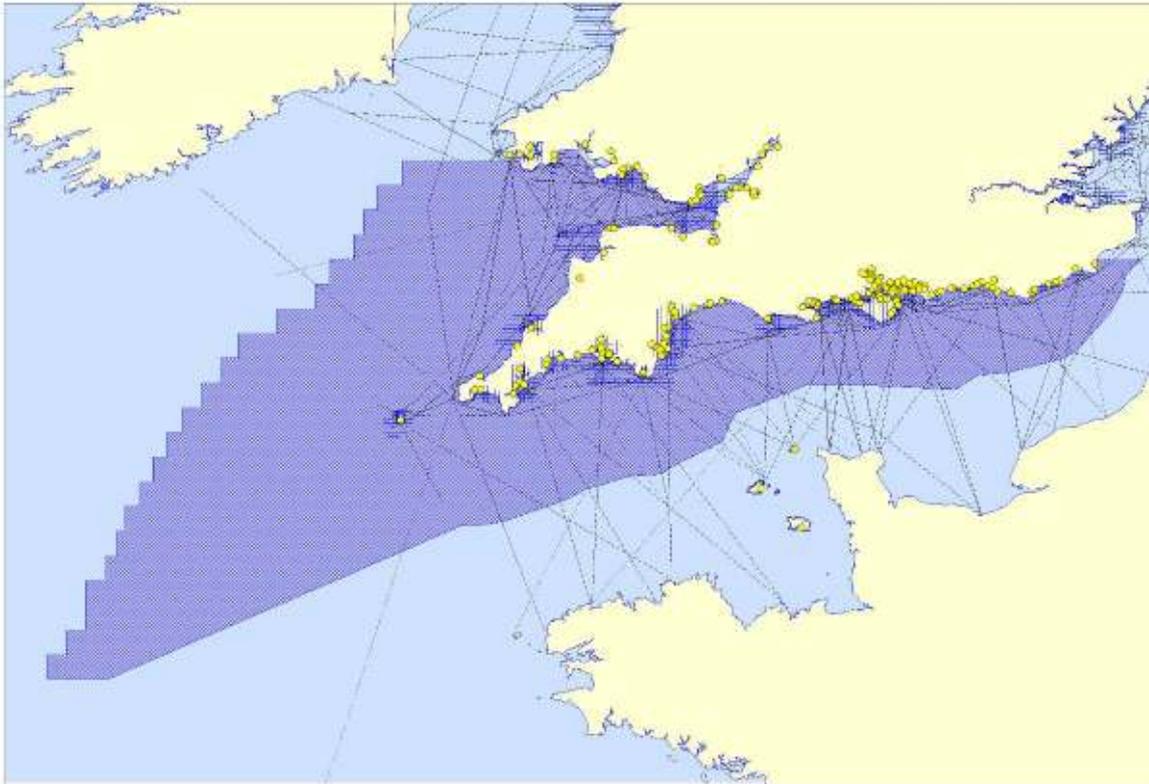


Identifying Recreational Cruising Routes, Sailing and Racing Areas within the SEA 8 Area

**A Report for the Department of Trade and Industry
By the Royal Yachting Association**



March 2007



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March 2007

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1 Introduction

1.1 Background

This project has been carried out to inform the UK Department of Trade and Industry (DTI) in the completion of a Strategic Environmental Assessment (SEA) of part of the UK continental shelf. This area is the eighth SEA area to be completed and as a result is referred to as SEA 8, see Figure 1. Historically the DTI SEA work has been concentrated on informing the licensing for offshore oil and gas but previous SEAs were expanded to include examining the impacts on stakeholders who may be affected by the development of renewable energy. An SEA was carried out for the three strategic wind farm areas identified in the DTI's *Future Offshore* document. One of the major outputs of the work was the identification of large gaps where data were absent and unavailable.

1.2 Developing a database of recreational boating use

Historically there has not been a database of recreational use of the UK's marine environment. Due to the difficulty in collecting this type of information there had previously been no attempt to gather co-ordinated data concerning the level of recreational boating around the UK or the locations of such activity. Databases of commercial shipping can be built through radar surveys and more recently through AIS (Automatic identification System) surveys. However, these are not generally carried by recreational craft. As a response to the lack of information highlighted by the SEA carried out for the three strategic wind farm development areas, the Royal Yachting Association, supported by the Cruising Association started to identify recreational cruising routes, general sailing and racing areas. This work was based on extensive consultation and qualitative data collection from RYA and Cruising Association members, through the organisations' specialist and regional committees and through the RYA affiliated clubs. The consultation was also sent to berth holder associations and marinas. The result of this work was published in 2004 in the document, *Sharing the Wind*.

Sharing the Wind was put together when it became clear that information on recreational boating was urgently needed to assist the Government's drive to develop offshore renewable energy, in particular wind farms, by providing data for consideration during the planning, design, and approval process. Such data has now assisted the work of making informed comment on details of individual wind farm proposals in the three strategic areas.

The database was expanded with support from Trinity House Corporation which enabled an entire *UK Atlas of Recreational Boating* to be produced. The revision of this work will continue, this study resulting in a thorough review of the Milford Haven to Dover section of the coast.

1.3 Inclusion of recreational boating in Strategic Environmental Assessments

In March 2005, the RYA completed the first SEA report focused entirely on recreational boating for the SEA 8 area. The decision to include recreational use into the SEA process was welcomed by the RYA. This report is the second such report and has been completed for SEA 8 area. The collation of recreational boating data in the SEA 8 area expands on the data collected for the Atlas of recreational boating and has enabled a thorough consultation to be undertaken of the routes and an updated second version for the area from Milford Haven to Dover to be completed.

The SEA work identifies the cruising routes, sailing and racing areas as well as the shore based facilities which can give an indication of intensity of use. In addition, where known the location of small craft anchorages are also marked which are important for craft seeking refuge as well as general passage making.

Collating information about recreational use is in essence difficult as sailor's passage logs are kept by the individuals. Day sailing and racing is also known to the individuals and clubs and not recorded into an official database. However, through the network of recreational boaters who are members of the RYA directly or are members of RYA affiliated clubs as well as utilising partner

organisations such as the Cruising Association and the Conference of Yacht Cruising Clubs, the RYA is able to reach a wide audience to compile a comprehensive set of cruising routes. The review of the original mapping work has been undertaken by a second round of consultation with the affiliated clubs and regional committees and associations and through consulting with Tom Cunliffe, RYA/MCA Yachtmaster Instructor Examiner and author of the Shell Channel Pilot who is an expert in cruising in this area.

1.4 About the Royal Yachting Association (RYA)

The RYA has taken an active role in policy making that affects boat users and has been the voice of recreational boating for over a century. It represents 101,000 personal members and over 1,500 affiliated clubs representing a further 400, 000 boat enthusiasts and administers training standards at over 2,000 RYA training centres.

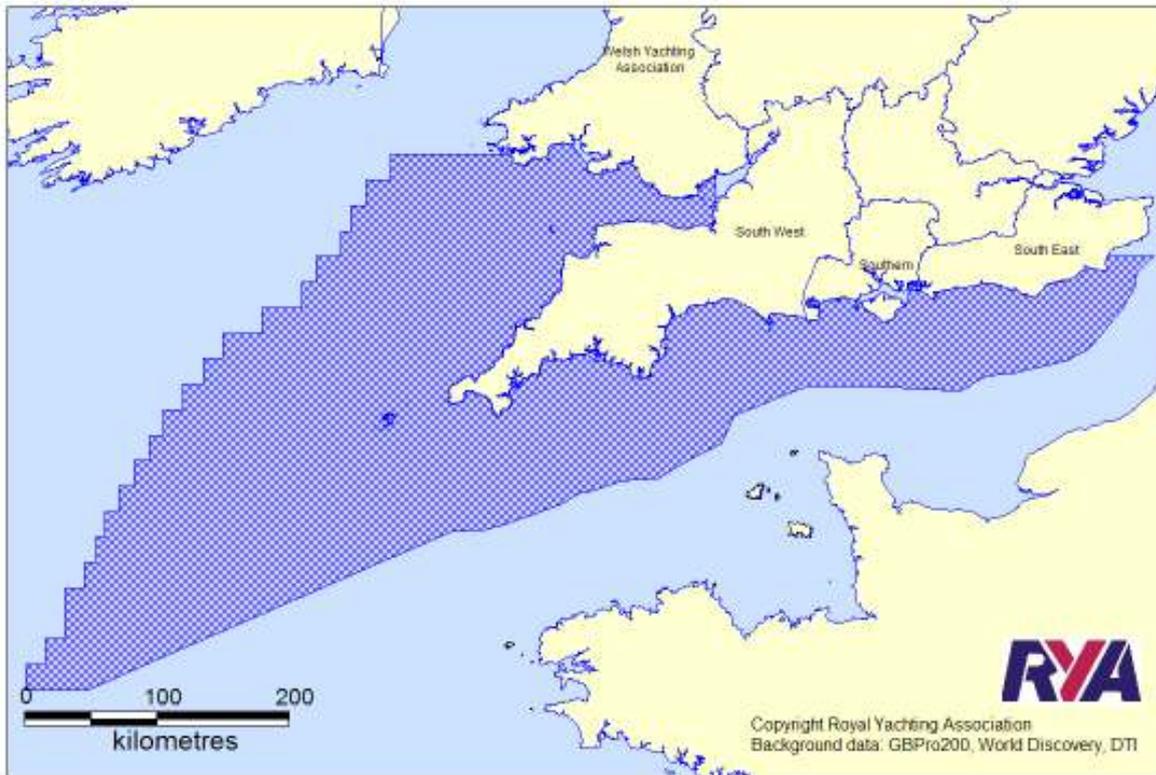
RYA represents users of:

- Cruising and racing sailboats and powerboats
- Sailing dinghies and day boats
- Windsurfers
- Personal watercraft

The RYA was originally formed as the Yacht Racing Association in 1875 to harmonise the right-of-way and handicap rules for yacht racing. Since then the focus of the Association has extended to encompass the views of all water users under sail or power, and just after WW2, the word "Racing" was justifiably dropped. Then in 1952 the "Royal" title was granted, to form the Royal Yachting Association, or the "RYA" as it is commonly known today.

RYA policy is determined by its democratically elected Council and a series of expert committees. These are almost exclusively occupied by volunteers who give large amounts of their time to helping the RYA, and it is these people who generate the policy and direction of the RYA. At a regional level, the RYA is divided into English regions and Home Country regions. Those relevant to the SEA 8 area are showing in Figure 1.

Figure 1: Map of the SEA 8 area and the adjacent RYA regions and Home Countries



2 Identifying cruising routes, sailing and racing areas in the SEA8 area

The SEA 8 project has been undertaken by the RYA. This has involved the coordination and collation of data within the SEA 8 area and input and revision of the RYA's geographical information system. The routes are plotted as straight lines. However, recreational sailing craft rarely operate in straight lines. Their direction of travel is dictated by the direction of wind. This is explained in detail in Annex A. this report also contains a section in Chapter 9 that describes some of the difficulties that may be faced in navigating around some of the different offshore renewable energy structures.

Relevant primary data was collected through the RYA network of personal RYA members and members of RYA affiliated clubs as well as through partner organisations. This work culminated in 2005 into the *Atlas of Recreational Boating*. The Cruising Association played a major part in helping to draft the cruising routes and through widening the consultation process to their Honorary Local Representatives placed throughout the UK. The SEA 8 process has enabled a full and detailed revision of these routes to be carried out both with the same network of both professional and recreational experts. As the application of the Atlas has gained increasing attention so has the need for greater detail and it is hoped this revision of the database increasingly reaches an accurate picture of coastal recreational boating.

The background to the identification of cruising routes, racing and sailing areas was derived from internal expertise as well as through relevant nautical almanacs, regional pilot guides, sailing guides and similar publications. This has led to a comprehensive database of recreational cruising routes categorised into light, medium and heavy or essential routes. The key definitions for these categories are explained in Annex B. Because the data is reliant on personal observations the data collection process has ensured that each route is correctly attributed to the person or organisation by which it was identified, likewise any revisions of the routes are also attributed. In addition, data from the British Marine Federation's moorings and marinas survey (BMF, 2004), BoatLaunch's Slipway Directory (BoatLaunch 2004) as well as the RYA Marina guide (RYA, 2007) has been used. The RYA also maintains a comprehensive database on clubs and training centres including their membership and the courses and activities they are involved in.

The primary data is submitted to the RYA by their volunteer network and as a result remains the copyright of the individuals and the RYA. However, the RYA is keen to share this information with decision makers, marine spatial planners and developers and through projects such as this has prepared the information for the SEA 8 area for wider distribution.

This report provides a set of comprehensive maps for the SEA 8 area that:

- Plot the cruising routes
- Plot the general sailing and racing areas
- Plot the anchorage areas
- Illustrate the intensity at which each route is used from local clubs
- Plot the location and size of shore based facilities

2.1 The format of the study

The study was carried out in three stages:

1. Consultation with clubs, regional committees and experts on charts of cruising routes, sailing and racing areas and impacts of navigating in the vicinity of offshore renewable energy structures

2. Identification and collation of data on facilities supporting recreational boating to enable some assessment of level of use to be made
3. Consolidation and analysis of information and reporting

The first stage involved consulting on the existing data held within the RYA's Geographical Information System (MapInfo) and compiling any new data that was required for the area. This information formed the consultation charts that consisted of a combination of data sets including routes, sailing areas, sailing clubs, marinas, training centres and anchorage areas. This information originates from:

- Standard publications, pilot books, charts and almanacs
- Key representatives from local clubs
- Data from the RYA database of clubs, marinas and training centres
- Data collated by other organisations: British Marine Federation, BoatLaunch.

The consultation list for the identification of cruising routes, sailing and racing areas in SEA 8 can be seen in Annex C. The initial consultation on the routes was undertaken through an exhaustive list of all RYA affiliated sailing clubs, RYA training centres as well as all recorded marinas within 2 km of the coast. This second round of consultation was more carefully targeted through the RYA's Regional Committees (South West, Southern and South East, Welsh Yachting Association, regional cruising representatives, selected cruising clubs and professionals in the field. In addition, copies of the charts were sent to RYA regional and specialist committee members, Cruising Association specialist committees and Honorary Local Representatives and the Conference of Yacht Cruising Clubs (CYCC). Tom Cunliffe, RYA/MCA Yachtmaster Instructor Examiner and author of the *Shell Channel Pilot*, extensively reviewed the routes and provided detailed commentary on navigating along the SEA 8 coast. For the Bristol Channel, his expertise was augmented with other qualified parties through a meeting held at Barry Yacht Club, chaired by Tom Cunliffe and attended by the President of the Bristol Channel Yachting Association, a Barry-based RNLI officer who is also a professionally qualified yachtsman, and a local sailor of retirement age who has cruised the Bristol Channel all his life from boyhood.

In addition to this report, the information is also available in digital format GIS files, ArcInfo and Shape files, Vector files and Raster jpg files to feed into the overall research of the area.

2.2 Assumptions taken in data collation

Several assumptions have been made in the collation of the information. These have been summarised in bullet form below:

- Coastal clubs are selected geographically from the location of their club house. Those within 2 km from the coast are selected. This may well omit those clubs without club houses that use the area as well as individuals that are not members of a club.
- Training centres are selected graphically from the location of their Centre which may omit training centres based further than 2 km from the coast but use the coast for practical training courses.
- Selection of relevant clubs, training centres and marinas have also included a few outside the SEA 8 area their location means they are likely to use the SEA 8 waters.
- Whilst comprehensive and covering a large number of individuals, the structure of the consultation will omit yachtsmen who are not members of a club. However, the involvement of professional experts will largely address this.

- Individual RYA members have not been directly targeted as many live in different places to where they sail and it was assumed the majority could be contacted through their club or as a marina berth holder.
- Individuals who are not members of the RYA or affiliated clubs have not been targeted. However, it is felt that through the RYA and its partner organisations consultation is comprehensive and should effectively represent the knowledge of the recreational boating community. The previous work in *Sharing the Wind* and the *Atlas of Recreational Boating* has been widely publicised to all members through the RYA magazine and other channels.

3 Recreational Boating in the SEA 8 Area

3.1 Introduction:

SEA 8 is the most popular recreational boating area in the UK with routes both along the coast and across the English and Bristol Channel. The English Channel sees many crossings to France and the Channel Islands. The Scillies are also a popular destination from the south western tip of England and there are also a number of routes crossing the Bristol Channel between the Welsh and English coast. The relative close proximity of these different and varied locations makes cruising in the SEA 8 area particularly popular. The activity is greatest around the Solent and Devon and Cornish coast. Here the harbours are close and picturesque providing much interest for the visitor. Many of these coastal towns and villages rely on the income that the visiting tourist brings and the marine industries that are sustained through the recreational boating activity. Sailing remains popular in the region whilst there is an increasing shift, which can be seen in national statistics, to motor cruising. Many of the coastal clubs run active racing programmes which would include racing series held all the year round. During the weekends racing tends to be held further offshore whilst summer midweek racing tends to be shorter courses closer to the club's base. Craft are kept in marinas as well as on swinging moorings and other pontoon moorings managed by harbour authorities and the individual clubs.

Recreational sailing in the area includes:

- Canoeing, sail-boarding and personal watercraft limited to a few places close inshore
- Dinghy sailing in most estuaries in suitable weather and tide conditions
- Day-sailing and racing around the coast approximately out to 15 miles
- Cruiser passage making between most combinations of yachting base

The most popular club activity of the clubs in SEA 8 is youth racing closely followed by dinghy racing, yacht cruising and yacht racing. This variety of activities can be illustrated by looking at the various areas of interest of the coastal clubs shown in Figure 2. The increasing interest in power boating can be seen by the number of training centres offering powerboat courses (66%) compared to those offering dinghy (34%) and cruising (22%) (see Figure 3).

Figure 2: Number of RYA affiliated clubs in SEA 8 area involved in specified forms of recreational boating (total number of clubs =123)

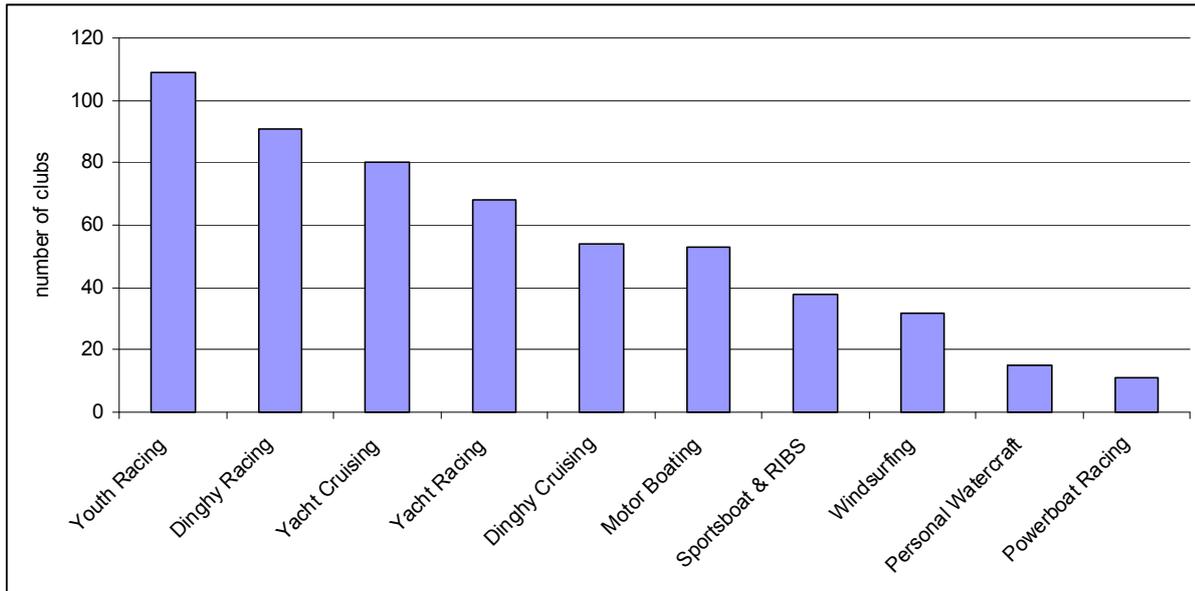
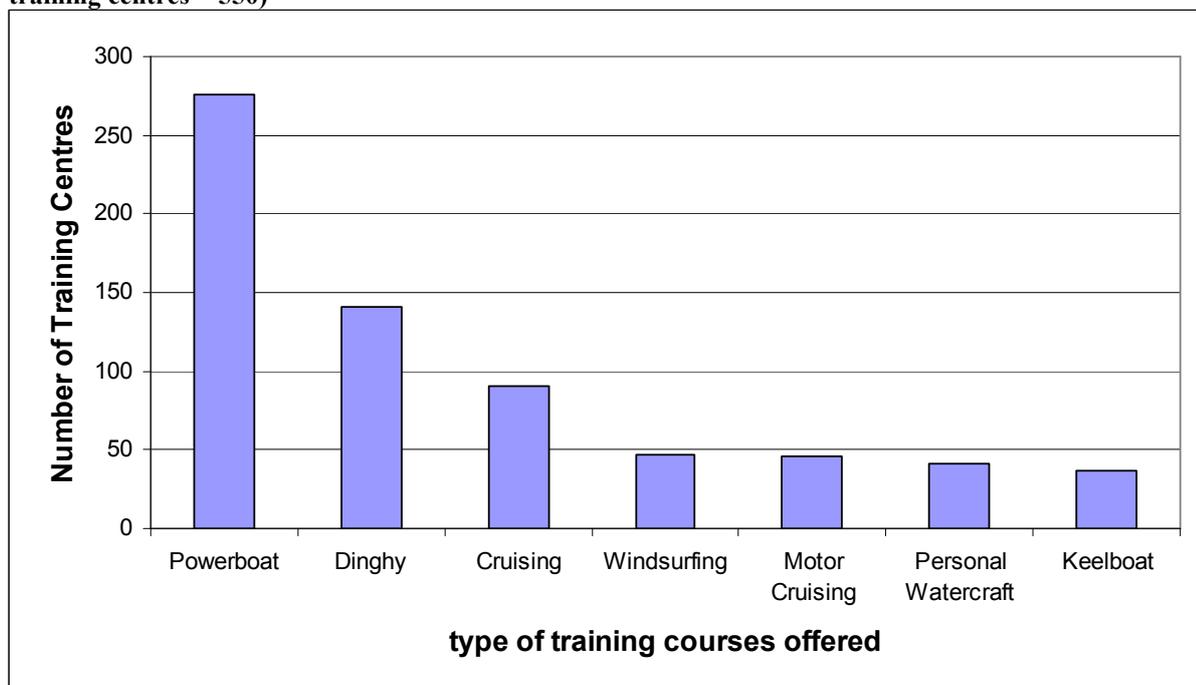


Figure 3 Number of RYA recognised training centres offering various types of courses in the SEA 8 area (total training centres = 550)



3.2 Boating facilities within SEA 8

There are a total of 123 clubs within 2 miles of the coast that would utilise the SEA 8 region (see Figure 4). The estimated membership of these clubs is just over 115,000, which represents 23% of the total UK club membership, illustrating the importance of the area for recreational boating. In addition, there are 550 RYA recognised training centres that are also within 2 km of the coast, of these 420 offer practical courses, the others offering theory courses (see Figure 5). This is by far the busiest area in terms of concentration of training centres around the UK, with over 30% of the UK's training centres in this area. These centres offer a number of different courses from yacht cruising to dingy racing (see Figure 3).

Figure 4: Map of the location of coastal recreational boating clubs in the SEA 6 locality

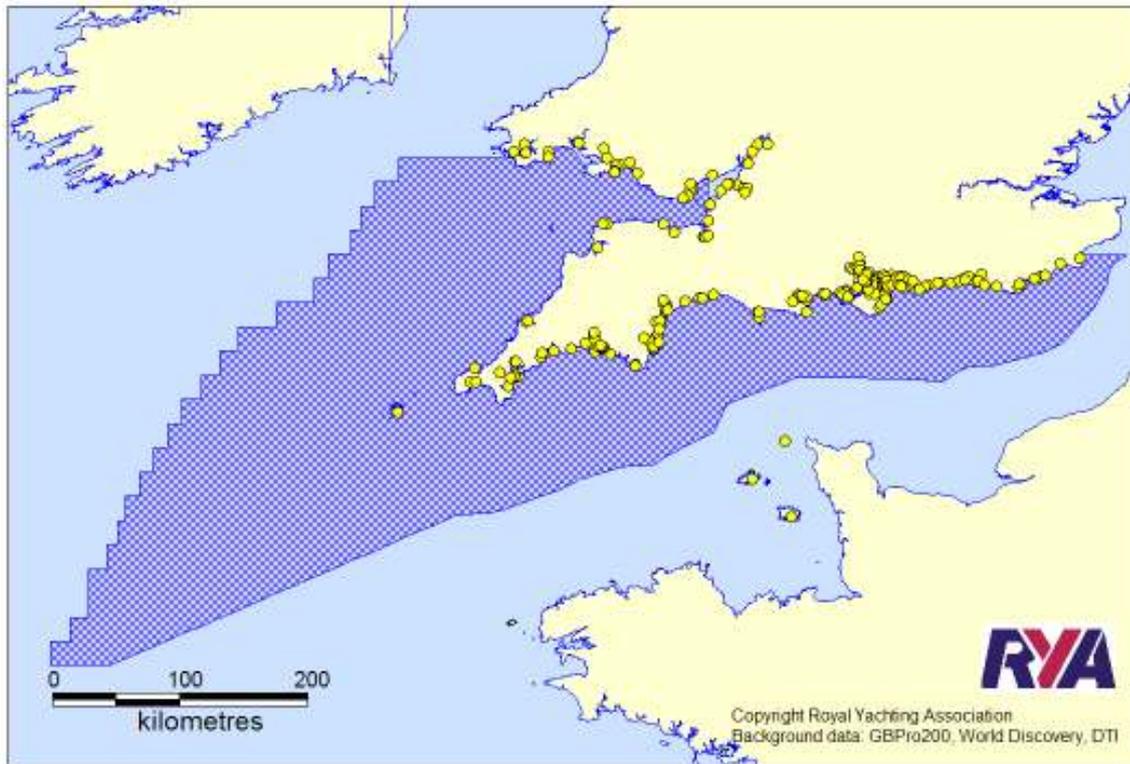
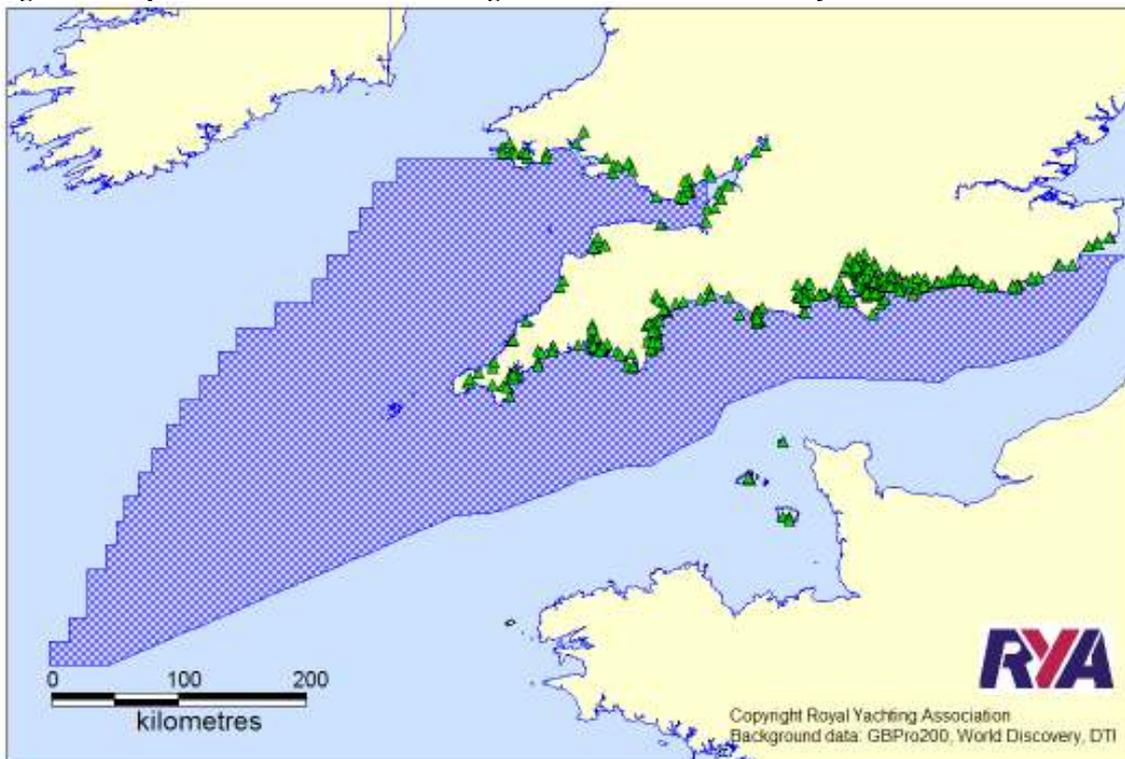


Figure 5: Map of the location of the training centres in the SEA 6 locality



The RYA has 82 commercial marinas listed in its database (see Figure 6) which have a total of just under 21,400 berths (RYA, 2007). The total moorings available to recreational boating in the SEA 8 area including swinging moorings, pile moorings, commercial marina moorings are estimated at over 54 700 (BMF, 2004). This compares to the 13,000 that are available in the SEA 6 area highlighting the popularity of the SEA 8 area for recreational boating. The demand for moorings in the SEA 8 area is high. Less than 3% of the available moorings are actually vacant. Many of these may be less appealing moorings due to their tidal inaccessibility. The majority of the moorings are managed through the Harbour Authorities (38%) and a large proportion (30%) remains in the commercial sector.

Additionally, there are a number of access points for launching and recovering boats that are available both through clubs as well as publicly managed (see Figure 7) that are estimated at over 240 (Boat Launch, 2004).

Figure 6: Map of the location of commercial marinas in the SEA 6 locality

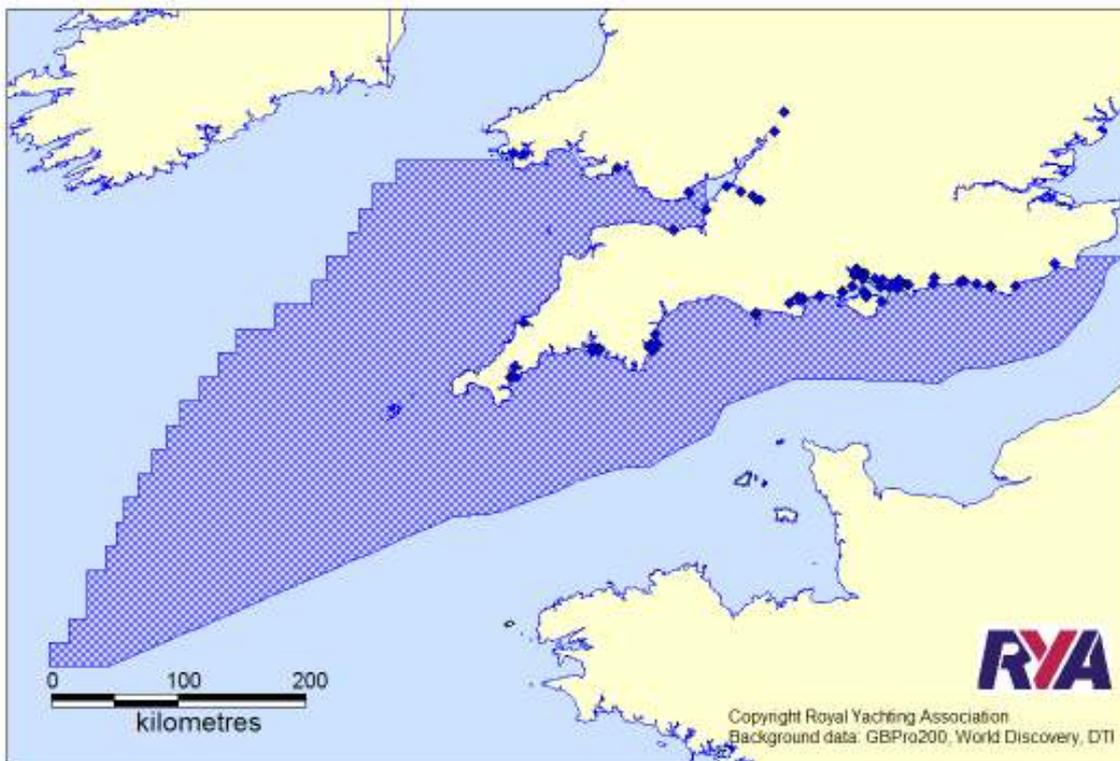
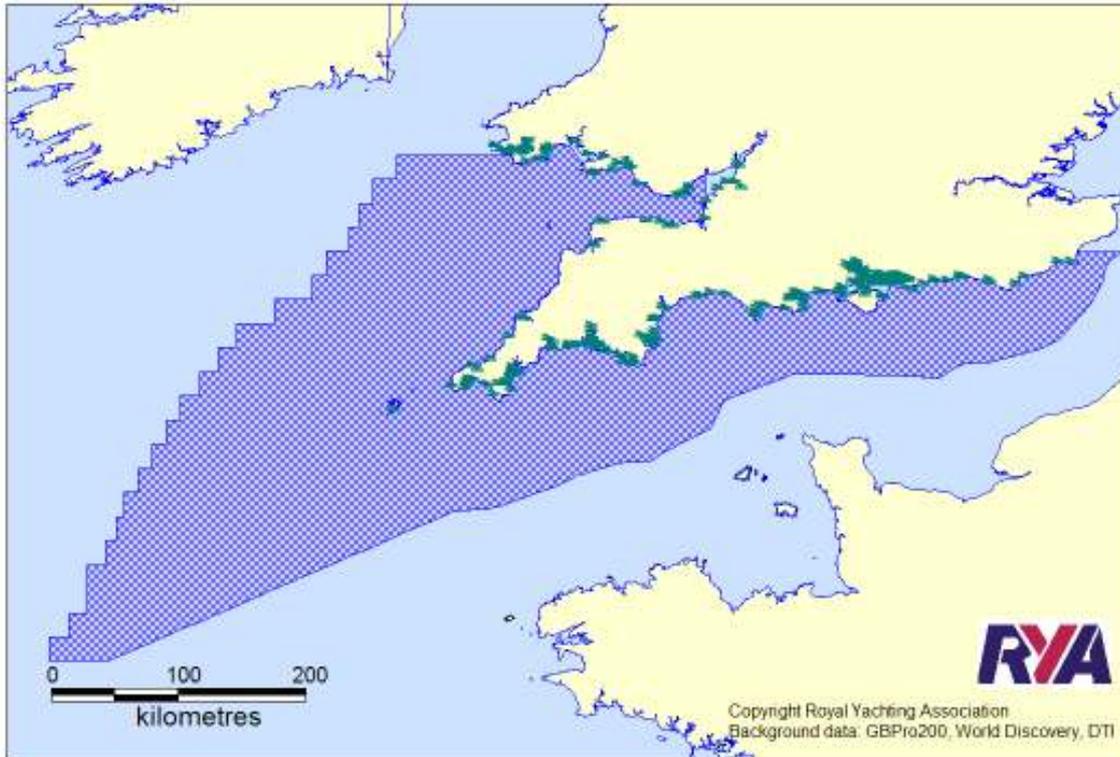


Figure 7: Map of the location of slipways in the SEA 6 locality



3.3 Small-craft navigation in the English Channel

Tides

Tides run fast in the English Channel. Fifteen miles offshore, a spring ebb can achieve almost four knots, while stream rates off headlands can be substantially higher. Tides are diurnal, with two floods and two ebbs each day. The tidal ranges are greatest at the south east and south west tips of the English Coast, with Cornwall seeing spring ranges of 5 metres and Kent 6 metres or more. In Brittany, ranges are far higher, with 12 metres possible at Granville. By a tidal anomaly, ranges in mid-Channel on the English side are modest, with the mean neap rise and fall at Portland Harbour as little as 0.8 metres.

Winds

Winds can come from any direction but they tend to blow either ‘up’ or ‘down’-Channel, with ‘up’ predominating. This will exaggerate the ‘zig zag’ routes followed by sailing craft when navigating into the wind direction (see Annex A). Gales are common in winter and by no means unknown in the summer months, although the latter are often of shorter duration.

Sea state

Swells are generally bigger at the west end of the Channel and in the Western Approaches where the uninterrupted ocean is felt. This rarely reaches far beyond Start Point, although in heavy weather a big scend can run all the way up to Dover.

Strong winds, especially Westerlies, kick up a rough sea anywhere, while Easterlies are notorious in the West Country for generating seas bigger than the ambient wind would imply. The many headlands create their own sea states, some of which are exceptionally rough in bad weather. The Race of Portland is hazardous even in otherwise calm conditions.

Due to a number of influences, the Channel is rarely flat calm.

Fog

Fog can occur at any season but, with the exception of the Dover Strait, it is more prevalent in the summer months. In July, occurrence runs at over 3% in the central Channel, while in January it drops to less than 2%.

Coastal traffic

Coastal traffic can vary from very dense in such places as The Solent and Plymouth Sound, to comparatively light close inshore in the bight East of Dungeness. However, it would be true to say that, night or day, one would struggle to find a stretch of coast with no yachts in sight in good visibility in summer. As already stated, the routes identified along the English Channel (see Chapters 5, 6 and 7) show the traffic heading in a generally East-West direction, however, it is not in the nature of yachts, especially those under sail, to follow pre-determined tracks. Unlike large commercial ships which tend to follow rhumb lines, shipping lanes and Traffic Separation Schemes (TSS), yachts and low-powered motor craft can be found literally anywhere there is water to float them, as they work the tides and the lee of the headlands. To understand where they may be, it is necessary to understand their need to work the tides, the lee of headlands, and the ever-changing winds (see Annex A).

Cross-Channel

Low powered craft crossing a wide body of water where a turn in tidal stream is anticipated benefit considerably from carefully planning their routes, which again will not follow a straight line. Rather than apply an infinitely varying tidal offset to maintain a track on the rhumb line, skippers allow the tide to drift their boats one way, then be brought back onto track by the turning stream. This applies even where the wind allows the rhumb line to be a viable and attractive option. The result of this is that yachts in mid-Channel travelling at 5 knots may be found up to fifteen miles from their direct track, yet they may still be better off in terms of distance sailed through the water. It should therefore be recognised that any attempt to specifically defined routes used by small craft is at best a rough approximation.

3.4 Small-craft navigation in the Bristol Channel

Tides

Bristol Channel tidal ranges are among the most extreme in the world. Because of the funnelling effect of the topography, a range of 7 metres at Saint Ives is compressed into a massive height of up to 15 metres at Avonmouth. The huge rise and fall generates exceptionally strong streams, especially in the upper Channel, where 6 knots is predictable for an equinoctial spring tide.

Winds

Winds can come from any direction, but they tend to blow either 'up' or 'down'-Channel, with 'up' south-westerly weather predominating. Gales are common in winter and by no means unknown in the summer months, although these latter are often of shorter duration.

Sea state

Seas in the Bristol Channel are what would be expected for any such body of water largely open to the North Atlantic. However, because of its extreme tidal conditions, the sea state is regularly subject to greater than average disturbances when tidal streams run contrary to the wind waves. At such times, waves of unusual steepness are experienced anywhere in the Channel, but in particular in the vicinity of shoal water and uneven bottom.

Fog

Fog can occur at any season, but it is more prevalent in the summer months. In general, poor visibility or worse is infrequent from November to May and is most likely to occur in June.

Mumbles coastal station reports an average of 30 days of fog per year and at Milford Haven coastal station report an average of 26 days of fog per year.

Coastal traffic

Coastal traffic in the Bristol Channel never achieves the extreme density of certain areas of the English Channel, but in the summer months, areas such as Swansea Bay and the waters between Barry, Cardiff and the Holms will rarely be seen without a yacht in sight in good visibility.

Chapter 9 shows most of the Bristol Channel small-craft traffic bound beyond Channel waters will be heading subsequently either North or South. Even vessels bound for Ireland will tend to follow the Welsh coast unless bound to or from one of the few ports on the English shore West of Portishead. The occasional yacht on passage further afield is so rare as to be statistically insignificant.

Cross-Channel

Similarly to crossing the English Channel, skippers of low-powered craft when crossing a wide body of water, such as the lower Bristol Channel from Milford Haven to Hartland Point or anywhere west of this line, will experience a turn in tidal stream. They will therefore allow the tide to drift their boats one way then be brought back onto track by the turning stream. The result is that yachts travelling at 5 knots on passage, say, from Padstow to Milford Haven, may be found up to twenty miles from their direct track, perhaps even East of Lundy Island. The cross-Channel passages of the upper Bristol Channel are of sufficiently short duration to work out a net tidal vector and off-set the stream, so in this region low-powered craft are more likely to be found on the rhumb line, unless they are sailing yachts unable to lay the course.

Headlands – importance of maintaining tidal options

As already noted, it is not in the nature of yachts, especially those under sail and working to windward, to follow pre-determined tracks. Yachts and low-powered motor craft can be found literally anywhere in the Bristol Channel, and the extraordinary tides often drive them very close inshore, both immediately off headlands and also in their tidal 'lee'. This last point is of the greatest importance to small-craft operators in these waters. Any inshore passages must be rigorously protected.

3.5 Competence and equipment

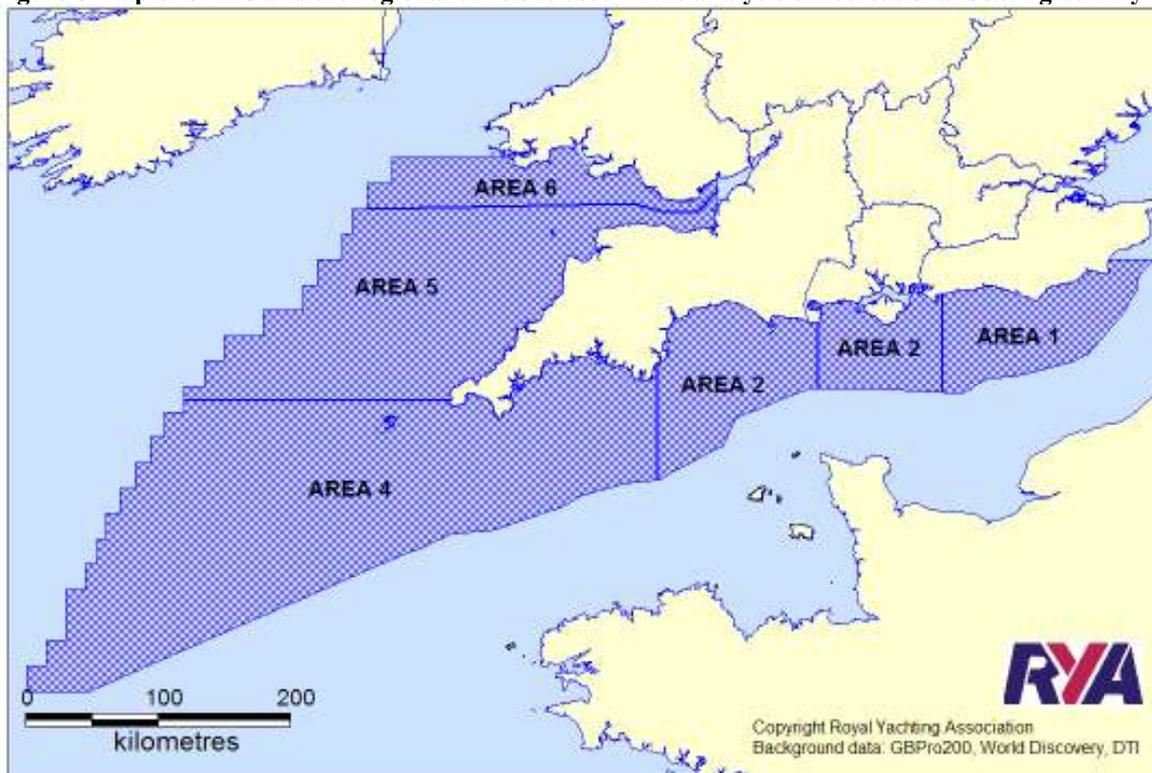
In general terms it may be assumed that recreational craft offshore are fully equipped for their type and that crews have a high level of competence. Typically a vessel offshore will be equipped with marine VHF radio but small craft equipment may not have the same transmission strength as commercial vessels. Many recreational sailors will also have mobile phones which can be useful inshore for calling harbour authorities and marinas but obviously less useful when someone is trying to contact the craft. Many recreational craft carry radars although like VHF radios, they are unlikely to have the same resolution as commercial craft. Most recreational craft do not carry AIS transmitters or receivers.

4 Intensity of recreational use within SEA 8

Unlike surveys of commercial use, there is currently little available survey data to assess intensity of use of these routes and areas identified. However, through the collation of navigational information it is hoped over time that these areas will be able to be verified and some level of intensity apportioned to each route. The level of facilities available can be taken as a proxy for comparable levels of intensity. Identification of the location of facilities will also be important in identifying the essential routes to and from harbours of refuge and safe havens which, for reasons of maintaining safety at sea, should not be interfered with.

In order to compare use across SEA 8, the area has been subdivided into six areas (see Figure 8).

Figure 8 Map of SEA 8 and the regional divisions used in the analysis of recreational boating activity



4.1 Comparison of use

The major recreational activity in the SEA 8 area is seen along the English Channel, the most intense use can be found around the Solent in terms of clubs (see Figure 9), moorings (see Figure 10) and training centres (see Figure 11). The Solent is a major site for people to both keep their boats and acts as a starting point for cruising both east and west along the English Channel as well as across the English Channel to France. Other important areas tend to be focused around the estuaries and harbours such as Plymouth, Fowey, Falmouth, Salcombe and Poole. Weymouth and Portland Harbour is a major site of importance for dinghy sailing. It is the location of the National Weymouth and Portland Sailing Academy and the site for the 2012 Olympics sailing events.

Figure 9 Comparison of RYA affiliated clubs between SEA 8 sub-areas (Total number of clubs = 123)

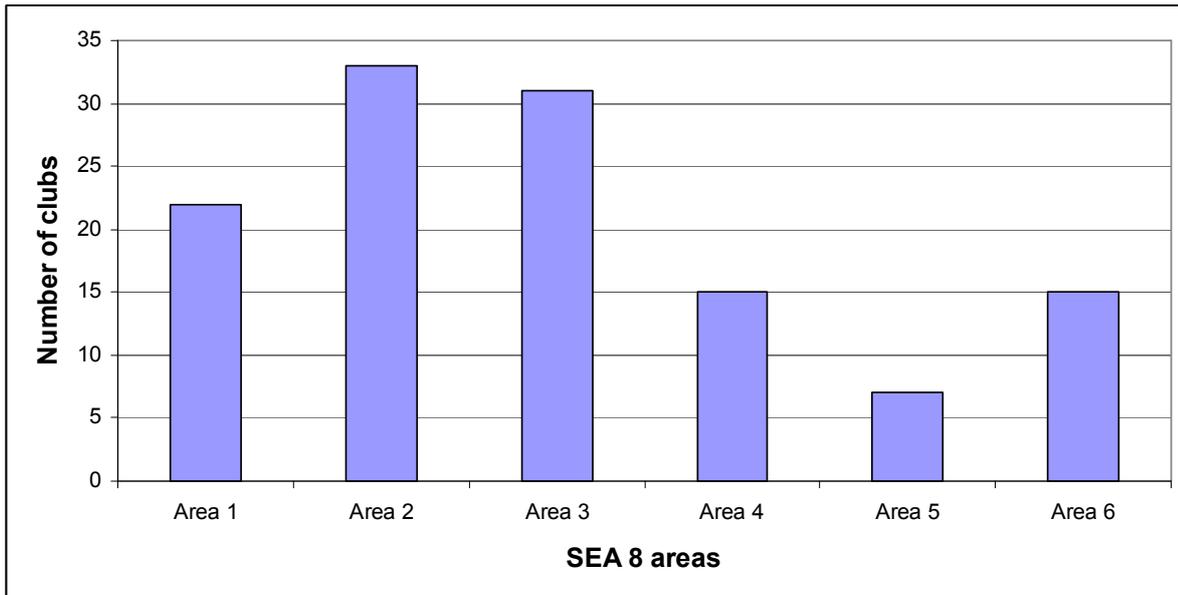


Figure 10 Comparison of estimated number of moorings between the SEA 8 sub-areas (total number of moorings = 54,700)

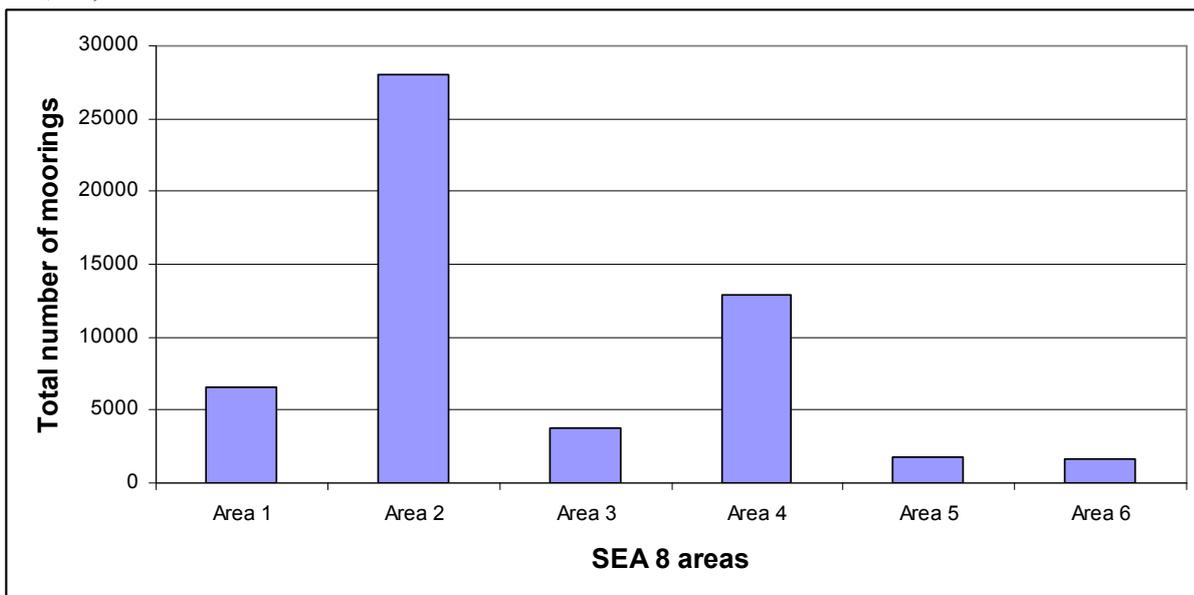
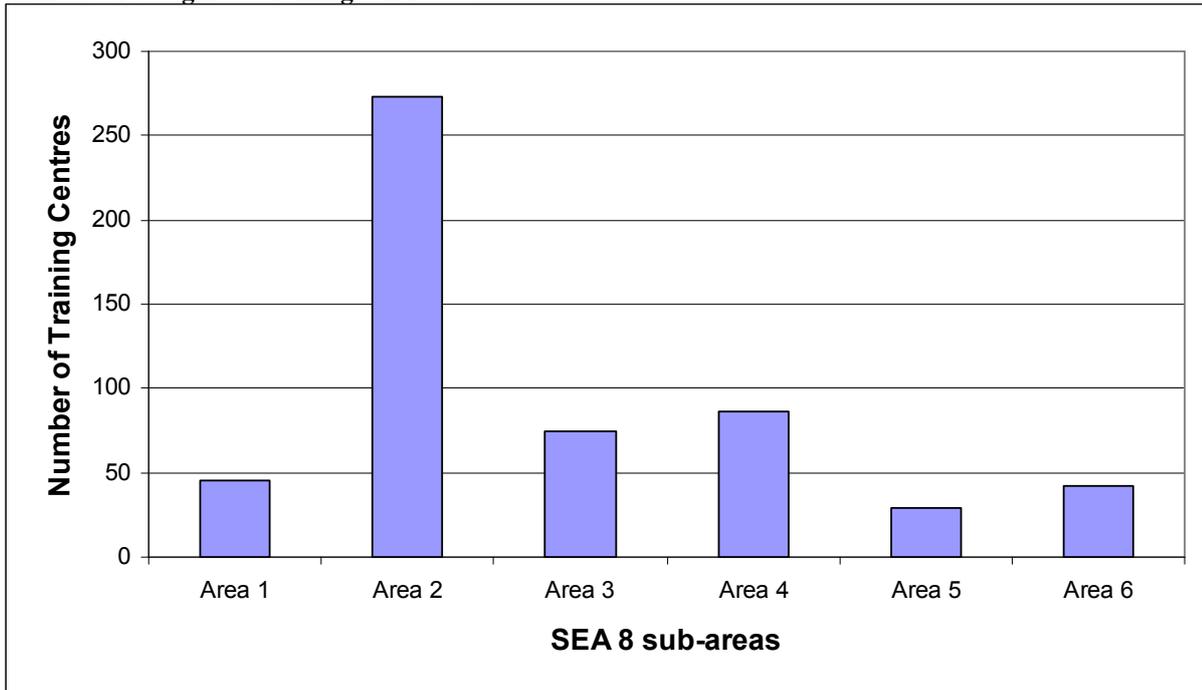


Figure 11 Comparison of the number of RYA recognised training centres between the SEA 8 sub-areas (Total number of recognised training centres = 550)

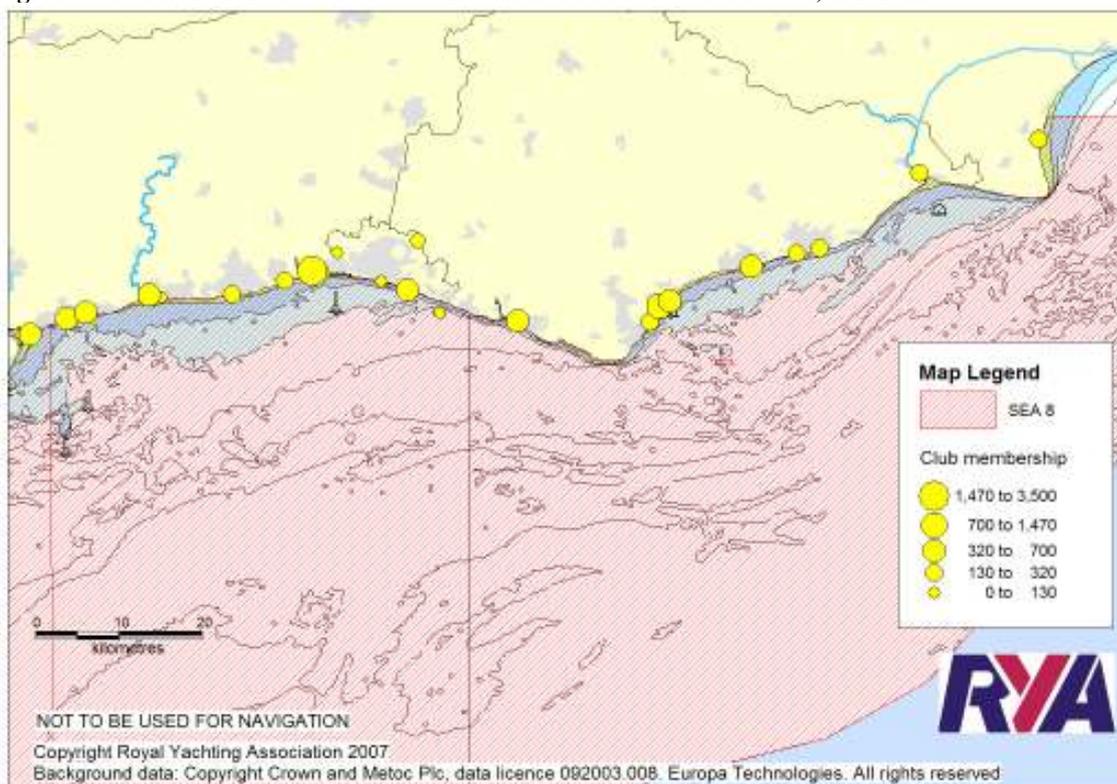


5 AREA 1: Dover to Selsey Bill

5.1 Recreational boating facilities from Dover to Selsey Bill

Whilst there is no reliable estimate for the number of vessels utilising the area or the number of people involved, the number of clubs, training centres and moorings can be seen as a proxy as to the level of use of the area. This area has the third highest number of clubs in the SEA 8 area (18%) which are spread along the coast (see Figure 12). The main club activities are focused around sailing, both racing and cruising for dinghies and yachts.

Figure 12 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 1



There are a total of 45 training centres in this area offering mainly dinghy and powerboat courses (see Figure 13). The prevalence of power boat courses at training centres highlights the growing sector of recreational boating but also that the majority is cruising and day sailing and relies less on the club structure which predominately run racing events. In addition to these practical courses are a number of theory courses such as VHF use, First Aid, diesel engine maintenance all of which are predominately used in cruising.

There are 12 marinas in the area (see Figure 14) totalling over 3280 berths (RYA, 2007). Of these 2620 berths can be found within three marinas:

- Brighton Marina 1500 berths
- Sovereign Marina 820 berths
- Newhaven Marina 300 berths

The total number of moorings in the area is estimated at 6570 (BMF, 2004) showing that approximately half the craft moored in this area are kept in commercial marinas (see Table 1).

Figure 13 Number of recognised training centres offering various practical courses within SEA 8, sub-area 1

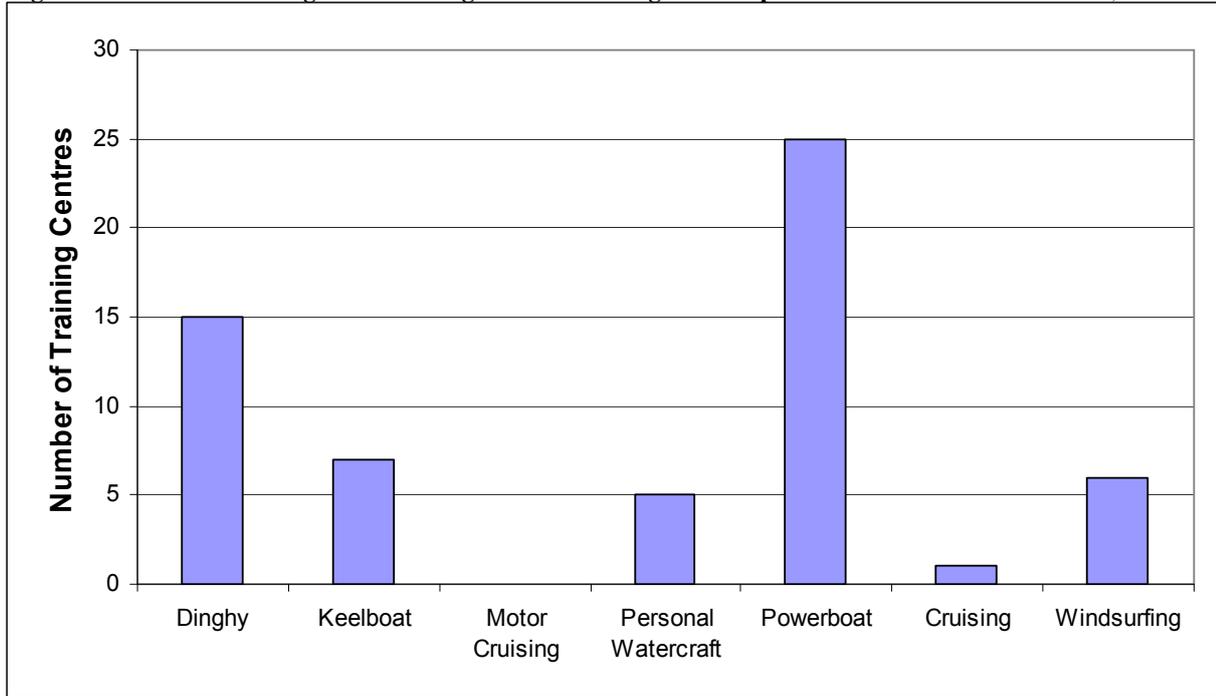


Figure 14 Location of slipways and commercial marinas and number of berths within SEA 8, sub-area 1

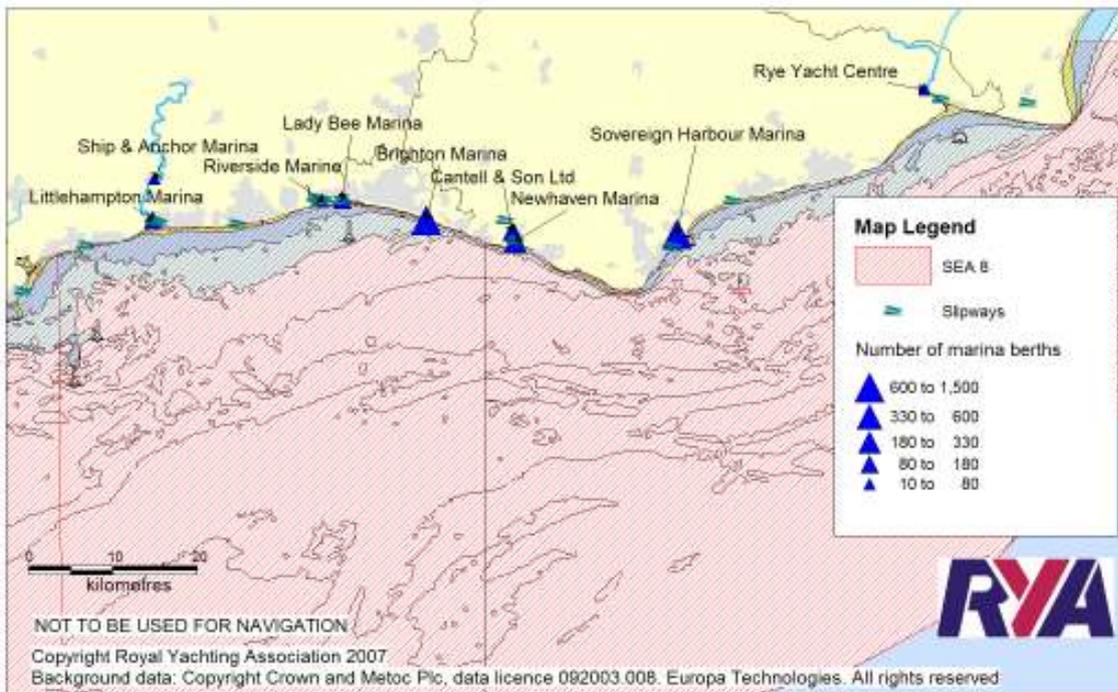


Table 1 Mooring provision between Dover and Selsey Bill

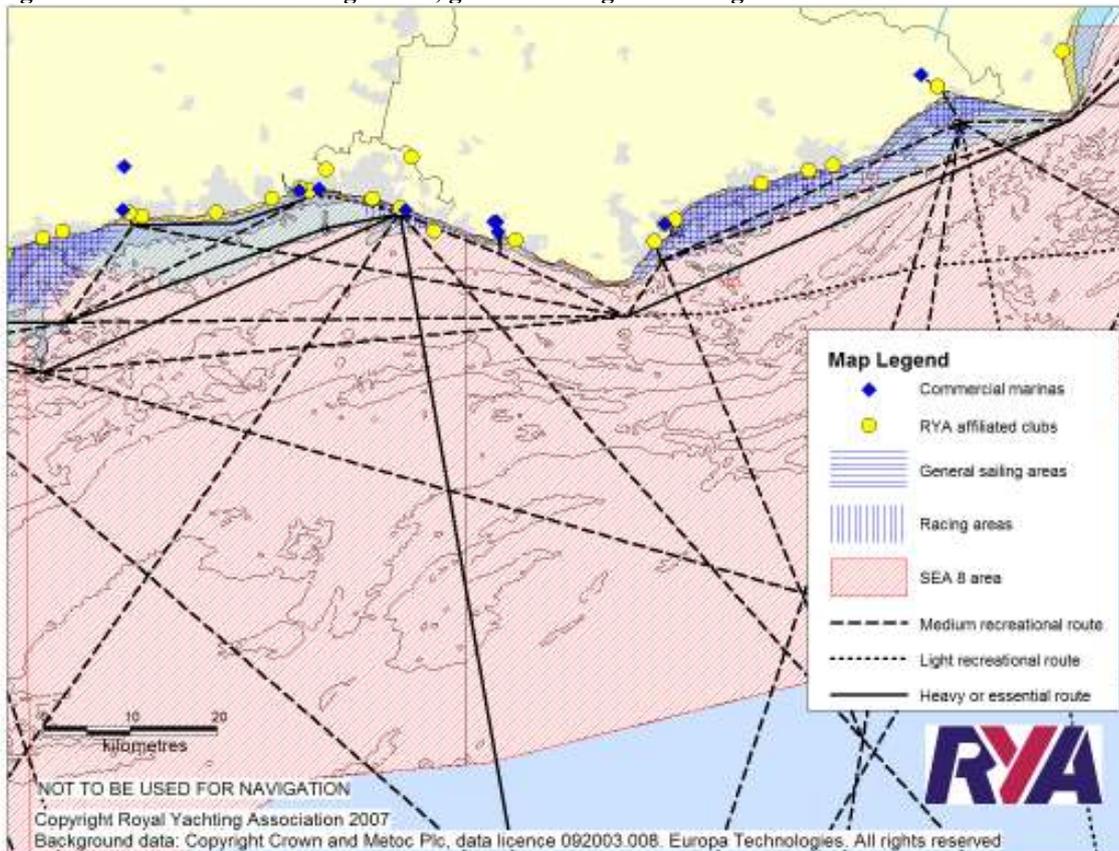
Mooring Type	TOTAL Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	4628	266	2030	1069	1128	0	0	135
Alongside	498	0	156	107	215	0	20	0
Fore & Aft	189	0	0	107	62	0	0	20
Swinging	2	0	0	2	0	0	0	0
Dry Sailing	195	0	0	20	175	0	0	0
Rack Sack	30	0	0	30	0	0	0	0
Store Slip	290	10	180	100	0	0	0	0
Riparian	106	0	0	86	20	0	0	0
Visitor	632	0	105	67	460	0	0	0
Sum	6570	276	2471	1588	2060	0	20	155

(Source BMF, 2004)

5.2 Cruising routes, sailing and racing areas

The cruising routes, general sailing and racing areas can be seen in Figure 15. Navigating these routes is described in detail in this section and should read with reference to Admiralty charts SC 5605 or equivalent.

Figure 15 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 1



North Foreland

Small-craft traffic moving North and South between Ramsgate and the Thames Estuary does not necessarily pass East of Elbow Buoy (51° 23.2N 1° 31.6E). It is quite normal to ‘cut the corner

across the Elbow Shoals and, at the right state of tide and weather, much of Broadstairs Knoll as well, en route for the recommended crossing point, or Ramsgate Channel, at No3 buoy (51° 19 6N 1° 26.6E).

Ramsgate to Dover

The short stretch of sea, west of the Goodwin Sands and East of Deal, was traditionally known as The Downs. In the lee of Kent, it provided shelter in westerlies for sailing ships unable to beat down-Channel or up to London. Some degree of protection is afforded from the east by the Goodwins, but small vessels are hardly aware of this in Easterly Gales, when conditions can rapidly become hazardous. Streams running north and south through The Downs can achieve almost three knots on a mean Spring.

The Downs

North-south traffic in this vicinity on passage between South Foreland and Ramsgate /North Foreland is constrained by the Goodwin Sands. Various channels are available and the mariner has essentially the choice of Ramsgate Channel, Gull Stream or East of the Goodwins.

Ramsgate Channel

Local people use the Ramsgate Channel west of Quern and Cross Ledge shoals, where additional lee from the Kentish shore can be found. It is not generally favoured by passing traffic.

Gull Stream

This channel 'inside' the Goodwin Sands is *Heavy Use* in summer and is the most important route for through traffic.

East of the Goodwins

A certain amount of small-craft traffic proceeding toward the Strait of Dover from the North Sea passes east of the Goodwin Sands, but the majority uses the Gull Stream for additional shelter and to save distance.

Channels through the Goodwins

The various channels through the Goodwin Sands, including Kellet Gut are navigable, but generally only recommended to those with genuine local knowledge, as the sands may shift.

South Foreland

Tides run hard around South Foreland. The bottom is littered with wrecks and navigation is very much constrained by the imminent proximity of Cross-Channel ferries operating from Dover. The passage between The Foreland and Sand Head (the Southern extent of the Goodwins) is around 2.5NM wide. To obstruct this would compromise freedom of navigation not only for small craft, but also for small ships and other commercial vessels passing north and south through The Downs. The Dover Strait TSS, which is sacrosanct, runs 4NM off The Foreland.

Dover to Dungeness

The large, shoal bight between Folkestone and Dungeness (Hythe Flats, Roar Bank and Swallow Bank) is little used by yachts or by any other vessel on passage. It also lies seaward of Hythe Firing Ranges. As such, it might be considered as an area for development. Although it receives some degree of shelter from Dungeness in Westerly weather, the whole sea area between Dungeness and the South Foreland is notorious for surge, perhaps as a result of the meeting of the North Sea and the English Channel. Tidal streams are slacker in the bight than in mid-Channel, although the ebb and flood exceed 1.5 knots. North of the line joining Dungeness and Dover runs the Inshore Traffic Zone of the Dover Strait TSS. All manner of shipping and small craft use this inner passage as a means of avoiding the constraints of the main TSS.

Dungeness to Beachy Head

Except in northerly weather, the area is essentially unsheltered. Except for the shoreline at Eastbourne, between Beachy Head and Sovereign Harbour, (50° 47.3N 0° 20E), the sea state is liable to typical 'Channel chops'. Further offshore towards and into the TSS, the area is exposed to the whole fetch of the Channel in westerly winds, so larger seas can be anticipated. Tidal streams are slacker in the bights than in mid-Channel, with streams rarely exceeding 1 knot. Offshore, 2 knots is the mean spring maximum for the area, making it one of the quieter tidal zones in the Channel, while off Beachy Head, 2.5 knots can be seen on both East and West-going spring streams. The main Dover Strait TSS runs west from East of Dover to a point approximately south of Newhaven. The vast majority of small-craft traffic uses the English side of the Channel and favours the Inshore Traffic Zone rather than the main shipping lanes.

Dungeness

The Inshore Traffic Zone of the Dover Strait TSS is a mere 3NM wide off Dungeness. Small craft and commercial vessels use the whole width of this. Yachts often round Dungeness very close inshore as the headland is steep-to on its Southeast facing point. Any man-made obstruction to navigation here could represent a major hazard.

Rye and Pevensey Bays

These broad bights are shoal, with depths of around 5 - 7 metres at LAT. They are little used by passing traffic, although local boats from Rye would be affected by any developments sited in the area. Beach-launched fishing craft from Hastings are active in the area. If an obstruction were to arise on the Four Fathom Sand Ridge and Fairlight Knoll, it would represent little more than an inconvenience to traffic on passage in the Channel except to sailing craft beating to windward who might well find it a nuisance. The same could be said for the shoal waters inside the 10-metre contour in these bights, so long as due consideration was given to traffic using Sovereign Harbour, Rye Harbour and Hastings Beach.

Royal Sovereign Shoals

The 3 – 5 metre patches on the various shoals inshore of the Royal Sovereign platform (50° 43.45N 0° 26.1E) are already a hazard to navigation near Low Water and in bad weather. Most commercial traffic of serious tonnage passes south of the platform, but smaller craft frequently favour the channel between this and the lit Royal Sovereign red buoy 0.8 NM North of it. Unless making for or leaving Sovereign Harbour, few vessels would pass inshore of this buoy unless they are working carefully inshore to get out of a foul tidal stream. This can happen at any time.

The Royal Sovereign Shoals and the shoal known as the Horse of Willingdon 2 NM east of them, together with the intervening Long Shoal, all kick up bad seas and overfalls in certain conditions. For this reason they are best avoided by mariners and so, pending the approval of fishermen, might be a useful site for a generating farm.

Beachy Head

Beachy is an important headland for craft working up and down-Channel. It is a tidal 'gate' whose narrow ledge of shoals drops away into comparatively deep water. The charted overfalls are by no means as reliable or as violent as others bearing the same symbol. The headland forms the Northern boundary of the Dover Strait TSS in this longitude which should not be impeded in any way as it is the main traffic route for inshore vessels of all descriptions.

Yachts on passage to and from Brighton, Shoreham and Newhaven will generally pass close inshore of Beachy Head unless forced offshore by adverse weather. The same applies to Sovereign Harbour.

Beachy Head to Selsey Bill

The wide bight between Beachy Head and Selsey Bill is, like much of the Channel shoreline, well protected in northerly weather. With any south in the wind, it is not. It is therefore exposed to south-westerly and south-easterly blows which can and do happen at any time of year. Selsey Bill receives no significant shelter from the Isle of Wight. In the East, streams are similar to those between Beachy and Dungeness, but as Selsey Bill is approached, streams grow stronger, with up to 3 knots off The Owers on the ebb. The Dover Strait TSS ends officially at 'Greenwich' buoy (50° 24.6N 0° 00.0E/W). However, Chart GB2656 advises mariners effectively to treat the charted main shipping lanes between here and the 'Off Casquets' TSS (begins at East Channel buoy 49° 58.7N 2° 29.1W), as if it were a TSS. At this part of the Channel, the shipping lanes are well offshore.

Newhaven, Brighton and Shoreham

All these are important small-craft ports, with Brighton the largest by a substantial margin. Traffic passing between here and points east and west along the coast is considerable. From Brighton east, the coast is relatively steep-to, with shoaling increasing as Shoreham is approached.

Shoreham to Bognor Regis

Shoal water extends typically between 2 – 4 NM offshore. Except for boats approaching or leaving Littlehampton, or on passage from the harbours east of here and west of Beachy Head, the area is not heavily used. Yachts on passage are generally south of 50° 41N.

Bognor Regis to Selsey Bill

The inshore zone here is shoal and the bottom is largely foul. It is beset with rocks and obstructions and generally avoided by small craft without local knowledge. Pagham Harbour is a protected nature reserve and is very shallow, largely drying out.

Selsey Bill, the Looe and The Outer Owers

In southwest gales with the ebb tide running to weather, the sea state off the Owers can be extremely heavy. No yacht traffic navigates far inside the Outer Owers buoy marking the seaward limit of the shoals, even at High Water. These run moderately fast at Springs off the Outer Owers. At spring tides, 3 knots can be seen on the flood. Up to 3 knots can also be experienced in the Looe Channel.

The Outer Owers and The Looe

The Owers South cardinal buoy (50° 38.6N 0° 41.1W) stands guard at the southernmost point of these notorious shoals. From the eastwards, they are also marked by East Borough Head, South Pullar and Pullar. Sailing yachts under pressure of wind direction sometimes stand North of South Pullar, and small craft with local knowledge, especially fishing craft of all descriptions, make full use of the Swashway passage between The Looe and the Outer Owers. Depths here are uncertain, but near high water there is unlikely to be less than 6 metres at the shallowest part of the passage. The Looe shoal is much used by fishing craft and largely avoided by the majority of yachts, which pass either South of the Outer Owers, or North-about via the Looe Channel.

The Looe Channel

The buoyed Looe Channel provides an important short-cut inside The Owers and The Looe for craft up to and including small commercial coasters on passage up and down-Channel from the Solent and Chichester. Any obstruction to navigation in this passage or its approaches would be a major issue.

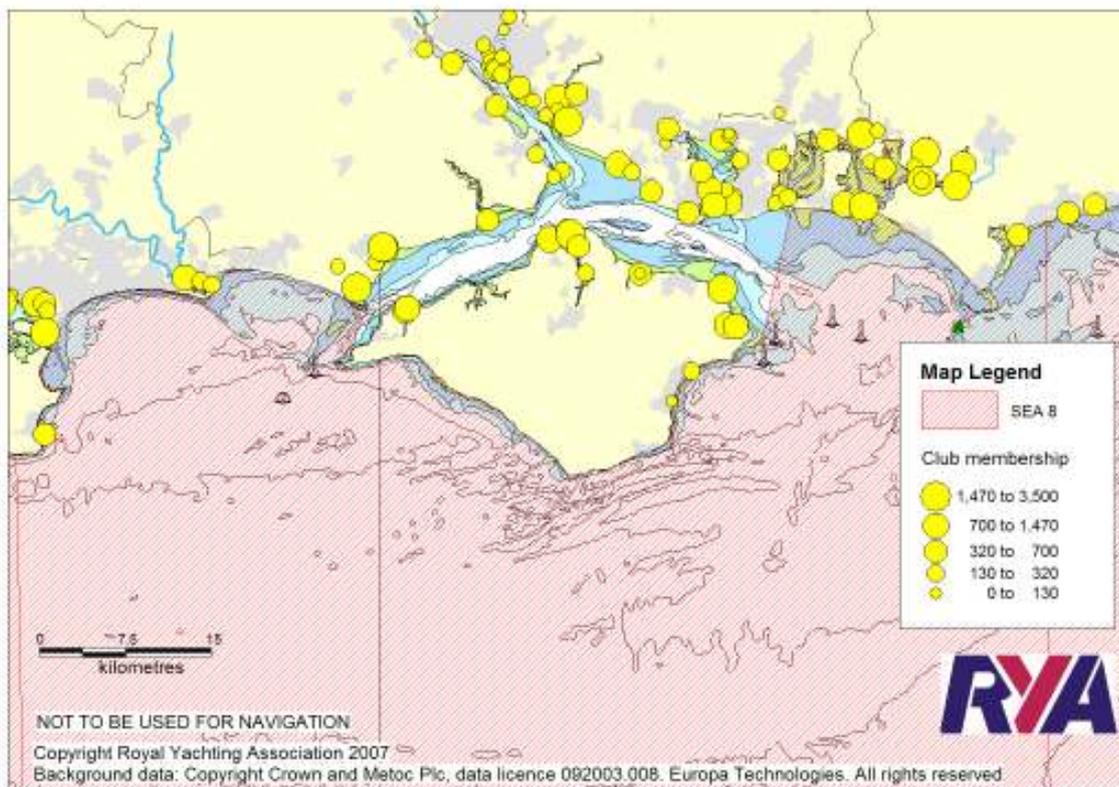
Selsey Bill and The Mixon

Between the 'Street' red buoy marking the Looe Channel and Selsey Bill lie The Mixon, The Malt Owers and The Streets. These are a series of rocky shoals drying up to 2 metres. The area is virtually un-navigable.

6 AREA 2 Selsey Bill to Anvil Point

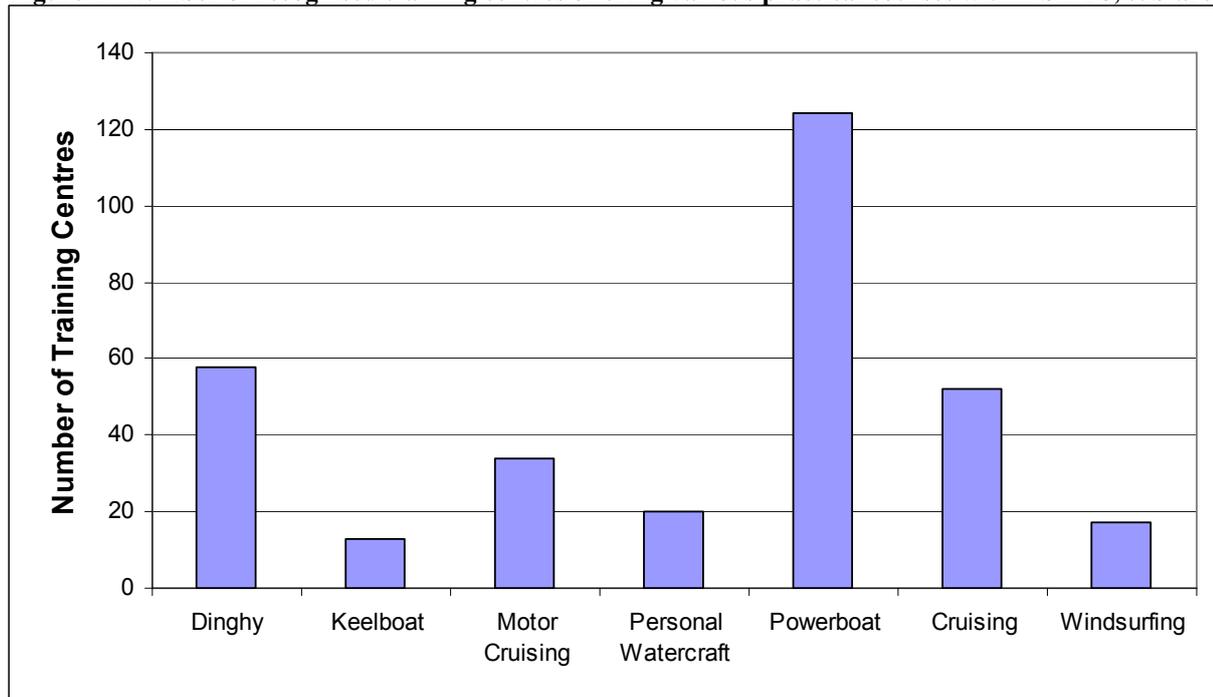
Whilst there is no reliable estimate for the number of vessels utilising the area or the number of people involved, the number of clubs, training centres and moorings can be seen as a proxy as to the level of use of the area. This area has the highest number of clubs in the SEA 8 area (27%) which are focused around the sheltered estuaries (Chichester, Langstone, Portsmouth) and the rivers (Southampton Water, Hamble, Lymington and Cowes) (see Figure 16). The main club activities are focused around sailing, both racing and cruising for dinghies and yachts. However, windsurfing is also popular and carried out in a third of the clubs.

Figure 16 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 2



Over half the SEA 8 training centres can be found in this area, a total of 273. These offer mainly powerboat, dinghy and cruising courses (see Figure 17). The Solent is a perfect place for cruising courses to be run due to the close proximity of harbours to navigate to and from. As with sub-area 1, there are a number of theory courses such as VHF use, First Aid, diesel engine maintenance all of which are predominately used in cruising. These may be run by the schools running practical training as well as purely theory schools.

Figure 17 Number of recognised training centres offering various practical courses within SEA 8, sub-area 2



There are 43 marinas in the area (see Figure 18) with a total of over 11,000 berths (RYA, 2007). 14 of these marinas contain 300 or more berths. 3688 berths are available in just five marinas.

- Chichester Marina 1071 berths
- Port Solent Marina 808 berths
- Haslar Marina 650 berths
- Lymington Marina 640 berths
- Gosport Marina 519 berths

The total number of moorings in the area is estimated at 6570 (BMF, 2004) showing that approximately half the craft moored in this area are kept in commercial marinas (see Table 2).

Figure 18 Location of slipways and commercial marinas and number of berths within SEA 8, sub-area 2

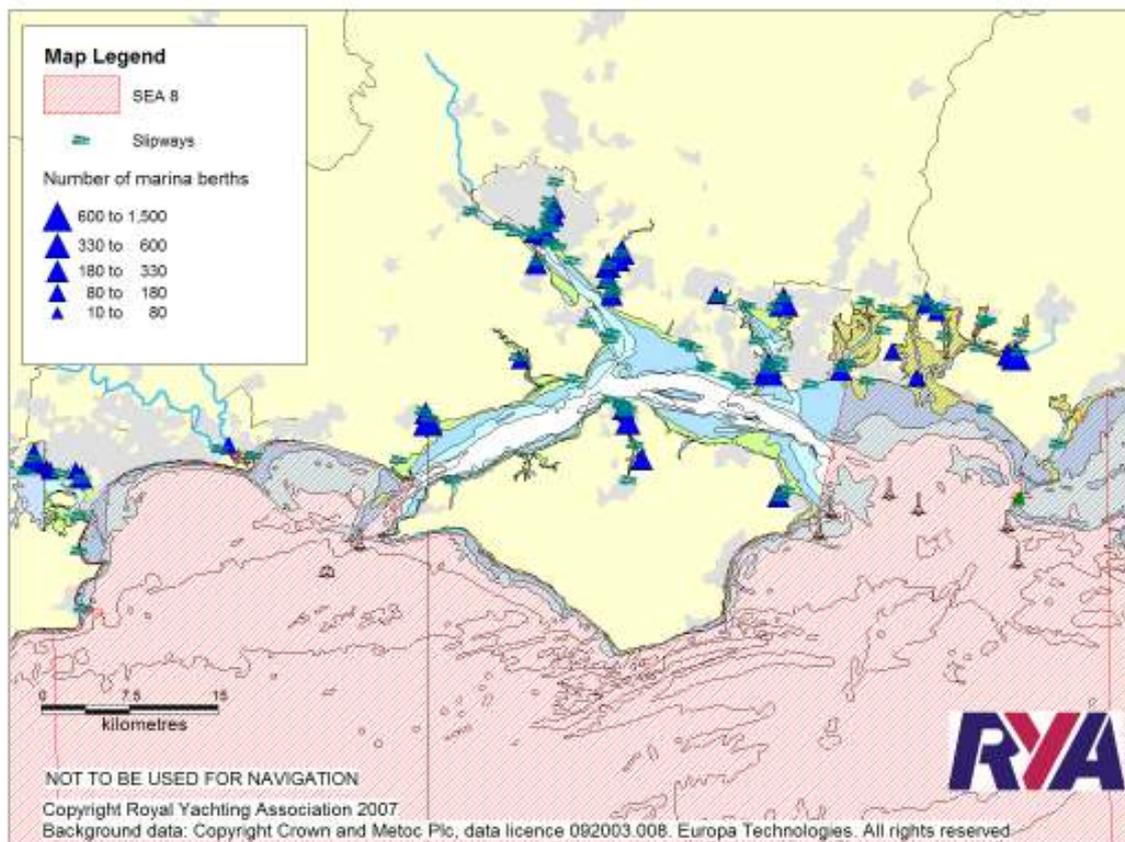


Table 2 Mooring provision between Selsey Bill to Anvil Point

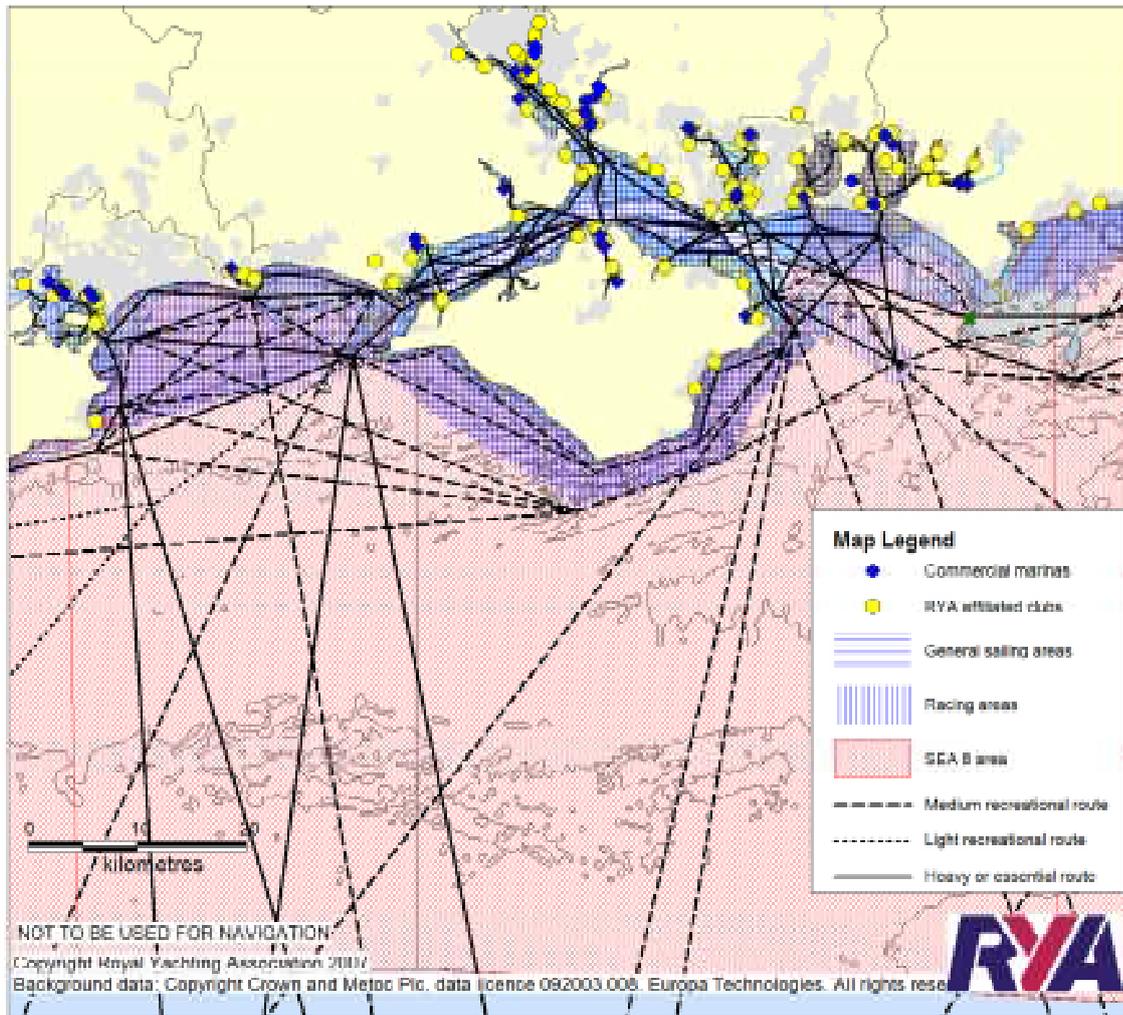
Mooring Type	Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	10050	183	5301	1806	2703	0	0	57
Alongside	702	0	411	47	100	0	0	144
Fore & Aft	3509	20	136	341	2926	0	43	43
Swinging	10612	388	603	2155	6948	451	0	67
Dry Sailing	623	8	252	215	40	108	0	0
Rack Stack	288	0	150	138	0	0	0	0
Store Slip	327	10	194	70	0	0	0	53
Riparian	426	0	0	404	0	0	0	22
Visitor	826	50	112	361	303	0	0	0
Other	681	344	299	38	0	0	0	0
Sum	28044	1003	7458	5575	13020	559	43	386

(Source BMF, 2004)

6.1 Cruising routes, sailing and racing areas

The cruising routes, general sailing and racing areas can be seen in Figure 19. Navigating these routes is described in detail in this section and should be read with reference to Admiralty Charts SC 5600 or equivalent.

Figure 19 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 1



Selsey Bill to St Catherine’s Point and south of the Isle of Wight

This area is subject to surge and swells in easterly weather, but some degree of shelter is found from the Island throughout the area in westerlies, especially in Sandown Bay. Heavy seas can develop off Chichester Bar on the ebb with a strong onshore wind. A tide race exists off St Catherine’s Point with overfalls that can be felt halfway to Dunnose in heavy weather on a big tide. Streams run hard here, with over 4.5 knots being experienced on spring tides off St Catherine’s Point. Towards the Nab Tower, streams slacken, but remain significant.

The Nab Tower vicinity

The Nab tower (50° 40.1N 0° 57.2W) stands at the main entrance to the Solent for big shipping. Almost exclusively, this now prefers the Eastern entry to the Western one via The Needles Channel. The Nab East pilot boarding area is a mere 2.3NM from Pullar buoy marking the Pullar Bank East of The Owers. Shipping in difficulties could easily stray into this area. The same applies to the area from the Nab to the Outer Nab rocks. New Grounds shoal off Bembridge Ledge is much used by small craft on passage. West-south-west of the Nab tower, are a series of large-ship anchorages. In varying conditions ships in numbers can be found anchored elsewhere in the vicinity, which is also in heavy use by cross-Channel ferries. It should not be considered for electricity generating.

Bembridge Ledge to Dunnose

The area between the big-ship anchorages mentioned above and Sandown Bay is a main road for small-vessel traffic coming into the East Solent and Chichester from the south and west. Sandown Bay is little used by yachts except when tacking up to Bembridge Ledge.

St Catherine's Deep

Offshore between Dunnose and St Catherine's Point is St Catherine's Deep. The main Channel shipping lane lies 15NM offshore. Except in weather to render the overfalls dangerous, small-craft traffic tends to stay within 2 NM or so of this shoreline. All traffic is East-West or vice-versa so a group of generating units say, not more than 0.6M wide, sited in this area 2 or more NM offshore would cause few problems. Yachts tacking in either direction could choose to work inside or outside. Little would be lost, so long as the farm did not impinge on a skipper's option to stand in once SSW of Dunnose. However, one safety consideration would be that a yacht which decided to stay inshore then found the overfalls too heavy would not be able to stand out to avoid them. Turning round would not be an option either, if the tide were running at 4 knots or more.

The south western coast of the Isle of Wight

This is an inhospitable lee shore for small craft in the prevailing weather. Atherfield Ledges, Brook Ledges and the shoals extending seawards from Blackgang Chine are all hazardous.

Generally speaking, the flattened bight between St Catherine's and The Needles is little used, even during Round the Island Race, unless the wind happens to be Easterly, an unusual contingency. Then, and only then, yachts beat into the bays. Otherwise, whether racing or just bound around the Island for a pleasure jaunt, the route lies direct from the Bridge Buoy off The Needles to St Catherine's. All other traffic comes in from down-Channel and heads up for St Catherine's Point or some waypoint offshore of there.

Freshwater Bay could provide a possible site for a generating farm without hazarding small-craft operations.

The Solent and Southampton Water

These are largely sheltered waters. The sea state 'inside' the Isle of Wight is generally calm, slight or, at worst, moderate. Tidal streams run hard in The Solent, especially in the west. At Hurst Narrows (50° 42.3N 1° 32.4W), 4¼ knots and more can be experienced. The tides quickly slacken as Christchurch Bay opens out, but they remain rapid down the south side of The Needles and on down towards St Catherine's Point.

The Solent and Southampton Water – General

Owing to their proximity to London and the towns of the central South Coast, these waters are densely populated with small craft activity of all sorts. They are also well endowed with natural harbours, most of which are filled to capacity with permanent and visitors berthing. The level of yachting activity cannot be over-stressed. This is a long-established state of affairs, going back to the time of Queen Victoria. The *America's* cup races were founded here in 1851. Today, people of all social classes and backgrounds enjoy the waters of The Solent. A substantial industry employing large numbers centres around this activity.

The West and East Solent – Nab Tower to the Needles

With a couple of exceptions noted below, the whole area of water is rendered a no-go zone for development by virtue of its extreme usage as a watersports centre. It has a global reputation and any substantial development would compromise this. In addition, fast tidal streams run in and out of many of the harbour entrances and any developments could seriously compromise navigational safety. There are no secluded corners that exist that could support a power generating station of any worthwhile substance. Even those that could are mostly protected as important nature reserves.

Chichester Harbour Approach: Tides in Chichester Harbour entrance run at up to 5 knots. The Harbour contains large areas of drying sands and mud currently protected as a SPA and RAMSAR nature reserve. Southeast of the entrance and its bar lie the East Pole Sands, approximately 1NM x ¾NM. These are largely unused for navigation.

Langstone Harbour: Tides run very fast indeed in Langstone Harbour entrance. So much so that it is normal to see substantial mooring buoys pulled under by both ebb and flood. The East Winner is an extensive gravel shoal of approximately 1NM x ½NM east of the entrance to Langstone harbour. It is largely avoided by small craft, even at high water. Inside Langstone Harbour lie extensive areas of half-tide mud flats unused for navigation of any description.

Portsmouth Harbour: The lower reaches of Portsmouth Harbour South of 50° 48.7N are heavily used by shipping, commercial, ferry, naval and leisure. North of this line lie relatively narrow channels and extensive half-tide wetlands which are designated as an SPA and RAMSAR site.

Ryde Pier to St Helen's Roads: The potential for developing Ryde Sands (largely unused for navigation except for a channel to Ryde Marina and for hovercraft is struck out by a RAMSAR. The area on the Island side of the 5-metre contour between Nettlestone Point (50° 43.3N 1° 06.5W) and Node's Point (50° 42.4N 1° 05.9W) is little used for navigation and the alternative exists simply to navigate east of the contour. However, development here would obstruct small-craft approaching Bembridge Harbour from the North.

Southampton Water

This is heavily used by small craft and commercial shipping. The tidal River Test runs into wetlands beyond the dredged Southampton Container Terminal, and the River Itchen is fully developed with boatyards, docks and marinas. Major attempts by ABP to gain permission to develop Dibden Bay on the West side of the lower Test have met with insurmountable opposition from environmental concerns.

Hamble, Beaulieu and Lyminster Rivers and Newtown Creek

All these rivers are entirely given over to long-established moorings and marinas. Any half-tide areas not thus encumbered are of concern as RAMSAR, SPA or SSSI.

Hurst Narrows, the Needles Channel and the North Channel

The strength of the tide here has already been noted. However, the passages are relatively narrow and are *Heavily Used* across their entire width for small-craft navigation. The Needles Channel is also much used by coasters and much larger shipping from time to time.

The Shingles

The Shingles Bank is a dangerous shoal extending 2¼ NM south-west of Hurst Castle, immediately south-west of the North Channel. Its un-navigable width varies between 0.6NM and ¼NM. No mariner would even enter this area wittingly, tides run fast and it is to some extent open to south-westerly weather. However, it is subject to shifting. Were it to be developed, it is recommended that to avoid conflict and safety issues with small craft, construction be limited between 50° 40.1N 1° 36.8W, 50° 41.7N 1° 35.6W and 50° 41.85N 1° 33.1W.

Poole Harbour

Poole harbour is extensively used by commercial shipping in its main channels. Its numerous secondary deep-water channels have long been enjoyed by all manner of small craft. Large areas of the harbour are half-tide wetlands protected by RAMSAR and SPA. Despite this, a certain amount of oil drilling has taken place in the vicinity of South Deep in recent years.

The entrance and the associated Swash Channel with their strong tidal streams are far too busy to develop, as is the shifting East Looe Channel. The Hook Sand which delineates the Swash is un-navigable between about 50° 40.9N and 50° 40.25N. The width on average would be around 0.2

NM. Exposed to easterlies and sheltered from the north and west, this could be a site for development.

The Isle of Wight to Anvil Point

The eastern part of this area is very exposed to the westerly winds from the Channel which is now widening towards the Atlantic. Shelter from Anvil Point is felt westward from around the mid-part of Poole Bay, but big seas can be encountered elsewhere, especially along the south-west facing coast of the Isle of Wight. Very strong streams at the headlands and up to 2.5 knots in the outer reaches of Poole Bay.

Poole and Christchurch Bays

Christchurch Bay is much trafficked by small craft bound up and down from The Solent to Poole and Christchurch. It has extensive waters around 5 – 10 metres deep at LAT, moderate tidal streams and little shelter from the south-west in its western parts. Any power generating development here would certainly 'get in the way', especially if close to Christchurch Harbour entrance which is used by yachts and fishing craft, but if it were sensibly contained and not extensive, a compromise may prove feasible.

Similar criteria apply to the northern part of Poole Bay, but note that large numbers of small craft work into Poole via the East Looe Channel which short-cuts the Swash Channel and is found almost on the beach at the entrance to Poole Harbour. Note also that many yachts are frequently obliged to beat across Poole Bay and that their routes cannot be predetermined. An extensive generating farm athwart any of the routes to the East Looe (c 50° 41.2N 1° 55.2W) or the Swash Channel (c 50° 39.6N 1° 55.2W) from the East would be a potential hazard to navigation.

Christchurch Ledge

The inner half-mile of Christchurch ledge (from Hengistbury Head to the racing buoy established to seaward of Beerpan Rocks) is not used by small craft, except by some fishermen with extensive local knowledge. Further to seaward (from about 1NM out from the headland) the ledge is crossed and re-crossed constantly by yachts, depending on the weather and the state of tide. The ledge is also extensively used by pot fishermen. Being able to cross it would be strategically important for yachts. To obstruct navigation would be potentially dangerous as well as commercially inconvenient for the fishing community.

Studland Bay

This is a well-established and extremely popular anchorage. Streams are slight and shelter in Westerly weather is first-class. It is used by huge numbers of Poole and Solent yachtsmen for recreation, as well as being an important passage anchorage for Channel traffic. In westerly gales, it can be thought of as a port of refuge for yachts, and should not be disturbed.

Handfast Point

A strong tidal stream runs past Handfast Point, but the passage is too close to the commercial route into Poole Harbour and to numerous small-craft routes to the Southward to consider using it for power generation.

Swanage Bay

While apparently as convenient an anchorage as Studland Bay, Swanage Bay is in fact not so. The town nestles close up in the Southwest corner of the bay. Here, there are moorings and an area where small craft can anchor in suitable weather, Further north, the bay is little used.

Peveril Point

Strong tidal streams run north and south past Peveril Point across Peveril Ledge. A buoy is established a quarter-mile off the point to mark the outer end of the ledge. East of this, navigation is regular and of *Medium density*, often higher in summer. It does not seem a realistic place to consider siting a development.

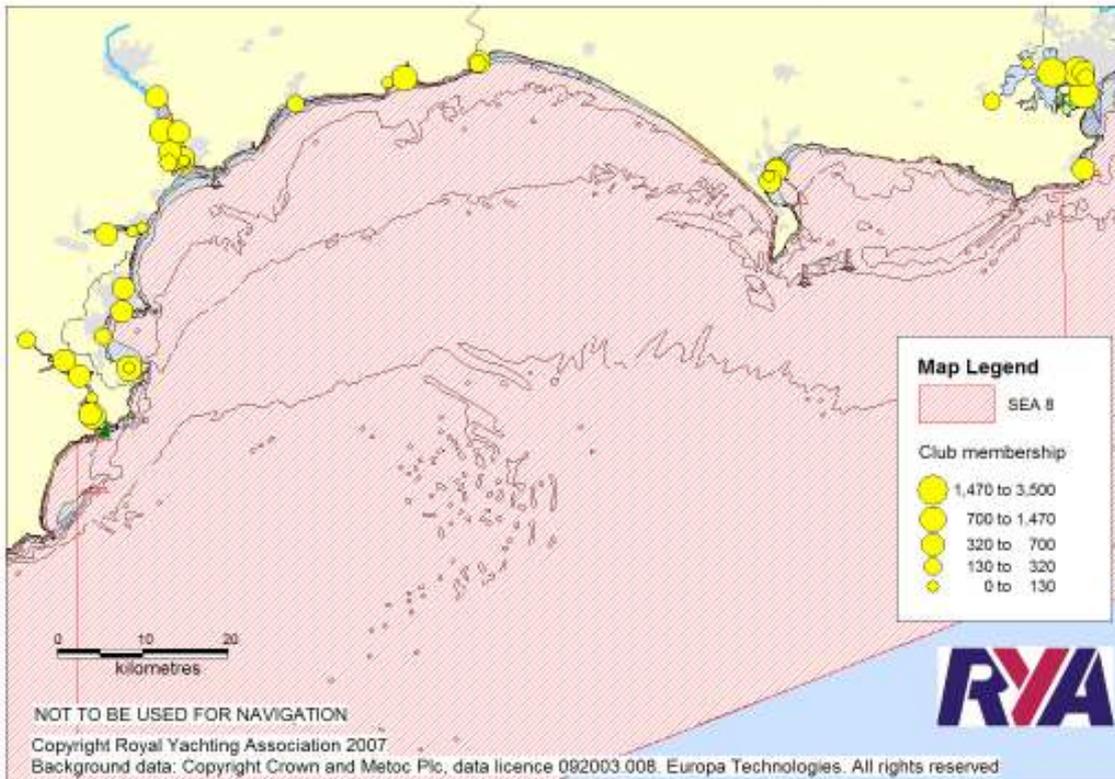
Durlston Head and Anvil Point

Streams run very hard down the half-mile stretch between these two headlands. The water is less than 10 metres deep at LAT up to $\frac{1}{4}$ NM offshore, but the area is on the main road for any craft on course from Weymouth and the Dorset coast by the shortest safe route for Poole Harbour and sometimes The Solent. To compromise this busy corner could raise safety issues, although keeping the area of influence of any units to within $\frac{1}{2}$ NM of the shoreline might supply a workable compromise.

7 AREA 3 Anvil Point to Berry Head

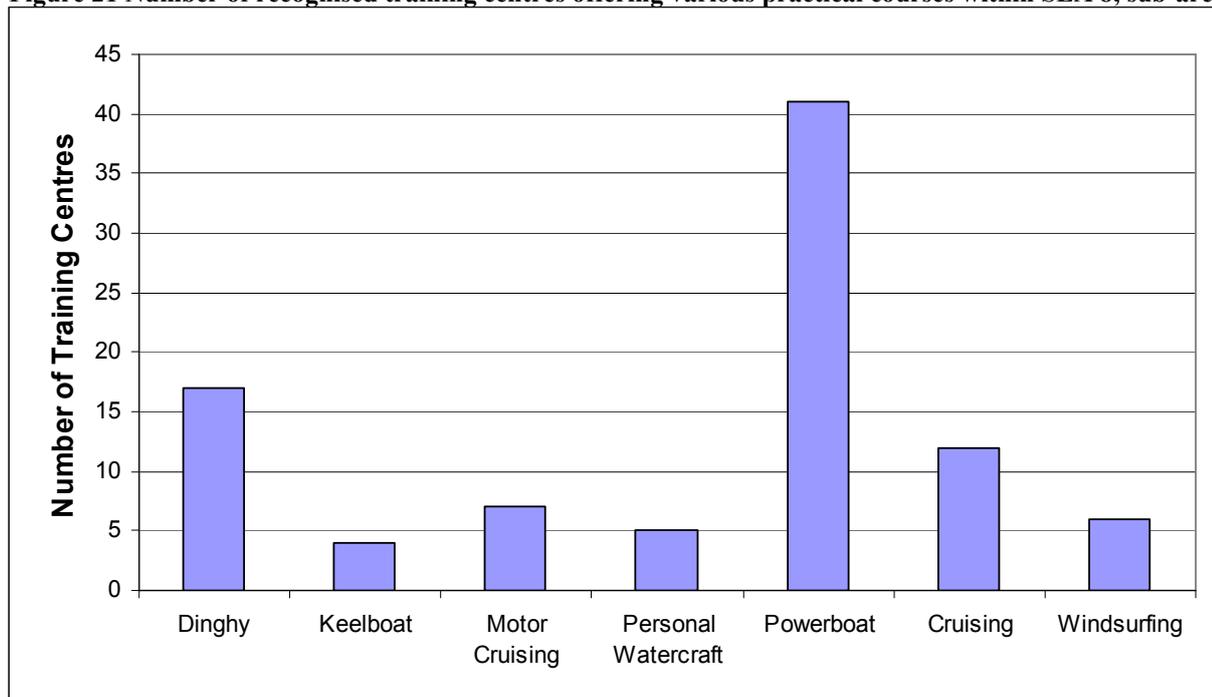
Whilst there is no reliable estimate for the number of vessels utilising the area or the number of people involved, the number of clubs, training centres and moorings can be seen as a proxy as to the level of use of the area. The area from Anvil Point to Berry Head has almost the same number of clubs as the adjacent area around the Solent (25% of SEA 8 clubs). These are concentrated at the western side of Lyme Bay (see Figure 20). The main activities carried out by clubs are dinghy racing and cruising (71% and 65% respectively) and windsurfing and yacht racing (both 52% of clubs).

Figure 20 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 3



There are a total of 75 training centres in this area offering mainly powerboat courses (see Figure 21). In addition to these practical courses are a number of theory courses such as VHF use, First Aid, diesel engine maintenance all of which are predominately used in cruising.

Figure 21 Number of recognised training centres offering various practical courses within SEA 8, sub-area 3



There are 9 marinas in the area (see Figure 22) with a total of 2551 berths (RYA, 2007). The largest marinas are:

- Brixham Marina 600 berths
- Torquay Marina 500 berths
- Weymouth Marina 484 berths

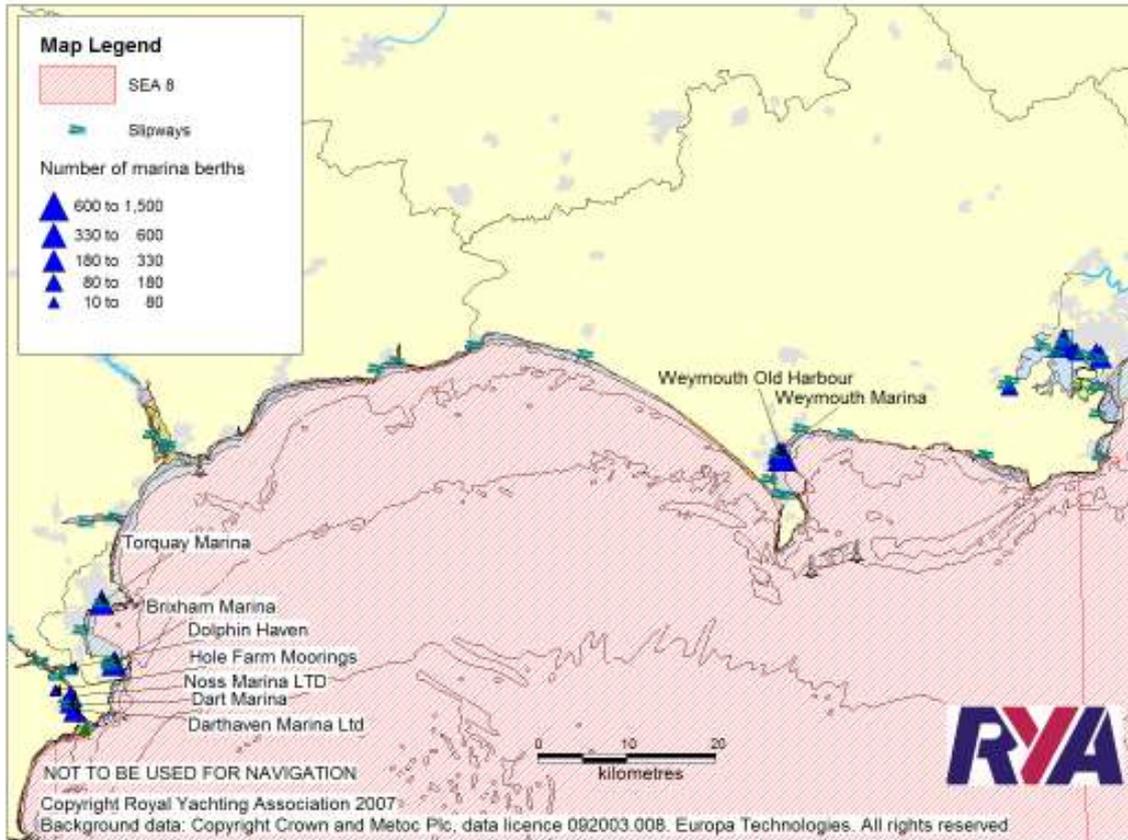
The total number of moorings in the area is estimated at 3770 (BMF, 2004) (see Table 3).

Table 3 Mooring provision between Anvil Point and Berry Head

Mooring Type	Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	1202	0	544	456	0	202	0	0
Alongside	15	0	15	0	0	0	0	0
Fore & Aft	473	77	0	95	0	301	0	0
Swinging	509	0	352	110	0	47	0	0
Dry Sailing	295	63	0	0	0	232	0	0
Rack Sack	16	0	0	16	0	0	0	0
Store Slip	20	0	20	0	0	0	0	0
Visitor	1240	0	35	3	0	1202	0	0
Sum	3770	140	966	680	0	1984	0	0

(Source BMF, 2004)

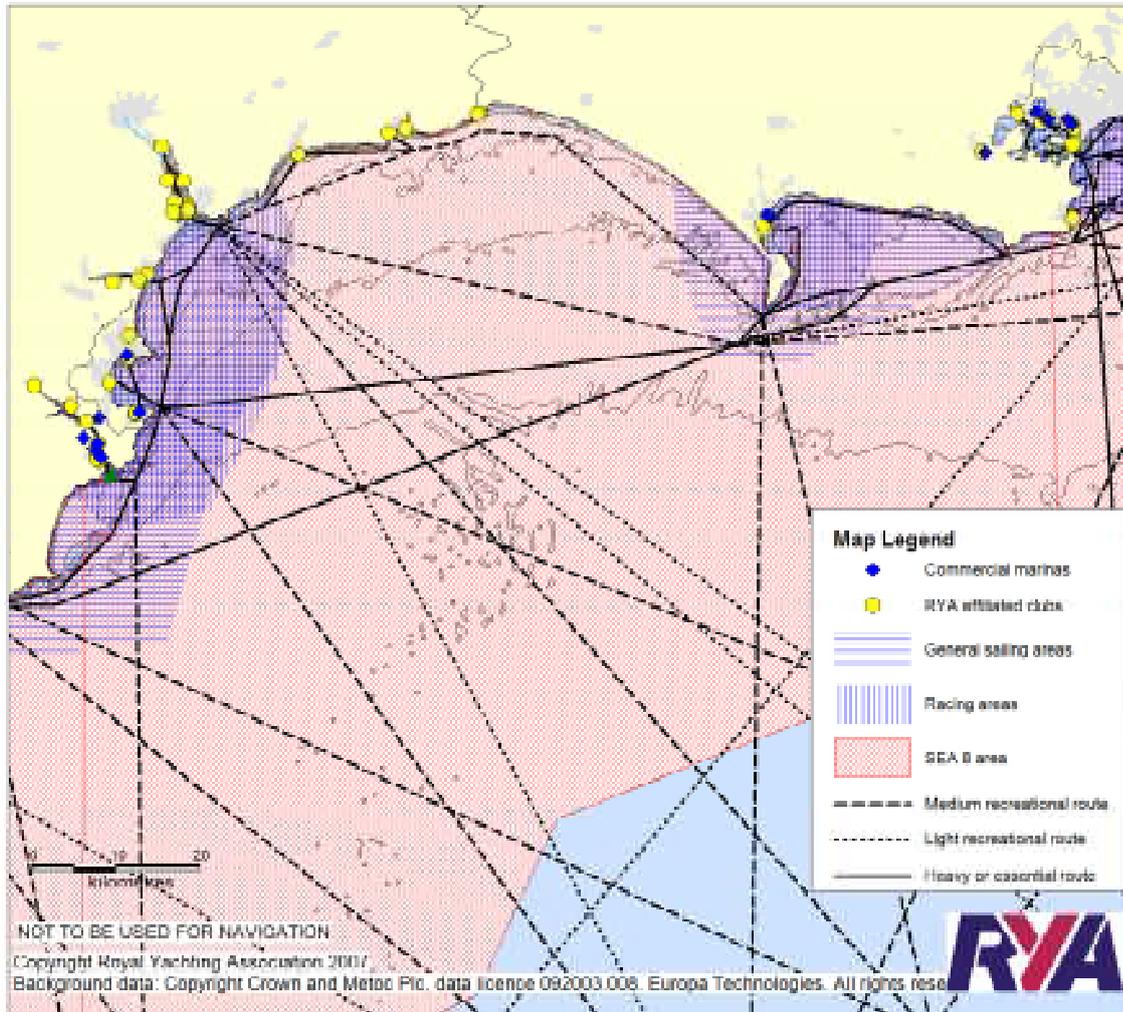
Figure 22 Location of anchorage areas, slipways and commercial marinas and number of berths within SEA 8, sub-area 3



7.1 Cruising routes, sailing and racing areas

The cruising routes, general sailing and racing areas can be seen in Figure 23. Navigating these routes is described in detail in this section and should be read with reference to Admiralty Charts SC 5601 or equivalent.

Figure 23 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 1



Anvil Point to Portland Bill

This area is wide open to the Southeast, but some shelter from Westerly weather is derived from the Bill of Portland as it is approached. Shelter from the West close-in in Weymouth Bay is total, although swell and surge still run into the area. Certain headlands in this area are noted for their tidal races and accompanying heavy seas and overfalls.

Tides run fast along this entire coast, especially so at headlands. Portland Race is exceptionally fast.

Lulworth Firing Ranges and St Alban's Head

The Lulworth Firing Ranges are an intermittent obstacle to useful navigation between points east and the important port of Weymouth. Unlike some firing ranges which are used only rarely, these operate regularly all year round for a substantial proportion of the day and night. Firings are posted and a range boat keeps stray craft clear. The area takes in much of St Alban's Race, an area of potentially dangerous water extending southwest from St Alban's Head. It is also largely exposed to the south, east and south-west.

For the above reasons, a development on the 3NM x c½NM of St Alban's Ledge would arguably cause less disruption to traffic than might initially appear.

St Alban's Head – inside passage

A passage of relatively smooth water exists close under St Alban's Head, which is chosen in reasonable weather by craft heading east and west past the headland. Depending on conditions, it extends approximately ¼ NM offshore. This passage should on no account be interfered with. Similarly, the coast within 2NM of the shore between St Albans and Weymouth sees regular traffic from yachts and fishing vessels.

Weymouth Bay

In addition to normal passage traffic and fishing activities, this is used as an international yacht racing venue. It is designated for the 2012 Olympic Games. Any area could be in use, and so development is not recommended.

Portland Harbour

This is a large expanse of water enclosed by Portland Bill and its own breakwaters. The military have now abandoned the harbour, but it is in regular use by the local yacht club and, more recently, the National Sailing Academy and its associated Olympic activities. Winds blow strongly across the harbour, but it has little tidal stream and seas rarely exceed 1 metre high.

Portland Bill – East Side

Small craft bound to and from Weymouth and Portland Harbours and points west generally use an inside passage between Portland Bill and its notorious race. The route to this lies close inshore along the East side of Portland Bill. This passage should not be impeded.

The Shambles

The Shambles shoal lies about 2NM East of Portland Bill. Its shallowest patch is around 6 metres at LAT so it can safely be crossed by small craft in fair weather. In fact, however, such is its reputation for heavy seas when the going gets rough, that few small vessels do this. Its west-south-west disposition means that vessels bound up and down-Channel pass either side of it. The 2 x 0.7 NM shoal could be a possible site for development. However, it must be noted that the tides run so fast that small craft in difficulties may find themselves set into such a farm.

The Race of Portland and inside passage

Without doubt, the Race of Portland generates potentially the worst seas on either side of the English Channel. Streams are charted as reaching 7 knots on mean springs – they undoubtedly exceed this velocity at times – and the tide converges from the main Channel and West, or Weymouth bays, being further confused by a broken sea bed. The resulting race varies in position, but a general distance of 1½ NM off The Bill is a reasonably fair definition in moderate weather. In gales, its effects can be felt as much as five miles offshore. An important inside passage that must on no account be obstructed extends up to about 2 cables (0.2NM) off the South point of The Bill.

Portland Bill to Berry Head

While streams offshore remain fairly strong, those in west and Lyme Bay are far gentler than streams further East. They remain a force to be reckoned with off headlands. The large bight delineated by this section is wide open to the South and, because of its size, largely so to the southwest and the east.

Portland Bill – West Side, and West Bay

Low-powered traffic bound to and from the inshore passage of Portland Bill from the west steers initially for a point on the Bill at around 50° 34N. This is to account for the increasingly strong

Southerly set which can suck a boat into the Race of Portland. For this reason, keeping the West side of The Bill clear of obstructions is a safety issue.

West Bay is a large expanse of water where yachts have a reasonable amount of option to steer where they wish. A modest obstruction here would not create much hazard so long as it did not impede the route described above, or the approaches to West Bay harbour (50° 42.6N 2° 45.8W), in which considerable investment has recently been made.

West Bay to Hope's Nose

The comments above about West Bay apply equally to the broader waters of Lyme Bay. However, no obstruction must be placed near the approaches to the Exe or Teignmouth, which are locally of *Heavy Use*. The passage between Hope's Nose and the Ore Stone (50° 27.4N 3° 28.3W) is used by craft on passage between Exmouth/ Teignmouth and Torbay.

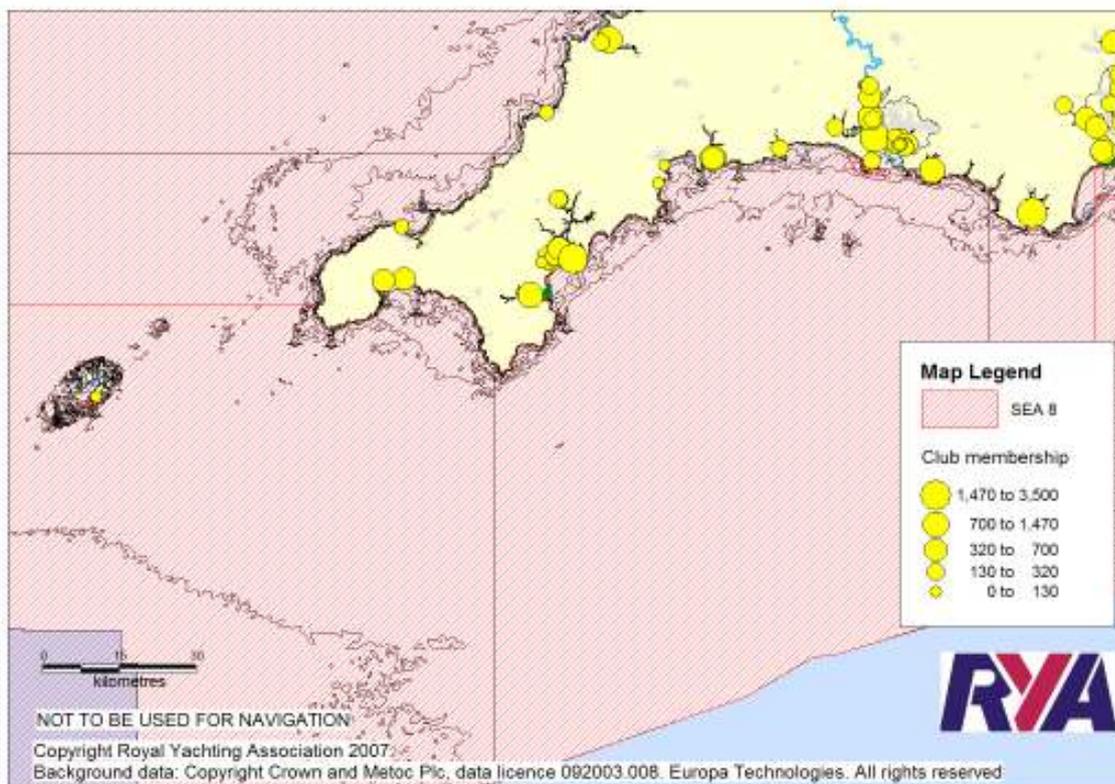
Torbay

Torbay is an ancient anchorage for shipping. It was used in the Napoleonic Wars by the Royal Navy for the Channel Fleet when heavy weather drove them off-station from the Blockade of Brest. Today, it is never devoid of heavy shipping waiting orders, tides or just lying up. It is also a *Heavy Use* area for small craft and fishing vessels from Brixham.

8 AREA 4 Berry Head to Lands End and the Isles of Scilly

Whilst there is no reliable estimate for the number of vessels utilising the area or the number of people involved, the number of clubs, training centres and moorings can be seen as a proxy as to the level of use of the area. This area has fewer clubs, a total of 15, than the three eastern areas already described in the previous three chapters. As with the other areas, they are concentrated around the major estuaries, in this case Plymouth and Falmouth area (see Figure 24). The main club activities are focused around racing, 80% of clubs running dinghy racing and 60% running yacht racing events. Dinghy cruising was also high (67%).

Figure 24 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 4



There are a total of 86 training centres in this area offering mainly powerboat courses, along with dinghy, cruising and windsurfing (see Figure 25). As with the other areas there are a number of centres running theory courses such as VHF use, First Aid, diesel engine maintenance all of which are predominately used in cruising.

There are 11 marinas in the area (see Figure 26) totalling over 2360 berths (RYA, 2007). The marinas are generally smaller than those further east. The largest four marinas being:

- Plymouth Yacht Haven 450 berths
- Sutton Harbour Marina 425 berths
- Mayflower International Marina 380 berths
- Falmouth Marina 337 berths

The total number of moorings in the area is estimated at 12,862 (BMF, 2004). This area differs from the eastern areas in that the vast majority of moorings are not in marina berths but are run by Harbour or River Authorities (see Table 4).

Figure 25 Number of recognised training centres offering various practical courses within SEA 8, sub-area 4

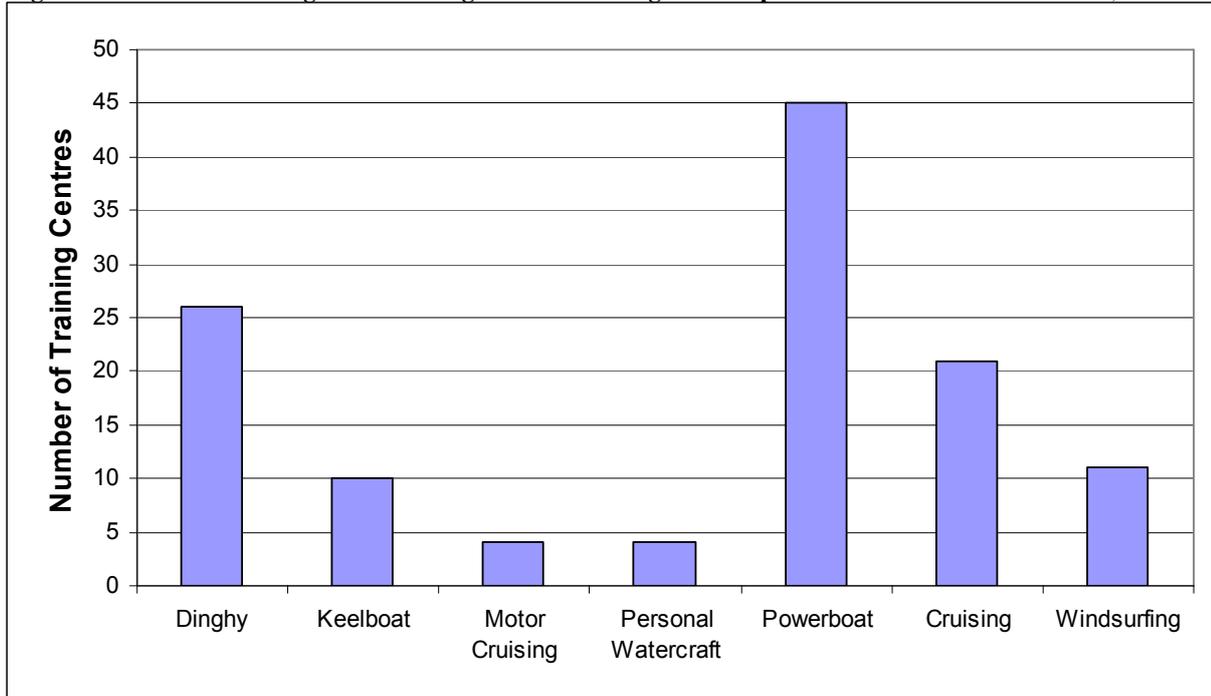


Figure 26 Location of anchorage areas, slipways and commercial marinas and number of berths within SEA 8, sub-area 4

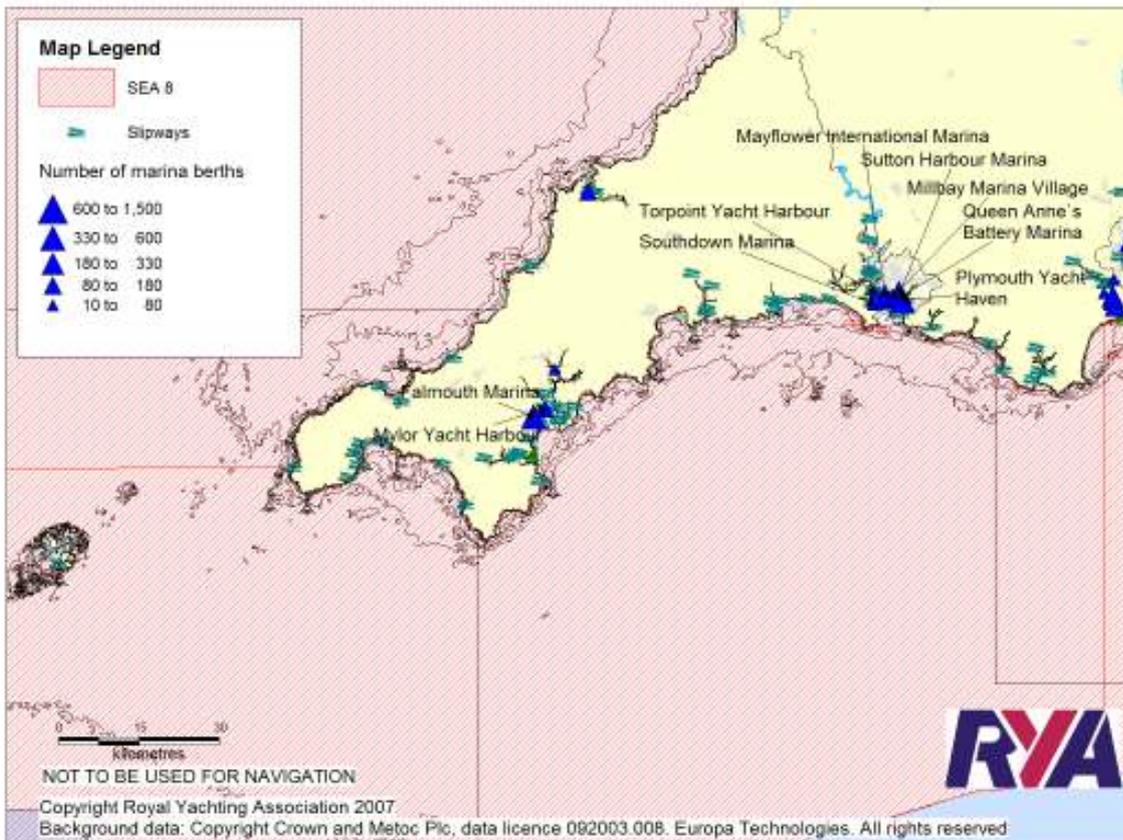


Table 4 Mooring provision between Berry Head and the Isles of Scilly

Mooring Type	Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	3079	5	1943	900	134	0	97	0
Alongside	159	8	37	15	99	0	0	0
Fore & Aft	1452	0	325	279	836	0	12	0
Swinging	4772	20	1587	283	2865	0	17	0
Dry Sailing	200	0	0	20	180	0	0	0
Rack Stack	20	0	0	0	20	0	0	0
Store Slip	767	0	482	0	285	0	0	0
Riparian	305	0	0	5	0	0	300	0
Visitor	383	0	190	36	127	0	30	0
Other	1725	0	0	0	105	0	1620	0
Sum	12862	33	4564	1538	4651	0	2076	0

(BMF, 2004)

Cruising routes, sailing and racing areas

The cruising routes, general sailing and racing areas can be seen in Figure 27. Navigating these routes is described in detail in this section and should be read with reference to Admiralty charts SC 5602, SC 5603 or equivalent.

Berry Head to Bolt Tail

Shelter can be found in the lee of various headlands and bays, but in general, from Berry Head westwards, the Channel is more or less open to the Atlantic. The seas become larger and longer than further east. Although streams can pick up off headlands – notably along the stretch of coast from Start Point to Bolt Tail, streams are weaker in this area than east of Portland and west of Falmouth.

Dartmouth and the River Dart

Dartmouth is a very important harbour, with some shipping and a huge amount of leisure activity. Neither the harbour, the River Dart, nor its approaches should be obstructed in any way.

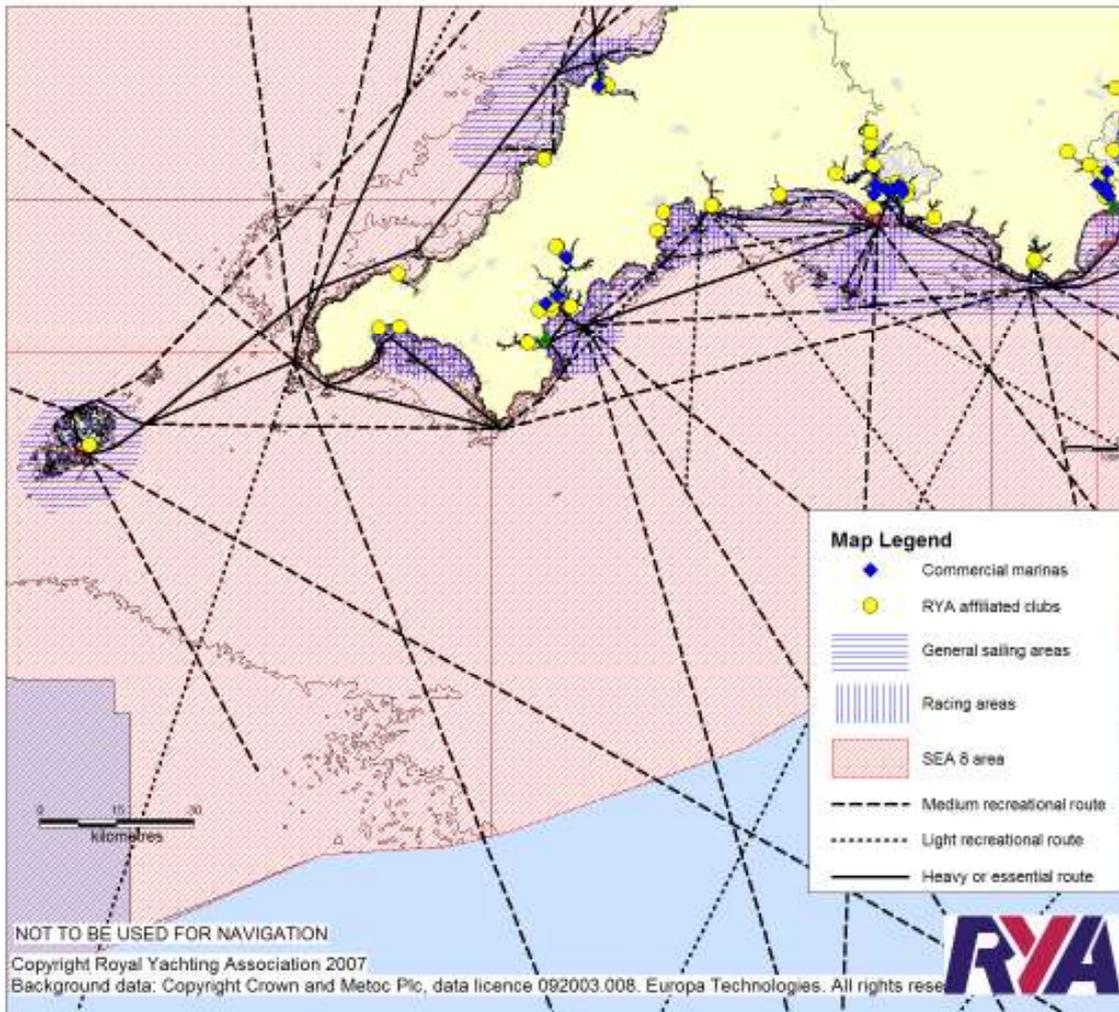
Start Bay and the Skerries Bank

Start Bay runs south-south-west from Dartmouth to Start Point. The direct route is obstructed by the Skerries Bank. With a least depth at LAT of 2.1 metres and a neap high water height of more than 4 metres, this can safely be crossed by most yachts in fair weather. In easterly gales, however, it is a death trap. A development on this shoal would not be popular, but a case could certainly be argued, so long as the ½ NM deep-water passage between the bank and Start Point were kept properly clear and the navigable water west of the bank were not impeded.

Start Point to Bolt Tail

In practice, this stretch of coast is a promontory along which boats travel on passage from anywhere west on the English shore and up-Channel. It therefore sees more traffic than one might expect. In summer it is certainly in *Heavy Use*. For some reason, seas along here are often awkward and rougher than the surrounding waters. It is recommended that, for reasons of safety, no obstacle be placed within 3NM South of Prawle Point.

Figure 27 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 1



Salcombe Harbour, The Bar and The Range

The Range (the bight leading up to Salcombe entrance) is of uneven bottom. Small craft cross and re-cross it in all directions in fair weather. In foul, they keep to the western side of it to approach the bar on the safe-water transit. The Bar and the passage at its western end are shoal and liable to *Heavy Use*. The deep-water navigable parts of Salcombe Harbour are taken up with long-standing moorings or navigable channels. The drying creeks, including the one running north to Kingsbridge, are of obvious environmental importance.

Bolt Tail to Looe Island

Sea state and tidal streams in this area can be thought of as similar to the area from Berry Head to Bolt Tail.

Bolt Tail to the Great Mew Stone

Bigbury Bay is used only by local inshore traffic. The main routes past offshore of it and only sailing yachts beating to windward might enter its bight. The area between Hilsea Point (50° 17.7N 4° 03W) and the Great Mew Stone is *Heavy Use* with yachts and local traffic using the River Yealm. A half-tide passage exists north of the Great Mewstone which is definable by observing transits. This should not be impeded.

Plymouth Sound

The whole area from the Great Mew Stone to Rame Head and in to Plymouth is in *Heavy Use* by traffic of all descriptions. It should not be impeded under any circumstances.

Plymouth Harbour and associated rivers

Plymouth Harbour from the Cattewater bridge to the Tamar bridges is very heavily used. The wide expanses of St John's Lake and Millbrook Lake are not so, although the channel leading up to Southdown Marina and the Multihull Centre should not be compromised. The West Mud is little used above the 2 metre drying line. The partly drying Lynher River estuary is an SSSI.

Rame Head to Looe Island

Attention is drawn to Knight Errant Patch, to make the point that it poses little or no threat to small craft. Closer in to Looe Harbour, traffic is *Heavy Use* on the tide in summer.

Looe Island to The Lizard

Sea state and tidal streams in this area can be thought of as similar to area 2.2.14. However, streams pick up off The Manacles where up to 2 knots can be experienced, with 2½ knots off The Lizard itself.

Looe Island to Dodman Point

The shoreline here is largely free of dangers, except for Udder Rock, Cannis Rock and Gwineas Rocks which are clearly buoyed. There are no special navigational considerations, but because it lies in the bight of land between Rame Head and Dodman point it should not be considered a backwater. Traffic is plentiful, especially in summer. The passage between Gwineas Rocks and Pabyer Point (50° 15.1N 4° 46.3W) should not be impeded because yachts and fishing craft proceeding south from Mevagissey, Charlestown and Par use it when bound west.

Dodman Point to St Anthony Head

Traffic passes close in under the Dodman, despite the charted tide race. In practice, this is often fairly inactive. Veryan and Gerrans Bays are little entered by passing yachts, except when beating to windward. Local boats use the tiny bays such as Porthscatho for lunchtime stops.

Falmouth Harbour

The Inner Harbour and the Penryn River are either full of moorings or are in *Heavy Use*. The harbour entrance and St Mawes Harbour are not only main traffic routes (St Mawes for the Percuil River), they are leisure sailing areas of major importance. Carrick Roads are used not only as yacht racing areas and routes – both commercial and small-craft – for the Mylor and Restronguet Creeks, the River Fal and the Truro River, they are also the site of one of the last sailing oyster industries in the World. These waters cannot be compromised by development.

Falmouth to The Lizard

The Manacles are generally left to the Westward by passing traffic, but local boats and fishing craft pass among them. The bays and bights including Coverack and Cadgwith are little entered as the shoreline is beset with rocks, and the tiny harbours afford little guaranteed shelter. However, the rhumb line between a point 2½NM South of the Lizard and The Manacles is a well-trodden path for yachts on passage.

The Lizard to Pendeen

West of The Lizard, the full weight of the Atlantic seas will be felt in Westerly weather. Tidal streams in the vicinity of Lands End can approach 3 knots. Mount's Bay is comparatively peaceful in this respect.

Mounts Bay

The rhumb line across the mouth of Mounts Bay is a *Medium Use* route, while further offshore, yachts bound to and from the Isles of Scilly up-Channel pass well south of Gwennap Head and the Runnel Stone. Porthleven is not a busy harbour, and so if it were felt desirable to locate a group of generating units in the Eastern part of Mount Bay, this would not cause serious disruption. The Northwest corner between St Michaels Mount and Mousehole would be far less popular, especially with the fishing community of Newlyn.

Lands End and the Longships

Traffic passing north and south around Lands End generally passes west of the Longships rocks and light. However, the inner passage, especially the one east of Kettle's Bottom, is favoured by locals and those of a more adventurous disposition in possession of the right chart. This passage should not be impeded, both for reasons of convenience and also for safety. This is an area of considerable potential danger, and one never knows what contingencies may arise. Most small-craft traffic on the routes described will pass inside Carn Base.

The Longships to Pendeen

The chart here speaks for itself, except to note that the whole area is designated a part of the Inshore Traffic Zone of the Seven Stones TSS.

The Longships to the Isles of Scilly

This sea area is entirely taken up with the Seven Stones TSS and its associated Inshore Traffic Zones.

The Isles of Scilly

It has been noted above that if serious consideration were to be given to creating a major generating station in the waters around the Isles of Scilly, the complexity of the area would demand a separate study. The whole area is subject to use at any time by the local launches and inshore fishermen as well as yachts and dive boats. It is also ecologically sensitive. Tidal streams are not strong here, but there are certainly sites in and around the Islands where wind or wave generators would be sited with commercial advantage. However, the navigational considerations are complex and would need to be addressed with the greatest care.

9 AREA 5 & 6 the Bristol Channel

The sub-areas 5 and 6 have are described in a single Chapter in this report due to their geography. Combining the areas for the purpose of mapping both facility location and routes which join the two areas improves the presentation. The data, where possible, remain split into the English and Welsh portions for increased detail. Whilst there is no reliable estimate for the number of vessels utilising the area or the number of people involved, the number of clubs, training centres and moorings can be seen as a proxy as to the level of use of the area. The English coast of the Bristol Channel has the least number of clubs in the SEA 8 area, a total of 7, whilst the Welsh coast has 15. This is a busy section of welsh recreational boating due to the proximity to the main Welsh population centres e.g., Cardiff, Newport and Swansea. Along the English coast, the club activities are dinghy cruising and windsurfing carried out at 71% of the clubs, followed by dinghy and yacht racing at 57% of the clubs. The Welsh coast sees the clubs active in dinghy cruising and racing at 87% and 73% of the clubs respectively. The western section of sub-area 5 shows a small scattering of relatively small clubs (see Figure 28). The clubs are denser along the upper sections of the Bristol Channel (see Figure 29) and like the locations along the English Channel can be found in the estuaries and rivers of the south Wales coast (see Figure 30).

Figure 28 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 5 west

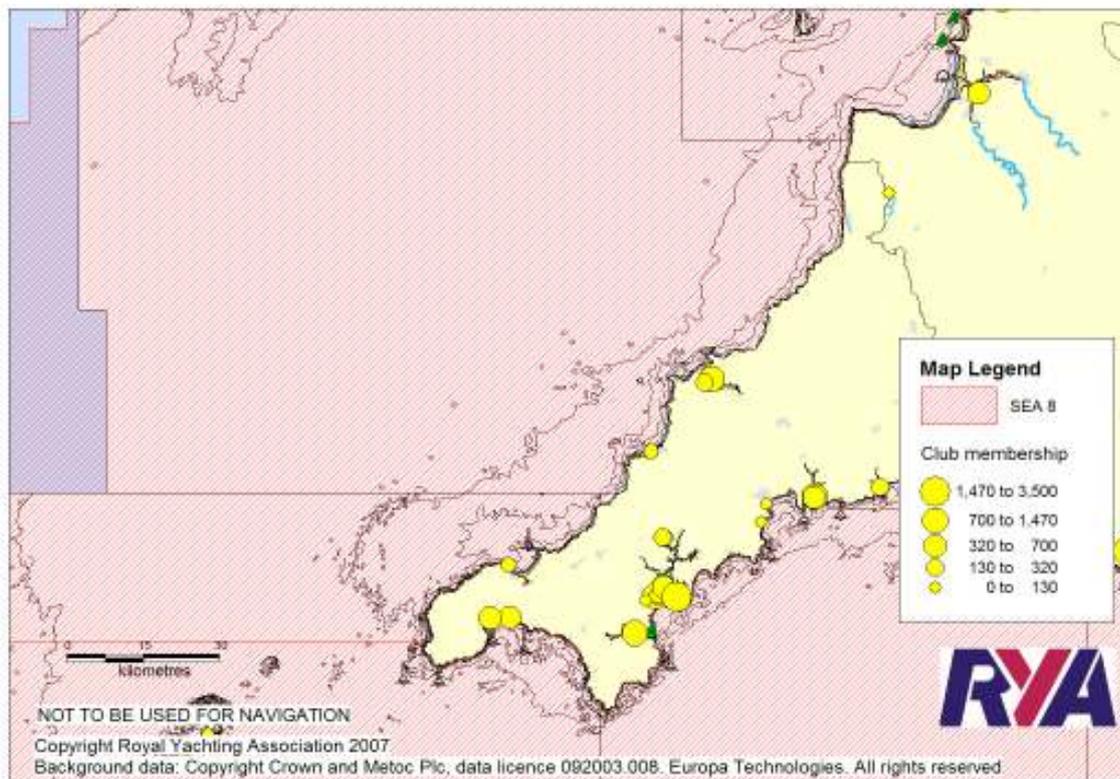


Figure 29 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 5 & 6 east

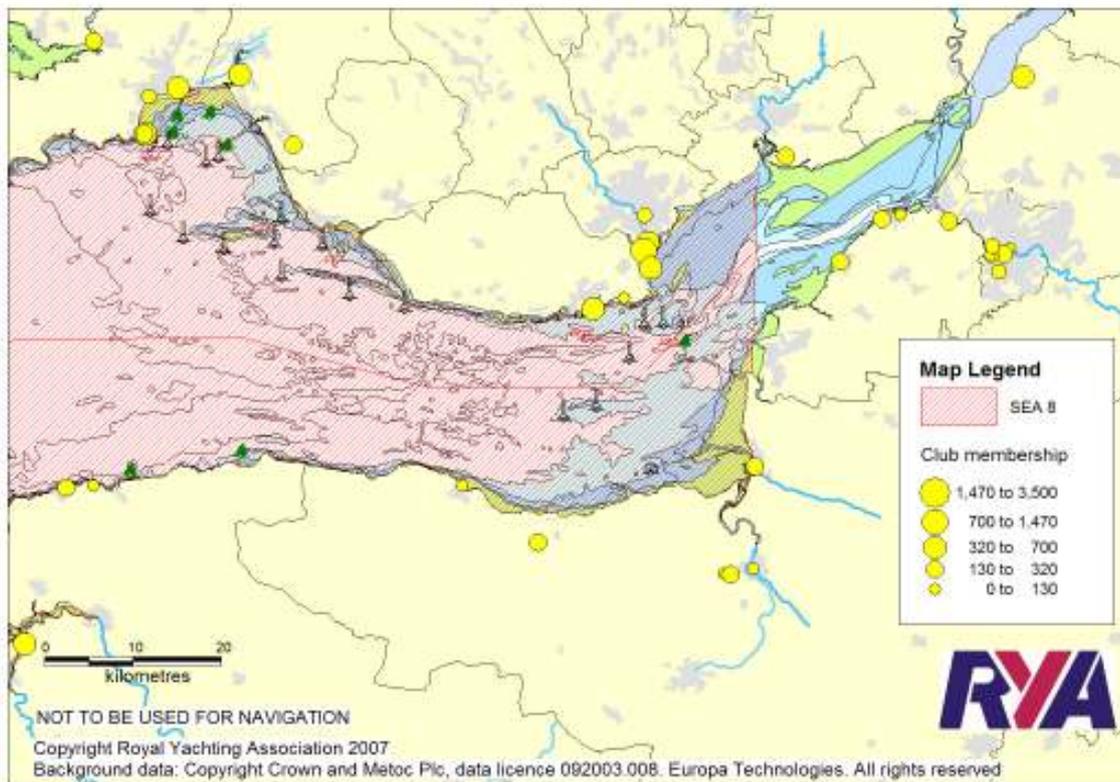
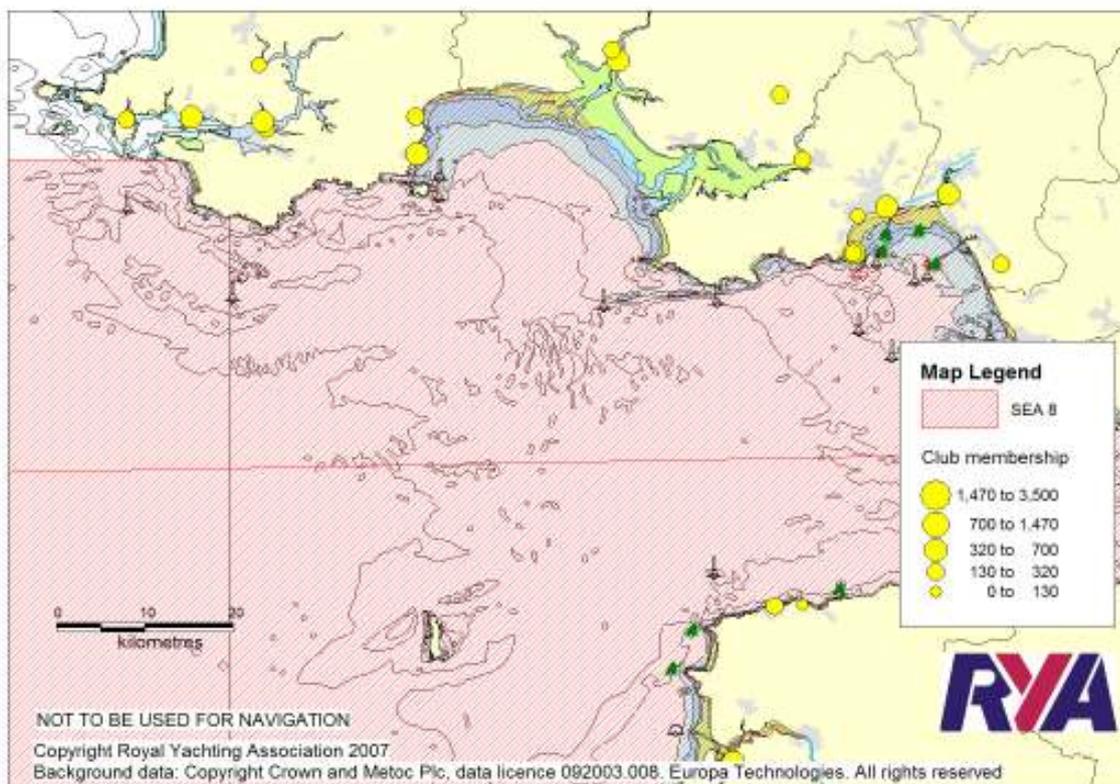


Figure 30 Size and location of the RYA affiliated clubs within the SEA 8, sub-area 6 west



There are a total of 29 training centres along the English coast and 42 along the Welsh coast. The two areas follow similar patterns offering mainly in this area offering mainly powerboat courses followed by dinghy courses (see Figure 31 and Figure 32). The prevalence of power boat courses at training centres highlights the growing sector of recreational boating and in this area may well highlight the difficult conditions for low-speed craft such as sailing vessels. In addition to the practical courses are a number of theory courses such as VHF use, First Aid, diesel engine maintenance all of which are predominately used in cruising.

Figure 31 Number of recognised training centres offering various practical courses within SEA 8, sub-area 5

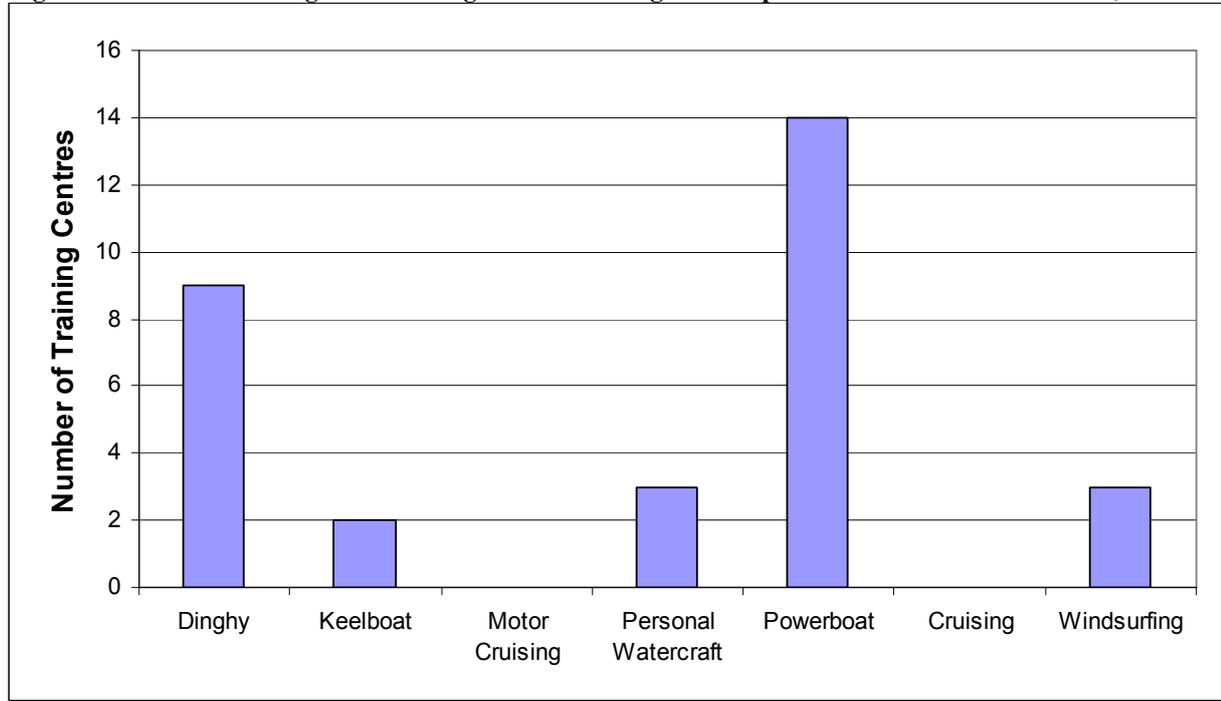
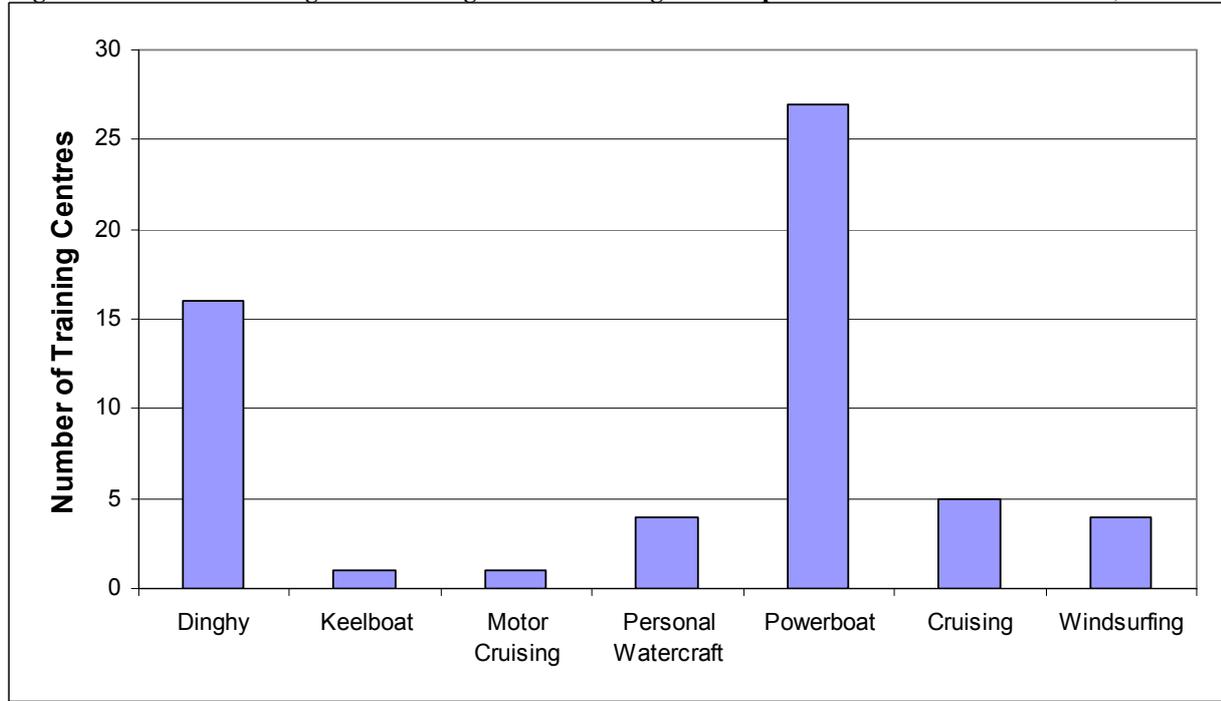


Figure 32 Number of recognised training centres offering various practical courses within SEA 8, sub-area 6



There are 3 marinas along the English coast and 4 marinas along the Welsh coast (see Figure 33, Figure 34 and Figure 35) with a total of 540 and 1460 berths respectively (RYA, 2007). The largest marinas are all found along the Welsh coast:

- Neyland Yacht Haven 420 berths
- Swansea Marina 400 berths
- Penarth Marina 340 berths
- Milford Marina 300 berths

Along the English coast Portishead and Watchet Marinas have 250 and 240 berths respectively with Uphill Boat Centre having just 50 berths.

The total number of moorings along the English coast is estimated at 1789 and along the Welsh coast, 1684 (BMF, 2004). This shows the majority of the moorings available along the English coast to be outside of marinas whilst the Welsh coast is almost exclusively within marinas (see Table 5 and Table 6).

Figure 33 Location of slipways and commercial marinas and number of berths within SEA 8, sub-area 5 west

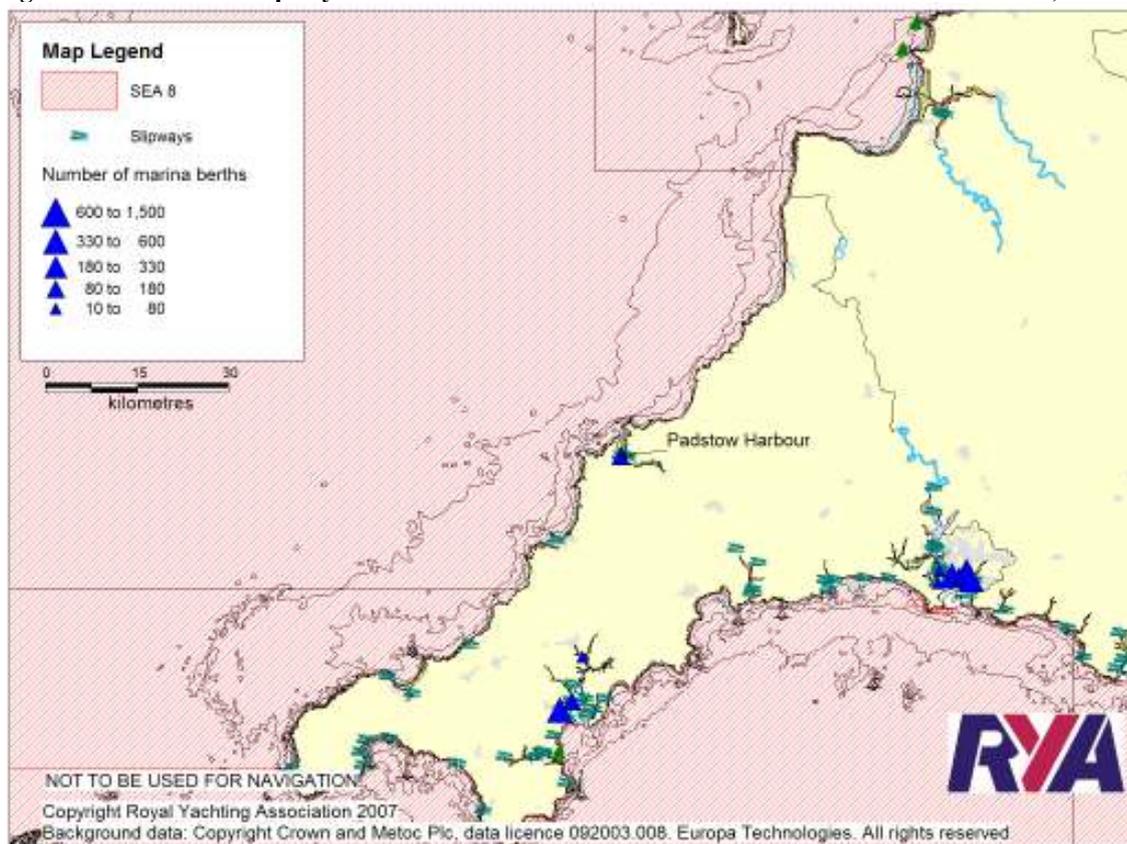


Figure 34 Location of slipways and commercial marinas and number of berths within SEA 8, sub-area 5 & 6 east

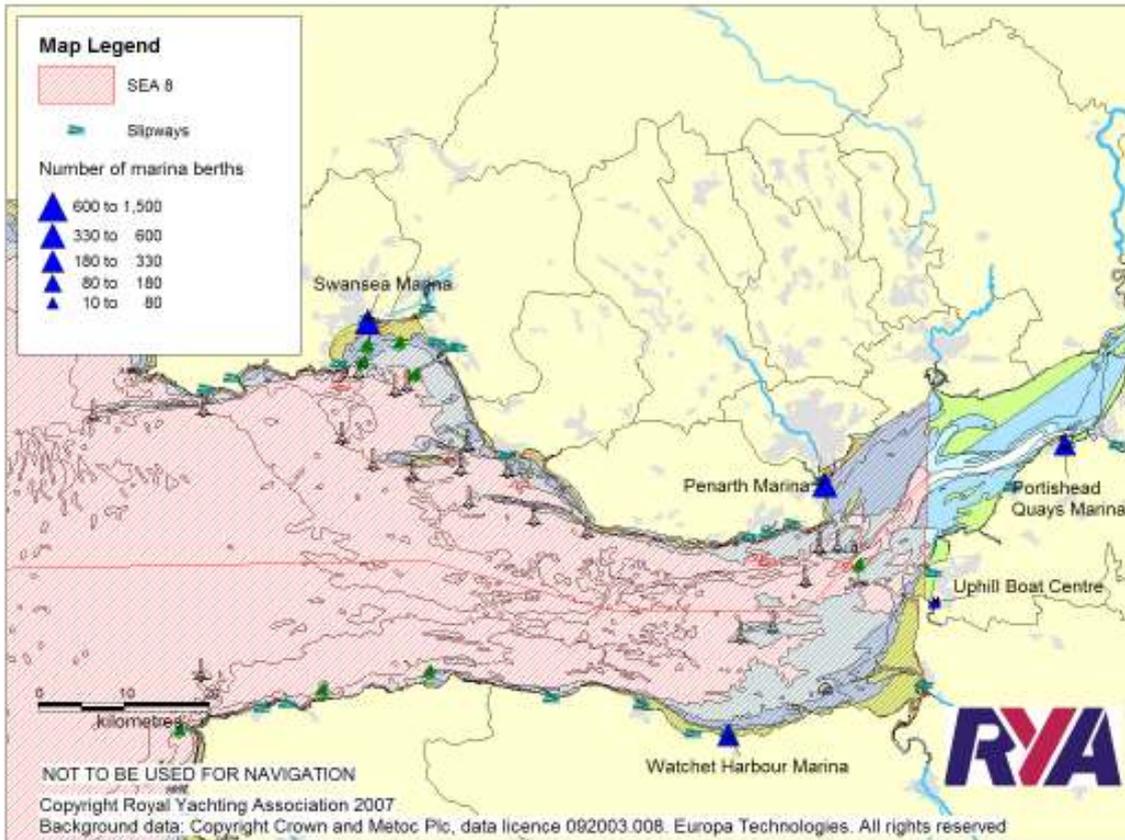


Figure 35 Location of slipways and commercial marinas and number of berths within SEA 8, sub-area 6 west

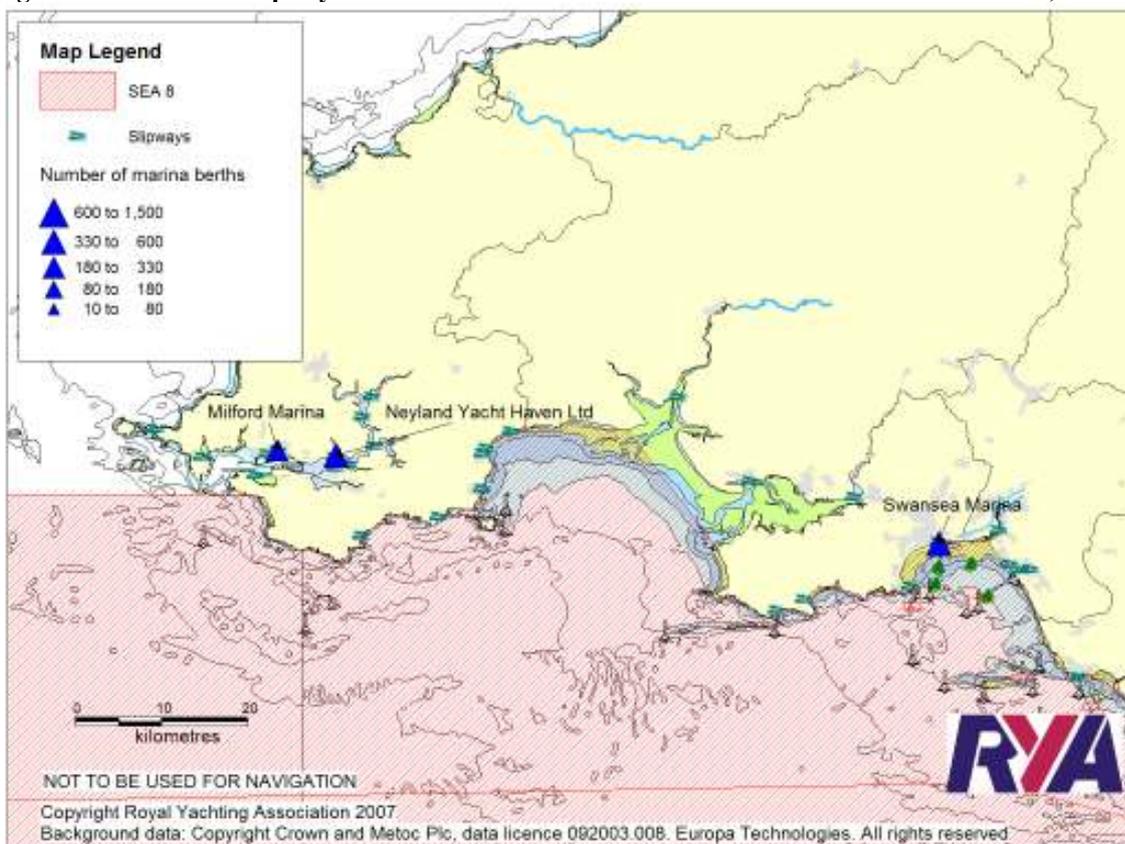


Table 5 Mooring provision along the English Bristol Channel coast

Mooring Type	Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	502	0	290	62	150	0	0	0
Alongside	112	0	57	37	18	0	0	0
Fore & Aft	740	0	137	446	157	0	0	0
Swinging	303	0	0	3	300	0	0	0
Dry Sailing	4	0	0	0	4	0	0	0
Store Slip	85	0	0	85	0	0	0	0
Visitor	43	0	5	14	24	0	0	0
Sum	1789	0	489	647	653	0	0	0

(Source BMF 2004)

Table 6 Mooring provision along the Welsh Bristol Channel coast

Mooring Type	Moorings	Vacancy	Comm	Non	Harb Auth	Loc Auth	Riv Auth	Other
Pontoon	1208	35	370	425	0	378	0	0
Alongside	4	0	0	0	4	0	0	0
Fore & Aft	285	30	0	195	60	0	0	0
Swinging	25	0	0	25	0	0	0	0
Dry Sailing	100	0	0	100	0	0	0	0
Store Slip	60	0	0	60	0	0	0	0
Visitor	2	0	0	0	2	0	0	0
Sum	1684	65	370	805	66	378	0	0

(Source BMF 2004)

9.1 Cruising routes, sailing and racing areas

The cruising routes, general sailing and racing areas can be seen in Figure 36. Navigating these routes is described in detail in this section and should be read with reference to Admiralty Charts SC 5603, SC 1165, 1152, 1176 and 1161.

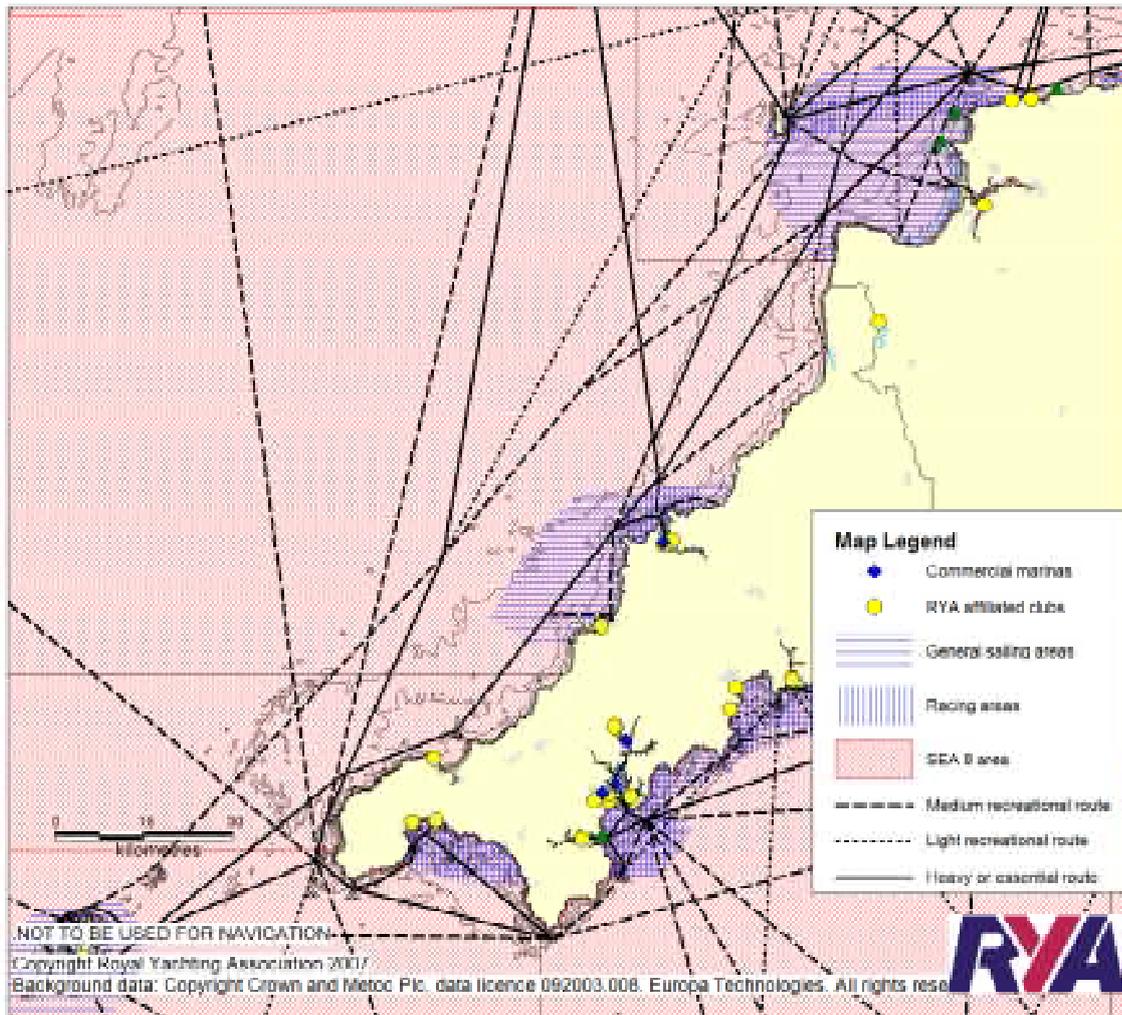
The sea and tide conditions of the Bristol Channel have been dealt with in general terms in Chapter 3. Although stronger than the English Channel, these factors are less complex and so no attempt has been made to categorise them for the various areas covered below.

Pendeen to Hartland Point

This coast experiences less tide than is typical of the Channel. Streams pick up off Pendeen and run hard off Hartland Point, but by Bristol Channel standards, they are comparatively gentle up the long stretch of the North Cornish shore. Compared with the south coast of Cornwall, traffic is very thin here. Indeed, the Admiralty have considered it unnecessary to complete the charting of a number of inshore areas which to this day are marked as ‘unsurveyed’. One such zone is less than 2NM from Newquay harbour.

The area between Trevoze Head and Hartland Point is considered notorious for strong winds.

Figure 36 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 5 west



Hartland point to The Foreland

Hartland Point

Small-craft traffic rounding Hartland Point is governed by the tidal stream and the overfalls which created a genuine hazard between 1 and 2NM offshore. Traffic therefore passes either close inshore or more than 2NM off, down the middle of the channel between the headland and Lundy Island which, in turn, creates its own tidal problems close in.

Barnstaple Bay

Except from access to Clovelly, the inner southern parts of Barnstaple Bay are little used except by fishing craft.

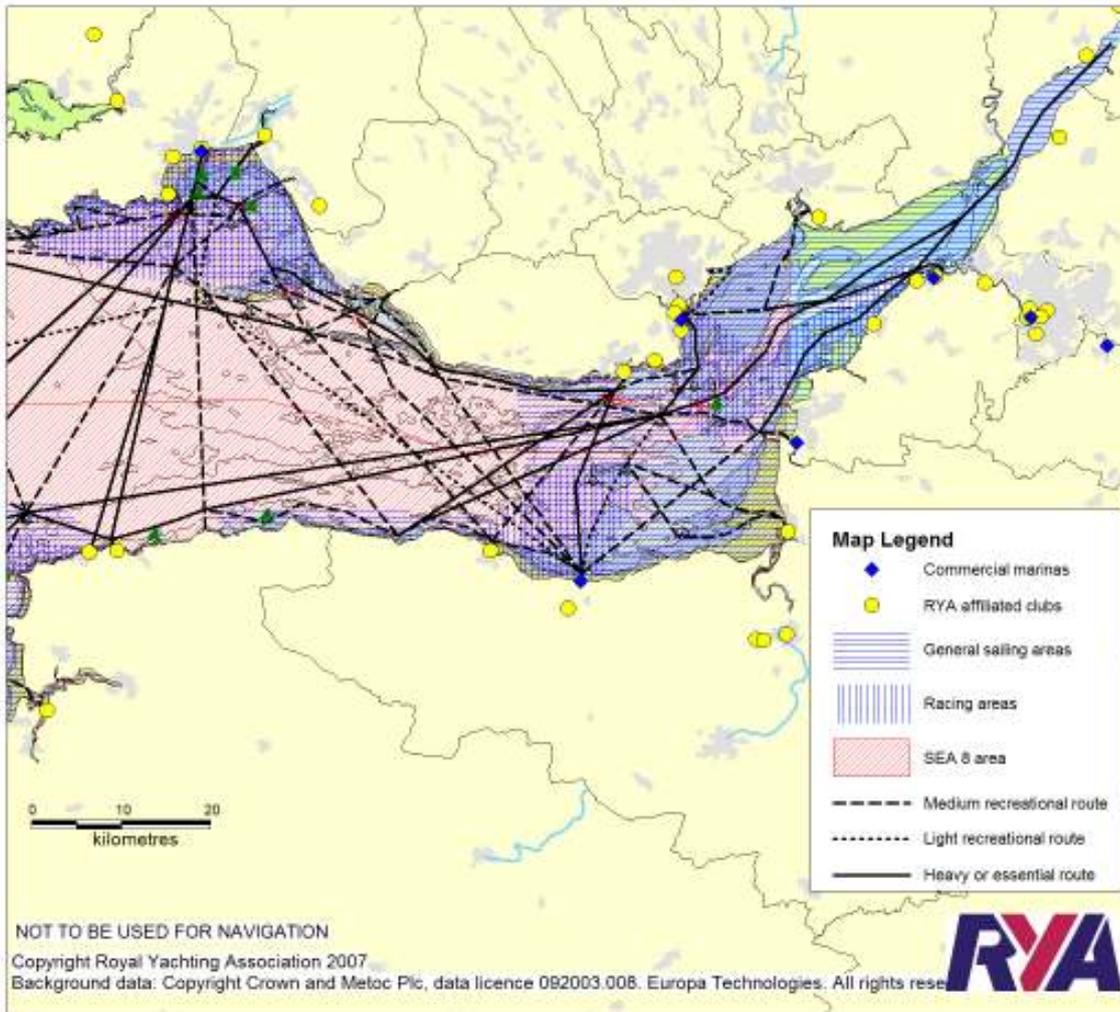
Bull Point to The Foreland

For up to 3NM offshore this is a busy passage route where sailing yachts beating to windward may well be met. Close inshore west of The Foreland is a useful haven from the stronger streams in the offing. This must not be interfered with.

Lundy Island

Lundy Island is a nature reserve and an SSSI. It experiences heavy tidal overfalls at its Northern and Southern extremities which can be felt offshore for well over a mile. With tidal streams exceeding 4 knots and various offlying rocks, it is hard to imagine small craft passing within a mile of either end except in fair weather.

Figure 37 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 5 & 6 east

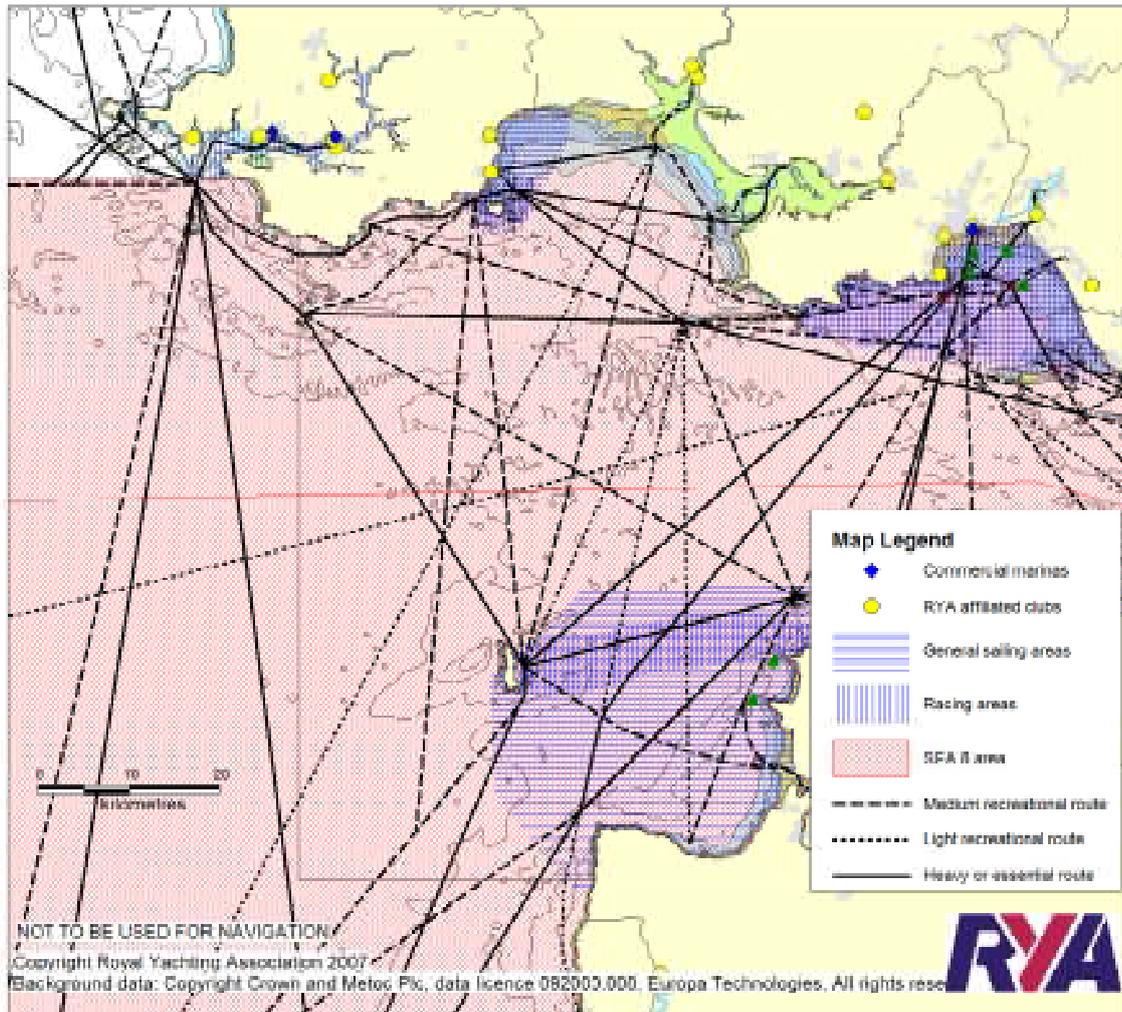


The Foreland

Tides running off the Foreland can reach 5 knots or more. On both sides of the headland some shelter from these can be found at the right time and it is important for small craft that these are not compromised. Vessels using these options will often pass close in under the headland itself, which also should be left unimpeded.

From Foreland Ledge shoal Northwards, little problem is anticipated in the event of any reasonable development. A tidal development off The Foreland would create little disruption, so long as a proper inshore passage of at least ½NM were maintained. It is suggested that if this option were to be taken up, the disposition of the units be in a diamond shape properly marked at its corner with cardinal marks, and running with its long axis East-West rather than North-South along the tide. This would allow craft working the inshore passage a reasonable space to enter and leave the area, whose markings would be unambiguous by night and day.

Figure 38 Recreational cruising routes, general sailing and racing areas with SEA 8 sub-area 6 west



The Foreland to Sharpness

Bridgwater Bay

Because most down-Channel traffic comes to Barry, then takes the next ebb down West, Bridgwater Bay sees little in the way of yachts and motor boats on passage. The exception is Watchet. Blue Anchor Road is little used. Consultation with regional experts identified that the extensive shoal areas off the bay could be used for renewable resource energy without causing serious disruptions.

Attention is drawn to the firing area in the bay which is a 'clear-range procedure' area.

Culver Sand

This is a shifting shoal running east-west between an east and a west cardinal buoy. Its centre is at about 51° 17.7N 3° 17.3W. The shoal is currently 2NM long by 0.4NM wide. Regional experts also felt that a small operation centred here would not cause problems to navigation because, although the shoal was technically on the rhumb line from Barry to Watchet, the tide tended to carry boats past it to one side or the other.

Sharpness to Nash Point

Newport to Cardiff

The extensive shoal areas between Newport and Cardiff are not extensively used for small craft passage traffic. However, it should be noted that so great are the tides that, for much of the cycle, all this area is perfectly navigable by craft drawing 3 metres and considerably more. For example, the sectored leading light marking the main channel into Newport brings vessels in across a large area charted at 0.5 metres which will, at half-tide, carry 6.5 metres of eminently navigable water.

Lavernock Point

Very strong tides run between this point and Flat Holm. Small craft bound east for Cardiff are bound to use this channel, often passing as close under the point as prudence permits. Passing further out would involve the risk of being set right past and up towards the Cardiff Grounds. With a good rise of tide in the last few hours of the flood, as would be the case for such boats, Lavernock Spit presents no problems although many would still opt to steer east of the Ranie buoy (51° 24.25N 3° 09.4W).

Barry to Breaksea Point

An inshore eddy runs west from Barry to Breaksea on the last hour or so of the flood. Since the days of the famous Barry sailing pilots over a century ago, this phenomenon has allowed west-bound craft to cheat the tide of an hour. The ground gained enables a well-sailed boat with a fair wind to beat the tidal gate off Hartland Point and continue Westwards against the weakening flood. Ilfracombe can be made on a single ebb tide even if beating directly to windward. The keys to these remarkable figures are the mighty Bristol Channel ebb, and the eddy down to Breaksea. This ancient inshore passage must therefore on no account be compromised.

Breaksea to Nash Point

Yachts bound west into Swansea Bay will usually be working the ebb tide and many pass between the Eastern end of the Nash shoal and Nash Point. Having worked the eddy from Breaksea, if they were sent far out to sea to avoid a generating plant, they would be obliged to steer outside the Nash and probably Scarweather also. In strong winds from the north or north-east, to have to give away the weather gauge and a safe position under a weather shore would be a serious safety issue.

Nash Point to Mumbles Head

The inside passage north of the Nash shoal and South of Tuskar Rock must not be impeded. Similarly, the passage north of the Kenfig Patches East cardinal buoy (51° 29.5N 3° 46.1W) must be kept entirely clear. The shoals between this buoy and South and West Scar buoys (W Scar 51° 28.3 3° 55.6W) are known to move, so yachts generally avoid them. The passages between the various shoals are to some extent buoyed, but anecdotes abound of seasoned mariners having had surprises in this area. Were it to be developed for generating, it seems little opposition would be encountered, so long as the passages mentioned were kept well clear.

Mumbles Head to Milford Haven

Mumbles Head to The Mixon

The Mixon Shoal lies a little over a cable south of the headland. Its southern limit is buoyed and the inside passage is little used.

Helwick Pass and the Helwick shoals

The inshore passage between Port-Eynon Point and the East Helwick is regularly used by yachts on passage. The well buoyed Helwick shoals are not generally crossed in either direction.

Caldy Island to Milford Haven

The passage between Caldy Island and the mainland is extensively used, as are the passages north of the Saint Gowan and Northeast of the Turbot Bank shoals. Note the Castlemartin firing range. This is charted as being a 'clear-range procedure' area. In practice, yachts are sometimes sent miles out to sea at the end of a long passage with the vital tide running out on them, so either the range operators are cynical, ignorant, or the range would seem more important than the chart suggests.

Milford Haven to St David's Head

Skomer and Skokholm

All the channels and sounds in this area that are reasonably navigable are much used. The tide races are reported as navigable and navigated in fair weather. The two anchorages noted above on Skomer are very important. The whole area is a nature reserve.

Skomer to Ramsay Island

St Bride's Bay sees heavy recreational use, but no passage traffic. Ramsay Sound is heavily used and keeping it open and unimpeded is a vital safety issue. The alternative is to pass outside the Bishops and Clerks rocks which, in heavy weather, could be highly undesirable.

10 Navigating around offshore renewable energy structures

This Chapter looks at the interactions between offshore renewable energy development and recreational boating and discusses some specific developments. In summary these interactions are as follows. Further more detailed comments and the position statement of RYA can be found in the RYA's position statement on offshore renewable energy developments (RYA, 2005).

1. Navigational safety
 - Collision risk
 - Risk management and emergency response
 - Marking and lighting
 - Effect on small craft navigational and communication equipment
 - Weather
2. Location
 - a. Loss of cruising routes
 - b. Squeeze into commercial routes
 - c. Effect on sailing and racing areas
 - d. Cumulative effects
 - e. Visual intrusion and noise
3. End of life
 - a. Dereliction
 - b. Decommissioning

10.1 Navigational Safety

Prior to leaving the shore, mariners make a passage plan and make assessments based on weather, tides and the environmental conditions. Offshore developments become an additional navigational hazard to the mariner. In many cases, these developments if sited sensitively, well designed and managed effectively can address many of the safety issues of concern to recreational boating.

Collision risk

Wind farm developments pose a risk of rotor blade collision with recreational craft and wave and tidal developments and the sub-surface structures and scour protection associated with wind turbines pose a threat of underwater collision. The main concern is over the moving parts of the developments and not with the static components, which is part of navigation only in rare situations poses a threat to life. The RYA has specified a minimum rotor height clearance above mean high water springs of 22 metres and a minimum underwater clearance of 3.5 m below mean low water springs based on available data of recreational craft (RYA, 2005). These clearances should also take into account sea conditions and may need to take a further 2 metres clearance (additional height or depth depending on sea conditions).

Risk management and emergency response

Risk management provisions should be formulated from the results of a site specific risk assessment that accounts for recreational craft and recognises the differences between recreational craft and commercial craft. Recreational craft will generally stay clear of the main shipping lanes and will take the shortest route to cross Traffic Separation Zones.

In order to effectively manage the risk of a vessel in distress drifting towards a installation, there needs to be an effective *Emergency Response System* in place. This will require the ability to shut down the moving parts, such as the turbines when an emergency call is reported. In some cases, where traffic is high, a stand-by safety vessel may be required, as is the case with the offshore oil and gas platforms. It should be noted that a safety zone will increase the safety of a vessel in

distress and may in some cases actually increase risk of collision with recreational craft and commercial craft.

A further issue relating to risk management is that of cables and anchoring. In most cases, recreational craft will not anchor within an offshore energy 'farm', however, in emergency situations this may be the only way of securing a drifting vessel to ensure no damage is done. To secure the safety of navigation, cables should be buried to a sufficient depth to avoid being uncovered. This should take into account shifting sediments on the seabed. Where cables are not buried to a depth of 1 metre these should be properly charted.

Marking and lighting

Whilst offshore renewable energy installations are still relatively new developments in UK waters, the requirements for marking and lighting the sites should find consistency. Much work has been done in this field and guidance supported by RYA is available from Trinity House. For wind farms, as a minimum each turbine should be clearly marked in high visibility yellow paint to a height of 12 m, low level lighting should allow the turbine number to be read from a 'safe' distance, corners of the wind farms should be marked and any other points or routes through the wind farm marked accordingly. Wave and tidal developments vary dramatically in their design and the marking and lighting of these installations will need to be developed carefully. For example, a Cardinal Mark seen singly in poor visibility will give a better chance of the area being avoided than a single special mark.

Effect on small craft navigational and communication equipment

All craft larger than a dinghy will have some form of navigational equipment on board. The most common will be a magnetic compass. Large quantities of steel, cabling and the transmission of electrical power may produce interference with the magnetic compass. Studies have shown the effect on systems such as GPS, VHF, mobile phones from wind farms are negligible. However, there is a demonstrated effect on radar systems which have impacts on the visibility of small craft to search and rescue vessels as well as to each other and larger commercial vessels. This causes concern when large wind farm developments are sited close to commercial shipping lanes and obstruct recreational routes avoiding these commercial routes or at the confluence of routes. Problems may be found with small craft navigational equipment, which are not as powerful as commercial varieties when we start consider installations further offshore. Antennae are likely to be lower and less powerful than many larger commercial vessels.

At present, designs are following the provision of buffer areas between shipping lanes and developments which should alleviate some of the issues. Concern for recreational boating is the interference from the developments will cause commercial vessels to turn the gain of their radar sets down and thus turn off the signal from small craft.

Weather

Local weather conditions should also be examined in the risk assessment and measures taken to reduce the effects of poor weather conditions, low visibility and fog should be included in the risk management plan. Installations may need to have fog horns attached for low visibility conditions.

10.2 Location

The location of offshore energy installations is going to be crucial to navigational safety as well as potential loss of amenity for recreational craft. The data and supporting text presented in this report should be utilised in identifying development sites within the SEA 8 area.

Loss of cruising routes

When examining the routes and location of turbines it is key to recognise the fact that sailing boats behave differently to power driven craft in that their actual line of travel may zigzag across the ultimate direction of travel as they are dependant on the wind direction (see Annex A). Along many

stretches of coast, the recreational craft may need to seek shelter in poor weather. Sheltered harbour and anchorages and *routes to these harbours of refuge* should be protected. These have been identified in this report.

The loss of routes will also lead to an increased distance of travel which has environmental implications for powered craft and safety implications for all craft. Some routes, typically narrow channels or strong tidal flows, may already be hazardous at times to navigate through and adding hazards in these areas may seriously affect navigational safety. There are also safety issues with the creation of turbulence and wind shadowing in confined areas where craft may be moving slowly and the effects of gusty turbulent conditions may create problems.

In addition to the loss of routes through physical obstruction, placing structures on the seabed is likely to have an effect on seabed morphology. This may result in shifting sandbanks or *silting up of existing channels*. These knock on effects may well result in loss of routes which need to be accounted for.

Squeeze into commercial routes

Recreational routes differ from commercial routes as recreational craft essentially aim to keep out of the major commercial navigation routes by travelling in the shallower adjacent waters or taking other routes entirely. As a result, examining commercial routes alone will not enable the safe positioning of these wind farms, recreational boating must also be accounted for. This may require routes being identified through large developments or provision of safeguarding inshore routes for smaller craft.

Effect on sailing and racing areas

Most of the general day sailing and racing areas are close to the shore and in the more sheltered waters. These are generally within 10 km of the shore. In the situations where these areas conflict with the installation sites, they should be accounted for. Recreational activity is important to the health and wellbeing of the community as well as economic support for the local coastal economies.

In certain confined areas and areas heavily used for sail racing, the effects of wind turbines in terms of turbulence and shadowing on craft could create a significant negative impact on the event site and diminish the value of the site for such activity.

Cumulative effects

Of increasing concern with the planned number of developments is the need to assess each development in its wider surroundings. The *cumulative effects* of offshore energy installations on navigation routes will be increasingly significant. Existing navigation routes affected by other proposed development sites will need to be accounted for, rather than current routes.

Visual intrusion and noise

Recreational boating, in particular cruising yachtsmen enjoy the peace and tranquillity of the sea and its unspoilt nature. Large scale wind farm development will affect this level of enjoyment and may also have a knock on economic impact. The visual and noise intrusion of wind turbines in the marine environment is no different to those enjoying the terrestrial environment on land.

10.3 End of Life

Dereliction

Derelict structures that are not marked or lit and remain a hazard to navigation both concerning passage and anchoring are not found in UK waters.

Decommissioning

Decommissioning should ensure that the structures are completely removed. Any parts of the structure remaining after the commercial operation of the installation will pose a hazard to navigation and should be avoided.

10.4 Navigating around wind farms

The main interaction of concern with wind farms and recreational boating is that of potential rotor collision. However, with careful and appropriate design and siting (as discussed above) it is felt that these types of developments can generally be made safe for small craft navigation.

10.5 Navigating around wave energy devices

Due to the variety of proposed wave energy developments, their interaction with recreational boating is less predictable than for wind farms. In general their inherent need to swing towards the prevailing wave direction makes charting, marking and lighting these devices difficult. In addition, their low lying nature will also create visibility difficulties which may be able to be overcome by additional superstructure constructed around the fixed point. The nature of the devices particularly when a number are to be sited together should be located as far from navigation routes and general sailing and racing areas as possible.

10.6 Navigating around tidal energy devices

To date, tidal energy devices have been more static structures with moving parts that react to the change in tidal direction but which remain essentially static. Their interaction with recreational boating is therefore more similar to that of wind farms and will focus around collision risk with the moving parts. Again, as with wind energy, with careful and appropriate design and siting (as discussed above) it is felt these types of development can be generally made safe for small craft navigation.

10.7 Tidal barrage

At present there is some discussion on a possible tidal barrage across the Severn Estuary. There is a reasonable level of support from both the regional experts and locally within clubs for such a scheme. Whilst it is anticipated there that significant tides would remain, a smaller tidal range may well improve the area for small low-powered craft as well as mooring facilities and access to the water. However, there may also be issues of silting up without the fast flowing tides that are presently seen and any proposal would need careful consideration. Access through the barrage is also a consideration for small craft and should be carefully consulted on.

11 Bibliography

Unless otherwise specified 'Updated' means kept up to date, either continuously or at short intervals. The latest version as of March 2007 was used.

- Balmforth, M. (1997). *Yachtsman's Almanac, South & East Edition*. SL
- BCY A Handbook. (Updated) *Bristol Channel*. BCYA
- BMF (British Marine Federation). (2004). *Marinas and Moorings Audit 2003/4 - Coastal Sectors*.
- Bowskill, D. (1990). *The Solent*. Imray
- Brandon, R. (Updated). *Isles of Scilly*. Imray
- Bray, A & Roach, P. (1990). *South Coast from the Air*.
- B & Y Bray, A. (1987). *Classic Passages*. YM
- Bristow, P. (1990). *200 Miles around the Solent*.
- Bruce, P. (Updated). *Inshore along the Dorset Coast*. Boldre
- Bruce, P. (Updated). *Solent Hazards*. Boldre
- Bruce, P. (Updated). *Wight Hazards*. Boldre
- Clarke, P & Jones, B. (1993). *Local Boating on the Solent & Sussex Coast*.
- Cruising Association (Updated). *Harbour, Anchorage and Navigation Notes*. Imray
- Cumberlidge, P. (1988). *Bristol Channel & Severn Pilot*. Stanford
- Cumberlidge, P. (1990). *Channel Crossings*. Coles
- Cumberlidge, P. (1990). *Channel Crossings around Britain for Power and Sail*. Adlard Coles Ltd.
- Cumberlidge, P. (2001). *North Brittany & Channel Islands Cruising Companion*. YM
- Cunliffe, T. (Updated). *The Shell Channel Pilot*. Imray
- D'Oliveira, B., Goulder, B., Lee-Elliot, E. (Updated Annually). *Reeds Nautical Almanac- Nautical Data*.
- Fishwick, M. (1993). *South Coast Cruising*. YM
- Fishwick, M. (1998). *West Country Cruising*. YM
- Fishwick, M. (Updated). *West Country Cruising Companion*. YM
- Goatcher, Diana (Ed) (1990). *Where to Launch your Boat*. Barnacle
- Godber, R. (1996). *Yachting Guide to the South Coast, West Country & the Channel Islands*. Scantec
- Godber, R. (Updated). *Local Boating on the Kent Coast & Rivers*. Scantec
- Griffiths, G. (Updated). *A Cruising Guide to North-West England and Wales, Tenby to Portpatrick and Isle of Man*. Imray Laurie Norie & Wilson Ltd.
- Heath, N. (Updated). *The Channel Islands*. Imray
- Jeune, P. (1998). *Cruising the Channel Islands - A Practical Guide*. PBO
- Knighton, S & Chartres, J. (1987). *Pembrokeshire Coast & Milford Haven*. Milford PO
- Lawson, J. (Updated). *North Brittany & the Channel Islands*. Imray
- MacMillan Reeds. (Updated). *Seafinder*. Nautical
- Marine Media. (Annually Updated). *Local Boating on the Kent Coast and Rivers, Guide for Local and Visiting Yachtsmen*.
- Perring, C. (1999). *Ports of Call*. Kensington West. Quarrie, S. (Updated). *The Solent Book*. IoW Press

Rochael, L. (2005) *Marina and Waypoint Guide*. Reeds

Royal Cruising Club Pilotage Foundation (Updated) *Passage Planning Guides* (16). RCCPF

Royal Cruising Club Pilotage Foundation. (Updated). *Scilly Islands (also available in French)*. Imray

Royal Cruising Club. (Updated). *Passage Planning Notes, Route 4 English Channel to Shetland*.

Royal Cruising Club. (Updated). *Passage Planning Notes, Route 1, English Channel to Faeroe via Irish Sea*.

Royal Yachting Association. (2004). *Sharing the Wind*

Royal Yachting Association (2005). *The RYA's position on offshore renewable energy developments*

Royal Yachting Association. (2007) *Marina Guide*

SCRA. (Updated). *The Solent Yearbook*. IoW Press

Taylor, D. (Updated). *Lundy and Irish Sea Pilot, Lands End to Portpatrick*. Imray

Laurie Norie Taylor, D. (Updated). *Lundy & Irish Sea Pilot - Lands End to Portpatrick*. Imray

UKRa. (Updated). *Admiralty Tidal Stream Atlas Approaches to Portland*. NP257

UKRa. (Updated). *Admiralty Tidal Stream Atlas English Channel*. NP2501

UKRa. (Updated). *Admiralty Tidal Stream Atlas Falmouth to Padstow inc Isles of Scilly*. NP255 UKRa.

UKRa. (Updated). *Admiralty Tidal Stream Atlas West Country - Falmouth to Teignmouth*. NP254

UKRa. (Updated). *Channel Pilot*. NP 27

UKRa. (Updated). *Irish Coast Pilot*. NP40

UKRa. (Updated). *Admiralty Tidal Stream Atlas - Dover Strait*. NP233.

UKRa. (Updated). *Admiralty Tidal Stream Atlas - Irish Sea and Bristol Channel*. NP256. UKRa.

UKRa. (Updated). *Admiralty Tidal Stream Atlas Lyme Bay*. NP263

UKRa. (Updated). *Dover Strait Pilot, Bognar Regis to Southwold & Cap d'Antifer to Scheveningen*. NP28

UKRa. (Updated). *West Coast of England Pilot, Cape Cornwall to Mull of Galloway*. NP37

van der Klugt, D. (2000). *Where to Launch Around the Coast*. Opus.

Webb, P. (Updated). *Local Boating on the South Coast*. Marine

"Norm". (1992). *A Yachtsman's Guide to Scilly*. Ennor

Annex A: How a Recreational Craft Works

1. Both sailing yachts and power cruisers normally wish to sail in a straight line along a route between required turning points. There are many limiting factors however, which rarely permit this such as varying depths, the strength and direction of wind, the strength and direction of the tide and the time at which the tide turns, all of which are important when planning a voyage. Other factors include crew comfort in the prevailing weather and sea conditions, the possible necessity to avoid other marine traffic, and the accuracy to which navigation plans may be followed.
2. The laws of physics mean that sailing yachts cannot sail directly into the wind, and the closest to the wind direction they can get is 45 degrees. As a result yachts can never sail through more than 270 degrees of a 360 degree circle and many vessels, due to design or crew comfort, cannot sail through more than 260 degrees. If the wind is strong, a wind blowing from directly behind the boat can be very uncomfortable and sometimes dangerous, so therefore leads to avoidance of courses where the wind is closer than 15 degrees either side of the stern. As a result many sailing yachts are limited by a further 30 degrees, leaving only 230 degrees out of 360 degrees possible to them for safe and easy navigation.
3. To deal with this limitation when in a narrow channel a sailing yacht will 'tack'/'zig zag' up a channel i.e. will sail first with the wind to one side of the bow, usually until it reaches the edge of the channel, and then it will turn the bow through the wind until the wind is on the other side of the bow and sail until it reaches the far side of the channel. Progress to windward therefore requires the full width of available channel, which will be limited varyingly by the height of tide at the time. Only with the wind from the side or from behind can a yacht proceed along a reasonably straight line.
4. It should be noted that a sailing yacht rarely proceeds in exactly the direction in which it is pointing with a difference (called leeway) between the two of up to 10 degrees. This is due to the physics of sail power which produces a sideways as well as forwards driving force.
5. It should also be noted that the speed of the tide is often a significant proportion of the speed of the vessel. Thus a yacht sailing at 4 knots will make only 2 knots over the ground if against a 2 knot tide but will make 6 knots over the ground if the same tide is with it. Speed through the water can differ considerably to speed over the ground.
6. A power cruiser is normally able to proceed directly to windward but this is often very uncomfortable in rough seas and heavy winds due to butting into waves. This results in power vessels choosing to 'tack' and not follow a direct route up the channel and could well require most of a channel width.
7. The strength of wind and its direction felt at sea level by a recreational craft is considerably affected by the nearby presence of land particularly if this is of any height. In general, a recreational craft will seek a distance offshore, which best meets its requirements.
 - An offshore wind will produce less waves close in shore and lead to choice of routing accordingly.
 - In conditions of a sea-breeze against an offshore wind a craft may similarly prefer a route in the quieter conditions often then found some miles offshore.
 - In conditions of on-shore winds most craft will choose to remain offshore for safety reasons and avoid routes close inshore.
 - In strong conditions recreational craft will balance between the choice of quieter routes along channels protected by shallows each side and more offshore routes away from shallow water.

8. The presence of waves or swell is an important element in determining choice of route or continuation of passage. The major factor is the direction and speed of the tidal stream relative to the strength and direction of the wind. Wind-against-tide conditions are avoided where possible because the wave pattern and shape then produced are particularly problematic for small craft.

9. The wind strength and direction felt by a small recreational craft at sea level will rarely be quite the same as at wind-turbine heights and will suffer greater short-term variation. This is due to the frictional effect of the sea and waves (which may be felt up to about 40 ft (13m)). A veer of 15 degrees and reduction of 1 Beaufort force would not be exceptional. Experience of vessels sailing close to wind-turbines and similar structures elsewhere in Europe indicates little effect from turning-blade wind shadows but some effect downwind from turbine towers.

Annex B: Definitions

Definition of Cruising Routes - Heavy, Medium and Light Use Recreational Routes

Recreational boating, both under sail and power is highly seasonal and highly diurnal. The division of recreational craft routes into Heavy, Medium and Light Use is somewhat arbitrary although there is widespread agreement on the assignments to these classes indicated on the charts.

- **Heavy Recreational Routes:** - Very popular routes on which a minimum of 6 or more recreational vessels will probably be seen at all times during summer daylight hours. These also include the entrances to harbours, anchorages and places of refuge.
- **Medium Recreational Routes:** - Popular routes on which some recreational craft will be seen at most times during summer daylight hours.
- **Light Recreational Routes:** - Routes known to be in common use but which do not qualify for medium or heavy classification.

a. Definition of Sailing Areas

General Sailing Areas: - Areas in extensive use for general day-sailing by all types of recreational craft but particularly smaller craft such as small cruisers, day-boats, dinghies, sailboards and personal watercraft. Such craft will not normally be undertaking point-to-point passages but will be on out and return activities and may appear to be sailing in random directions as they take advantage of wind and tide to make progress.

Racing Areas: - Areas in frequent use, particularly at week-ends and holiday periods, by large numbers of racing craft normally under sail but also power. Such areas are generally under the control of nearby Sailing Clubs and may contain temporary or permanent race course marking buoys. Detailed routes will normally only be determined on the day of the race although certain longer-distance races may have routes published in advance. In addition some racing may take place outside the areas indicated. Racing craft will obey the specialised racing rules between themselves but will follow the conventional Collision Regulations when other vessels are in conflict.

b. Definition of Sailing Facilities

Training Centres: - Teaching institutions providing practical and theoretical training in sailing and power boating to recognised Royal Yachting Association standards. Those located on the coast will normally have marina-type boat berths attached which are in use throughout the year.

Sailing Clubs: - Membership organisations affiliated to the Royal Yachting Association. Each tends to specialise in certain types of activity – for example dinghy racing, sail cruising, power-boating, but all are normally open to passing visitors. The facilities provided usually include both alongside berths and swinging moorings but shore facilities are not normally to expected commercial standards. The majority of persons sailing in the areas charted are expected to be members of local sailing clubs but some may be visitors from other areas. The areas charted therefore have recreational boaters from local, national and international areas.

Marinas: - All charted are commercial marinas. Most berth-holders will be permanently based at that marina but most also have a high proportion of visitor berths available for passing craft. Most have a full range of yachting facilities such as chandlers and repair shops and should be regarded as primary ports of origin and destination for all recreational crafts routes.

Annex C: SEA 8 Consultees

Area 1 Consultees

- Arun Yacht Club
- Arun Youth Aqua Centre
- Bexhill Sailing Club
- Bognor Regis Yacht Club
- Brighton College Sailing Club
- Brighton Marina Yacht Club
- Brighton Sailing Club
- Eastbourne Sovereign Sailing Club
- Felpham Sailing Club
- Hastings & St Leonards Sailing Club
- Hastings Motor Boat And Yacht Club
- Lancing Sailing Club
- Littlehampton Sailing And Motor Club
- Newhaven & Seaford Sailing Club
- Newhaven Yacht Club
- Pevensey Bay Sailing Club
- Rye Harbour Sailing Club
- Shoreham Sailing Club
- Sovereign Harbour Yacht Club
- Sussex Yacht Club
- Varne Boat Club Ltd
- Worthing Yacht Club

Area 2 Consultees

- Bosham Sailing Club
- Chichester Harbour Federation
- Chichester Yacht Club Limited
- Christchurch Sailing Club
- Dell Quay Sailing Club
- East Dorset Sailing Club
- Eastney Cruising Association
- Emsworth Sailing Club
- Emsworth Slipper Sailing Club
- Hayling Island Sailing Club
- Highcliffe Sailing Club
- Hurst Castle Sailing Club
- Itchenor Sailing Club
- Keyhaven Yacht Club
- Langstone Sailing Club
- Langstone Yachting Limited
- Locks Sailing Club
- Mengeham Rythe Sailing Club
- Meridian Trust Association
- Mundeford Sailing Club
- North Haven Yacht Club
- Pagham Yacht Club
- Royal Motor Yacht Club
- Shanklin Sailing Club
- Solent Sunbeam Class Owners Association
- Sparkes Cruising Club
- Swanage Sailing Club
- Thorney Island Sailing Club
- Thorney Island W/S Centre (ASA 131)
- Tudor Sailing Club
- West Sussex Schools Sailing Ass.
- West Wittering Windsurf Club
- Yaverland Sailing And Boating Club

Area 3 Consultees

- Axe Yacht Club
- Babbacombe Corinthian Sailing Club
- Beer Sailing Club
- Boat Owners Association Teignmouth
- Britannia Yacht Club RNSA
- Brixham Junior Sailing Club
- Brixham Yacht Club
- Castle Cove Sailing Club
- Cockwood Boat Club
- Dart Sailability Group
- Dartmouth Yacht Club
- Dittisham Sailing Club
- Exe Power Boat And Ski Club
- Exe Sailing Club
- Hobie Cat Class Association British
- Lyme Regis Power Boat Club
- Lyme Regis Sailing Club
- Lympstone Sailing Club
- Paignton Sailing Club
- Portland Castle Sailing Club
- Royal Dart Yacht Club
- Royal Dorset Yacht Club
- Royal Torbay Yacht Club
- Shaldon Sailing Club
- Sidmouth Sailing Club
- Starcross Fishing And Cruising Club
- Starcross Yacht Club
- Stoke Gabriel Boating Association
- Teign Corinthian Yacht Club
- Topsham Sailing Club
- Weymouth Sailing Club

Area 4 Consultees

- Cawsand Bay Sailing Club
- Falmouth Town Sailing Club
- Flushing Sailing Club
- Fowey Gallants Sailing Club
- Helford River Sailing Club
- Looe Sailing Club
- Mounts Bay Sailing Club
- Pentewan Sands Sailing Club
- Penzance Sailing Club
- Porthpean Sailing Club
- Royal Cornwall Yacht Club
- Royal Fowey Yacht Club
- Scillonian Sailing Club
- St.Mawes Sailing Club
- Yealm Yacht Club

Area 5 Consultees

- Burnham-On-Sea Motorboat And Sailing Club
- Ilfracombe Yacht Club
- Minehead Sailing And Watersports Club
- North Devon Yacht Club
- St. Ives Sailing Club
- Watermouth Yacht Club
- Weston Asinusians Cruising Club

Area 6 Consultees

- Barry Yacht Club
- Bristol Channel Yacht Club
- Cardiff Bay Yacht Club
- Cardiff University Student Union
- Cardiff Yacht Club
- Corus Sailing Club Margam
- Monkstone Cruising And Sailing Club
- Mumbles Motor Boat And Fishing Club
- Mumbles Yacht Club
- Penarth Yacht Club
- Saundersfoot Sailing Club
- Sully Sailing Club
- Swansea Yacht And Sub-Aqua Club
- Tenby Sailing Club
- University Of Wales Swansea

Other Consultees

- Roger Donkin President of the Bristol Channel Yachting Association
- Bruce Grant – RYA Offshore Coastal Cruising Panel
- David Derbyshire –RYA Cruising and Government Affairs Committee
- Eddie Ramsden – Chairman of the Royal Yachting Association Council
- Geoff Baldwin - Welsh Offshore Coastal Cruising Panel
- Mike Grubb – South West Cruising Representative
- Robert Leigh Warner – Bristol Channel Yachting Association
- RYA – South East Region
- RYA – South West Region
- RYA – Southern Region
- Ted Osborne – Cruising Association
- Tom Cunliffe – RYA/MCA Yacht Master Instructor Examiner and Author of *'The Shell Channel Pilot'*
- Welsh Yachting Association (WYA)

Annex D: Contact details

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