within Cardiff Bay, Cardiff Harbour Authority's Water Use Strategy uses a zoning system to locate recreational activities in areas where they are likely to cause the least disturbance to protected habitats and species. Water-skiing, the use of a personal watercraft, jet-skis, boardsailing and canoes are permitted only with the prior approval of the Harbour Authority. Members of Penarth Water Ski Club are permitted to use the Bay at certain times Friday to Monday (for example, on Saturdays between 08:00 and 12:30 and Sundays 17:00 until 30 minutes before sunset). Speed limits are also in place within the Rivers Taff and Ely which enter the north and south of the Bay. This prevents the wash from powerboats disturbing nesting birds along the river banks.

**River Axe Seasonal Mooring Agreement:** There is an agreement in place in the River Axe which places seasonal restrictions on the mooring of recreational boats. This agreement between Natural England and the Weston Bay Yacht Club restricts the mooring of boats in the inner Axe

Estuary (south of a given line shown on Figure 36) to summer months only, namely March to September. Over the winter, boats are moved off the moorings in the inner Axe Estuary to the moorings in the mouth of the river or ashore. This agreement was put in place to address concerns regarding the potential disturbance of birds using important roosting areas in the River Axe arising from activities associated with moorings in combination with wildfowling activities. In recent years a few boats have been observed on moorings in the restricted area in the upper Axe estuary during winter months, although there is little or no boating activity generally taking place here. Natural England are monitoring the implementation of management measures and the potential for disturbance of roosting birds.

**Figure 36 Seasonal mooring agreement in the River Axe Estuary.**



## 9.5 Legislation and consents

Recreational boating activities are covered by a range of environmental legislation, with *some* examples including the following:

- There is national and European legislation protecting certain habitats and species from intentional or unintentional killing, damage, taking and disturbance, including wild birds, their nests and eggs (e.g. the Countryside and Right of Way Act and the Wildlife and Countryside Act);
- The Water Resources Act (1991) makes it an offence to deliberately or accidentally discharge pollutants in to controlled waters, including estuaries;
- Operators of marinas, harbours and other shore-side facilities are required to provide reception facilities for boats to land their waste, reducing amounts of waste disposed of at sea, under the Merchant Shipping and Fishing Vessels (Port Waste Reception Facilities) Regulations.
- The Hazardous Waste Regulation set out procedures for the appropriate disposal of any hazardous wastes, including waste oil, oily rags and waste material from maintenance

activities depending on its contents e.g. if containing antifouling paint or hazardous cleaning products.

- The Environmental Permitting (England and Wales) Regulations (2010) requirements are the mechanism by which pollution is managed and enforcement is undertaken.
- Marine Planning – the draft Welsh National Marine Plan has a number of policies which impact on recreational boating and Marine Protected Areas. In the absence of a marine plan on the English side of the estuary, the Marine Policy Statement should be referred to.
- The Environment Act (1995) outlines the statutory guidance surrounding pollutants and facilitates enforcement.

The development of new recreational facilities and supporting infrastructure, such as the placement of new moorings, is defined as a plan or project, which requires a number of consents, including a marine licence under the Marine and Coastal Access Act 2009, planning permission and Harbour Authority and landowner consent. A variety of regulators are therefore involved in the control of new recreational infrastructure, including the Marine Management Organisation, NRW's Marine Licensing Team, Natural England, the seabed owner (e.g. the Crown Estate, Swangrove Estate) and the relevant Local Authority and Harbour Authority if within their area of jurisdiction. The consenting process addresses potential environmental effects on habitats and species of the EMS.

As identified in Section 8.2, a few areas have been identified in the EMS where the regulation, control and management of mooring areas is unknown, namely the wooden jetties/pontoons in the Rivers Ebbw and Usk in Newport and a small number of moorings in the River Banwell. These moorings and wooden jetties appear to be in private ownership. There is potential for disturbance and damage to very small, localised areas of intertidal flats and saltmarsh should moorings spread in an unregulated manner. It is recommended that Relevant Authorities investigate any areas where there are possible unregulated moorings to ensure that any potential disturbance and damage to intertidal habitats is considered and where appropriate addressed.

**Figure 37** Wooden jetties/pontoons on designated habitats in the River Ebbw near Newport (left) and moorings in the River Banwell (right) © Google Maps 2014.



## 10 Consultation

This report provides information on what is currently known by ASERA about recreational boating in the Severn Estuary. It is based on available information on boating activity, its key potential environmental effects, recommended good practice and existing management measures. It was recognised that in places this information may have been incomplete or several years old. Subsequently, ASERA consulted on the report over a 6-week period during October to November 2015 to gain input from recreational boating interests and associations, Relevant Authorities and Conservation Agencies.

The short consultation questionnaire aimed to gather views on recreational boating in the Severn Estuary, ensuring that the information in the report was correct and identified whether there was any additional information available to help ASERA better understand and manage boating in the EMS. ASERA was keen to understand whether there was agreement with the key report findings and recommendations, including the recommended production of a Good Practice Guidance leaflet for recreational boating activities in the Severn Estuary. A targeted consultation was undertaken with the following key stakeholders:

- **Recreational boating interests in the Estuary, including boat clubs, marinas and representatives of recreational boating associations, including the RYA, BCYA and BMIF.**
- **ASERA members, importantly those Local Authorities and Harbour Authorities with a role in managing boating activities in the Estuary.**
- **Conservation Agencies and Environmental Regulators, including Natural Resources Wales, Natural England, Environment Agency and Devon and Severn IFCA.**

14 consultation responses were received by ASERA from a range of boat clubs and marinas, ASERA members, the Conservation Agencies and Environmental Regulators. For the full list of consultees, see Annex 3.

Some of the key comments/suggestions made were:

- Most respondents agreed with the overall findings and recommendations of the report;
- Many clubs, associations and Relevant Authorities were interested in being involved in the development of Good Practice Guidelines to minimise potential environmental risks from recreational boating;
- Amendments to and the addition of more specific information on the intensity and frequency of boating in the Estuary;
- Amendments to the Disturbance to Feeding & Roosting Birds section (8.1), in line with guidance from Natural England;
- Amendments to the Legislation and Consents section (9.5), in line with RYA comments; and,
- Updates to information on certain clubs, marinas and associations.

This has been an important step in informing ASERA's work throughout 2016 to finalise the draft Severn Estuary EMS Management Scheme and update of the Relevant Authority Action Plans.



## 11 Recommendations

1. It is recommended that ASERA produce Good Practice Guidelines for recreational boating in the Severn Estuary EMS to avoid or minimise potential environmental risks, particularly in sensitive areas such as in sheltered waters or in the vicinity of important roost sites. These guidelines should draw on the information in this report and the wealth of existing good practice from The Green Blue, to provide Severn Estuary-specific advice and guidance. The guidelines should be developed together with representatives of local marinas and boat clubs.
2. It would be helpful if boat clubs and boat users could be provided with local information on the importance of designated habitats and species with the Severn Estuary EMS, and the influence their activities may have on them. This local information can help raise awareness of specific geographical and seasonal sensitivities, such as the location of key roost sites for overwintering wildfowl and waders or the location of eel grass bed which would be particularly sensitive to anchoring activities. In addition, awareness should be raised about the importance of recreational boating in the Estuary.
3. ASERA proposes to review the findings of this report with respect to potential disturbance to SPA bird species in light of new information on the location of important high tide roost sites when this information is available for the whole Estuary.
4. It is recommended that an additional management measure is incorporated in the Action Plans for certain Relevant Authorities to investigate areas of unregulated moorings to ensure that there is no further spread within the EMS, and to also fully consider any potential disturbance and damage to intertidal habitats as a result of such developments in the future and, where appropriate, address as part of the planning and marine licensing regime.
5. The potential spread of non-native species by recreational boating in the Estuary has not been considered in this report. It is recommended this issue is also covered in ASERA's Good Practice Guidelines. Cardiff Harbour Authority implements management measures to address the risk of introducing or spreading non-native species and would be well placed to advise ASERA on good practice.

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## 13 Annex I – Summary of 2009 ASERA Management Scheme proforma responses regarding water based recreation

Relevant Authorities that completed the 2009 water based recreation proforma:

- Environment Agency
- Cardiff Harbour Authority (part of Cardiff Council)
- Gloucester Harbour Trustees
- Newport Harbour Commissioners
- Port of Bridgwater (part of Sedgemoor District Council)
- The Bristol Port Company
- Monmouthshire County Council
- North Somerset Council
- Somerset County Council
- South Gloucester Council
- Vale of Glamorgan County Council
- Forest of Dean District Council
- Sedgemoor District Council
- Cardiff Council (excluding Cardiff Harbour Authority functions)
- Newport City Council



## 14 Annex 2 – F-codes activity assessment and guideline management options

Code	<b>Assessment</b> (used by the countryside agencies to provide assessment advice on the activity pro-formas)	<b>Guideline Management options</b>
<b>F1</b>	The activity constitutes a <b>plan or project</b> .	Competent Authority to apply Habs Regs 48 – 53. Maintain audit trail on decisions. ASERA to provide framework where appropriate.
<b>F2</b>	<b>No impact possible</b> There is no known mechanism(s) for the activity to cause deterioration or significant disturbance to a feature(s). Activity is not known by the RA to have an effect in its area of jurisdiction.	No action is required for activities that do not have an effect on the site, subject to the continuation of current management. Where there is a change in management, or in light of further information, the impact of the activities should be re-assessed.
<b>F3</b>	<b>Impact unknown</b> There is a known mechanism(s) for the activity to cause deterioration or significant disturbance to a feature(s), but there is insufficient current information to determine whether or not it is causing deterioration or significant disturbance.	One or more of the following management options may be considered for activities with an unknown effect on the site: a. No action, subject to the continuation of current management. Where there is a change in management, or in light of further information, the impact of the activities should be re-assessed. b. Increased monitoring of the condition of the feature/site c. Surveillance of the extent of activities d. Research to address cause and effect relationships and other relevant gaps in information e. Precautionary management measures (see e-l below for examples) Selection of the appropriate management option above will be considered on a case by case basis depending on the likelihood of an impact occurring and the magnitude of that possible impact. Effort and costs associated with researching or addressing “unknown impacts” should be proportional to the environmental improvement likely to result from those actions.
<b>F4</b>	<b>No impact identified</b> There is a known mechanism(s) for the activity to cause deterioration or significant disturbance to a feature(s), but no current information shows that it is causing deterioration or significant disturbance at present. Activity is not known by the RA to have an effect in its area of jurisdiction	No action is required for activities that are not known to have an effect. Where there is a change in management, or in light of further information, the impact of the activities should be re-assessed. Management options may be reviewed in the light of revised advice from the countryside agencies.

<b>F5</b>	<p><b>Significant impact (managed)</b></p> <p>There is current information to suggest that an activity is causing deterioration or significant disturbance to a feature(s) and the mechanism(s) is known.</p> <p>Activity is known by a Relevant Authority to be having an effect in its area of jurisdiction and a single Relevant Authority is responsible or has power for that activity.</p> <p>Activity is known by a Relevant Authority to be having an effect in its area of jurisdiction and a number of Relevant Authorities have powers or are responsible for that activity around the Estuary</p>	<p>For activities with a known impact on the site, action must be taken. Actions may include one or more of the following:</p> <ul style="list-style-type: none"> <li>a. Increased monitoring of the condition of the feature/site</li> <li>b. Surveillance of the extent of activities</li> <li>c. Research to address gaps in information</li> <li>d. Provision of information to Relevant Authorities, interested parties, and the public as appropriate.</li> <li>e. Training of staff within Relevant Authorities.</li> <li>f. Liaison and improved communication with other Relevant Authorities, interested parties and the public</li> <li>g. Introduction of Voluntary Codes of Conduct</li> <li>h. Review and possibly amendment of existing management regimes/procedures</li> <li>i. Enforcement of byelaws</li> <li>j. Development and trialling of operational limits</li> <li>k. Zoning of activities</li> <li>l. No action required (further information indicates that adequate management measures are in place to avoid or minimise effects on the feature/site; or in the absence of any alternative, cost-effective management solutions).</li> </ul> <p>Selection of the appropriate management option above will be considered on a case by case basis depending on the nature, magnitude and current management of that possible impact. Effort and costs associated with researching or addressing “impacts” should be proportional to the environmental improvement likely to result from those actions.</p>
<b>F6</b>	<p><b>Significant impact (unmanaged)</b></p> <p>There is current information to suggest that an activity is causing deterioration or significant disturbance to a feature(s), but it is outside management control (i.e. natural process, or there is no current mechanism for management).</p> <p>Activity is having an effect and no one has responsibility for the activity.</p>	<p>When an activity with a known effect on the site is outside management control, Relevant Authorities may set-up a working/topic group of appropriate organisations and interested parties to consider possible actions (see a-l above).</p>

## 15 Annex 3 – Consultees

### Boat Clubs & Marinas

<b>Burnham on Sea Motor Boat &amp; Sailing Club</b>	<b>Lydney Yacht Club</b>	<b>Rhymney River Motor Boat, Sail &amp; Angling Club</b>
<b>Cardiff Bay Yacht Club</b>	<b>Newport Uskmouth Sailing Club (NUSC)</b>	<b>Sharpness Marina</b>
<b>Cardiff Marina</b>	<b>Penarth Quays Marina</b>	<b>Shirehampton Sailing Club</b>
<b>Cardiff Yacht Club</b>	<b>Penarth Rowing Club</b>	<b>Thornbury Sailing Club</b>
<b>Chepstow &amp; District Yacht Club</b>	<b>Penarth Water Ski Club</b>	<b>Uphill Boat Centre</b>
<b>Chepstow Boat Club</b>	<b>Penarth Yacht Club</b>	<b>Weston Bay Water Sports Club</b>
<b>Clevedon Sailing Club</b>	<b>Portishead Cruising Club</b>	<b>Weston Bay Yacht Club</b>
<b>Clevedon Pilot Gig Club</b>	<b>Portishead Quays Marina</b>	
<b>Combwich Motor Boat &amp; Sailing Club</b>	<b>Portishead Yacht &amp; Sailing Club</b>	

### Conservation Agencies & Environmental Regulators

<b>Devon and Severn IFCA</b>	<b>Environment Agency</b>
<b>Natural England</b>	<b>Natural Resources Wales</b>

### Other ASERA Members

<b>Associated British Ports</b>	<b>Newport City Council</b>	<b>South Gloucestershire Council</b>
<b>Axe-Brue Drainage Board</b>	<b>Newport Harbour Commissioners</b>	<b>Stroud District Council</b>
<b>Cardiff Council (including Cardiff Harbour Authority)</b>	<b>North Somerset Council</b>	<b>The Bristol Port Company</b>
<b>Gloucestershire County Council</b>	<b>North Somerset Levels Internal Drainage Board</b>	<b>Trinity House Lighthouse Service</b>
<b>Gloucester Harbour Trustees</b>	<b>Parrett Internal Drainage Board</b>	<b>Vale of Glamorgan Council</b>
<b>Forest of Dean District Council</b>	<b>Sedgemoor District Council (inc. Bridgwater Port Authority)</b>	
<b>Monmouthshire County Council</b>	<b>Somerset County Council</b>	

### Other Organisations

<b>Bristol Channel Yachting Association</b>	<b>Royal Yachting Association</b>
<b>British Waterski and Wakeboard</b>	<b>The Crown Estate</b>