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EMS Recreation Study Document 04. Survey of recreational use within the Plymouth Sound and Estuaries European Marine Site: Scoping report and survey results.

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A report for Plymouth City Council prepared by the Marine Biological Association of the UK.

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This report was commissioned by Plymouth City Council and funded through a consortium of additional local authorities working together consisting of Cornwall Council, South Hams District Council and West Devon Borough Council with support from Natural England.

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This work was commissioned by the Natural Infrastructure Team, Plymouth City Council and closely overseen by Kaja Curry (Natural Infrastructure Officer and Tamar Estuaries Consultative Forum Co-ordinator). The project was steered by the Plymouth Sound and Tamar Estuaries Recreation Mitigation Task Group which consisted of Plymouth City Council, Cornwall Council, South Hams District Council, West Devon Borough Council and was advised by Natural England.

The Marine Biological Association of the UK has a long-term specific interest in the research into, and management of, our immediate marine and coastal environment. In recognition of the importance of this project the MBA generously matched the funding to complete the survey and results (Section 2 of this document).

This study would not have been possible without the support of the visitors to the Plymouth Sound and Estuaries European Marine site who freely gave their time to answer site surveys, attend workshops and complete the online survey. The project team at the MBA appreciate and acknowledge their contribution.

Executive Summary

The Plymouth Sound and Estuaries EMS is a complex site of marine inlets and larger bays which can provide ideal conditions for a number of coastal and marine recreational activities. The sites proximity to the city of Plymouth provides water users with infrastructure to support boating communities and many access points for users to undertake a number of activities such as swimming, bait digging, crab tiling and kayaking.

The Marine Biological Association of the UK (MBA) was commissioned by Plymouth City Council and a consortium of additional local authorities consisting of Cornwall Council, South Hams District Council and West Devon Borough Council with advice from Natural England, to conduct an assessment of recreational activities within the Plymouth Sound and Estuaries EMS. The purpose of the work is to inform the Habitats Regulations Assessment of the local plans for all four local planning authorities in relation to potential impacts on the Plymouth Sound and Tamar Estuaries European Marine Site.

This project has been delivered in two stages, 1) a scoping report identifying the conservation features of the EMS their sensitivity and potential overlap with recreational activities and 2) a survey of the distribution and frequency of recreational activities within the EMS based on on-site surveys, workshops and an on-line survey. The scoping project informed the recreational activity survey by identifying the conservation features and the pathways (pressures) through which recreational activities can impact on these and therefore determining what evidence the survey should collect. The scoping stage also identified areas where recreational activities may impact and where the on-site surveys should be carried out.

The scoping project used spatial overlay analysis using ArcGIS v10.3 software to determine where recreational activity overlaps with designated habitats and species within each management area within the EMS. This was done by mapping available data for feature distribution (and abundance in the case of the protected bird species in the SPA) within the EMS, and overlaying these maps with a recreation intensity layer (Figure 2). This layer was constructed by aggregating 1) the number of different recreational activities, and 2) infrastructure that would permit access for recreational users, within a 200m grid cell (recreational layers used included, car parks, slipways, public footpaths within 2km of the coastline, mooring areas, crab tiling, high speed boating areas, marinas, yacht anchorages and swimming areas)

The scoping study identified that recreational activities can adversely affect habitats and disturb species, primarily through noise, abrasion / penetration of the seabed, litter, organic enrichment, contamination (synthetic compounds / organo - metal / hydrocarbon / PAH), spread of non-indigenous species, physical change (to other seabed types) and introduction of light. All but one of the habitat subfeatures were sensitive to at least one activity (Subtidal course sediment was the exception), and one habitat (Intertidal rock, showed sensitivity to all the activities/proxies). The SAC species Allis shad (*Alosa alosa*) is sensitive to collision below water and underwater noise changes (Natural England 2015) indicating interactions with high speed boating areas, marinas, slipways, mooring areas and small craft anchorages. Shore dock (*Rumex rupestris*) is found well above the high water mark; many activities were assessed as Not Relevant (Natural England 2015). The SPA bird

features were sensitive to at least one pressure from all activities and the supporting habitat features identified sensitivity of the intertidal habitats and saltmarsh to the recreation activities.

The overlap analysis showed that the number of activities and/or infrastructure varied across the site (based on the sum of the activities/infrastructure in each 200m cell of the site grid). Higher levels of recreation activity/infrastructure were noted in management areas G (Tamar (Saltash)), K (Tamar (Torpoint), L (Plym) and M (Outer Estuary) and N (Sheltered Bay), where there was a concentration of slipways, car parks, marinas, moorings and swimming areas serving the population centres of Kingsand and Cawsand, Saltash, Torpoint and Plymouth

While the scoping study provided some indication of the intensity (number of activities and/or infrastructure) of recreation in the EMS by using proxy data, it did not capture the actual activities being undertaken (and completely omitted some activities such as diving / snorkelling, sailing areas, recreational angling, bait digging, stand-up paddle-boarding, canoe/kayaking and gig racing), or their distribution and intensity across the EMS. In addition, using the proxy recreation activity layer, there was no way of assessing a seasonal pattern, which is important given that the bird features are overwintering populations. Gathering further evidence on site use by recreational visitors was, therefore, recognised to be a key requirement to achieve a greater understanding of potential impacts and disturbance to the features of conservation importance present within both the Plymouth Sound and Estuaries EMS.

The MBA were commissioned to undertake this evidence gathering using three complementary methods:

1) Visitor survey data collected via site-use observations and structured questionnaires. These provided information on visitor numbers, activities undertaken, routes taken on site, visitor origin, and motivations for visits. A total of 644 on-site surveys were conducted across 19 sites, in each of the four seasons and this constituted a total of 314 volunteer survey hours. A total of 4222 people were recorded entering the site accompanied by 422 dogs. The interview success rate averaged 60% acceptance across the sites and seasons

2) Targeted workshops focused on recreational angling (boat and shore based), sailing (dinghy, yacht) and power-boating, sub-aqua diving and paddle-sports (rowing, canoeing / kayaking, stand-up paddle-boarding) yielded detailed information about site use and seasonal trends. The workshops and were attended by a total of 35 participants, many of which represented clubs and societies with large memberships.

3) Online recreational use questionnaires captured information about visitor origin and preferred sites for visits. The online survey had a total of 655 responses over the period from 18th November until 3rd January 2017.

What emerged from these three approaches combined was that predominantly recreational users are local to Devon and Cornwall (87% of visitor groups in the on-site survey and 82% on online survey respondents). There were seasonal trends in the data with more non-local visitors in summer as would be expected with tourists visiting the area from further afield.

Terrestrial activities accounted for the majority of visitors surveyed both on-site and online. There were clear preferred locations that emerged from the on-site surveys within the EMS (upper Tamar (Calstock-Cotehele area), the Tavy (Lopwell Dam – Bere Ferrers area), Hoe (Devil's Point to Barbican) and the coast path between Mount Batten and Wembury. The online survey indicated that the Outer Estuary (management zone M) and the Open Coast (zone P) were most used, with much lower patterns of use in the upper Tamar and Tavy. This pattern likely reflects the main access points to the EMS and proximity to the main population centre of Plymouth.

The most popular marine-based recreational activities were canoeing/kayaking, angling, sailing and swimming and was consistent between the on-site and online surveys. Most activities showed similar distribution and intensity between the approaches used to gather the spatial data, aside from paddle-sports which had contrasting patterns of use between the on-site surveys (showing high intensities of activity in the upper parts of the estuaries (Tamar, Tavy, Yealm), and the targeted workshops and online survey which indicated most activity was going on in the Plymouth Sound.

To identify the core visitor area where most of the visitors to the EMS originate a sequence of maps is presented detailing different options for a Zone of Influence (ZoI) around the Plymouth Sound and Estuaries EMS. Using the home postcodes supplied by local resident visitors (resident in Devon or Cornwall) to each site, we calculated the shortest distance by road between their postcode and the site that they visited. Three Zone of Influence scenarios are presented in the report, each is based on a different type of treatment or variable selection of the underlying distance data. For each scenario from the distance data we identified the 3rd quartile point (the point between the middle distance and the maximum distance travelled by visitors). The 3rd quartile point distance separates the closest 75% of visitors from the 25% that travel further. The closest 75% are considered to be the core local visitors.

Three Zone of Influence scenarios were developed to identify core groups of visitors based on the distance travelled by 1) all local visitors weighted by number of visits 2) local visitors that arrive by car or motorbike 3) visitors using all forms of transport that visit once a month or more.

The Zone of Influence based on all visitors with the distances weighted by visit frequency clearly skews the core visitor catchment area much closer to the SAC and SPA (based on buffers of 5.4 and 7 km respectively). The other ZoI options presented drew larger buffers around the EMS (12.3-9.4 for the SAC and 12.1-8.7 km for the SPA). The smaller, distance weighted buffer may be considered to accurately reflect that the majority of visits to the EMS are by people that live locally and visit frequently. However, as 50% of site survey respondents originate outside of this boundary and account for 25% of visits (within the ZoI analysis) it could be considered that this boundary is relatively small.

For all the options, the convex hull was considered to offer a better representation of the core visitor group as it is based on where visitors live and can be seen to be biased towards larger roads and population centres which influence visitor numbers. The straight-line Euclidean buffer is drawn as a line from the site boundary and typically encompasses much of the sparsely populated areas to the west of the EMS which supply few visitors to the site. The scoping study and recreation survey provide the most comprehensive survey of recreational use of the Plymouth Sound and Estuaries

EMS to date and have provided detailed information about recreational activities and recreational users of the site. Future work to build on this understanding and identify where management needs to be focussed in relation to the conservation objectives of the site would comprise the sensitivity assessment of the site features against the pressures that arise from the distribution and intensity of recreational activities shown here.

It should be noted that the impacts and sensitivities in the scoping report were based on advice from Natural England, at that project stage the sensitivity assessments did not identify different categories of sensitivity based on resistance and resilience and therefore it has not been possible to match the intensity of recreational activities to potential impact levels. New sensitivity assessments (MarESA sensitivity assessments) are now available and in use by Natural England and these should support further identification of conservation feature vulnerability.

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The Plymouth Sound and Estuaries EMS is a complex site of marine inlets and larger bays which can provide ideal conditions for a number of coastal and marine recreational activities. The sites proximity to the city of Plymouth provides water users with infrastructure to support boating communities and many access points for users to undertake a number of activities such as swimming, bait digging, crab tiling and kayaking.

The Marine Biological Association of the UK (MBA) was commissioned by Plymouth City Council and a consortium of additional local authorities consisting of Cornwall Council, South Hams District Council and West Devon Borough Council with support from Natural England, to conduct an assessment of recreational activities within the Plymouth Sound and Estuaries EMS. The purpose of the work is to inform the Habitats Regulations Assessment of the local plans for all four local planning authorities in relation to potential impacts on the Plymouth Sound and Tamar Estuaries European Marine Site.

This work was overseen by Kaja Curry (Natural Infrastructure Officer and Tamar Estuaries Consultative Forum Co-ordinator) and steered by the Plymouth Sound and Tamar Estuaries Recreation Mitigation Task Group which consisted of Plymouth City Council, Cornwall Council, South Hams District Council, West Devon Borough Council and was advised by Natural England.

This project has been delivered in two stages, 1) a scoping project providing a brief spatial investigation into areas of possible interaction between common recreation activities (as defined by data available through Plymouth City Council) and EMS features of conservation importance, and 2) a survey of the distribution and frequency of recreational activities within the EMS based on on-site surveys, workshops and an on-line survey.

The scoping project aimed to determine which conservation features have possible interactions with recreational activity across the EMS, and the sensitivity that those features have to the particular recreational activity acting upon them. The scoping project informed the recreational activity survey by identifying the conservation features and the pathways (pressures) through which recreational activities can impact on these and this determined what evidence the survey should collect. The scoping stage also identified areas where recreational activities may impact and where the on-site surveys should be carried out.

The recreational survey consisted of three key stages, 1) on-site survey, 2) targeted workshops for recreational activities and an on-line survey. These stages were designed to complement each other and to address evidence gaps. On-site surveys were biased towards collecting information from shore/land based activities participants; this was addressed by three recreational activity workshops targeting water-based activity participants (recreational anglers and large and small water-craft based activities). The survey and workshop participants were mostly local residents; to extend the reach of the survey an on-line survey was created that was advertised to a range of local and national recreational activity clubs and societies.

The results of the second stage of the project were provided as an interim report outlining the spring on-site survey results and a final report that discussed the results of the on-site survey, workshops and on-line survey.

This report presents the scoping report (Griffiths et al., 2016a) and the final recreational survey report (Langmead et al., 2017). These are provided in their complete form without edits. A final conclusion section (Section 13) draws some of the key findings from these two reports together.

Section 1 EMS Recreation Study Document 01:

A brief investigation into the possible interaction and sensitivity of priority species and habitats to recreational activity within the Tamar Estuaries Management Plan area.

Charly Griffiths, Matt Arnold & Joseph Butler (September 2016).

Recommended citation: Griffiths, C; Arnold, M and Butler, J. (2016) EMS Recreation Study Document 01. A brief investigation into the possible interaction and sensitivity of priority species and habitats to recreational activity within the Tamar Estuaries Management Plan area. A report for Plymouth City Council.

2 Introduction

2.1 Plymouth Sound and Estuaries European Marine Site

The Tamar Estuaries Consultative Forum (TECF) was established to promote the delivery of integrated management of the Tamar estuaries and nearby coastal areas to ensure long term sustainability. A major component of TECF's work involves implementing Plymouth Sound and Estuaries European Marine Site (EMS) management.

The EMS consists of the Plymouth Sound and Estuaries Special Area of Conservation (SAC), and the Tamar Estuaries Complex Special Protection Area (SPA) (Figure 1), designated for those habitat and species features listed in Table 1and Table 2**.**

Figure 1 The Plymouth Sound and Estuaries European Marine Site, incorporating the Plymouth Sound and Estuaries Special Area of Conservation (SAC), and the Tamar Estuaries Complex Special Protection Area (SPA)

Table 1. Designated Features of the Plymouth Sound and Estuaries SAC

Designation Type	Feature	Subfeature
SAC Annex I habitat	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	
	Estuaries	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Circalittoral rock
		Infralittoral rock
		Intertidal mixed sediments
		Intertidal mud
		Intertidal rock
		Intertidal seagrass beds
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
	Large shallow inlets and bays	Circalittoral rock
		Infralittoral rock
		Intertidal rock
		Subtidal coarse sediment
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
	Mudflats and sandflats not covered by seawater at low tide	Intertidal coarse sediment
		Intertidal mixed sediments
		Intertidal mud
		Intertidal sand and muddy sand
		Intertidal seagrass beds
	Reefs	Circalittoral rock
		Infralittoral rock
		Intertidal rock
	Sandbanks which are slightly covered by sea water all the time	Subtidal coarse sediment
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
SAC Annex II species	Allis shad (*Alosa alosa*)	
	Shore dock (*Rumex rupestris*)	

Table 2. Designated Features of the Tamar Estuaries Complex SPA

Designation Type	Feature	Subfeature
SPA Bird features	Non-breeding Avocet (*Recurvirostra avosetta*)	
	Non-breeding Little egret (*Egretta garzetta*)	
SPA Supporting habitat	Annual vegetation of drift lines	
	Coastal reedbeds	
	Freshwater and coastal grazing marsh	
	Intertidal mixed sediments	
	Intertidal mud	
	Intertidal sand and muddy sand	
	Intertidal seagrass beds	
	Water column	
	Saltmarsh	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

2.2 Conservation features and impacts from recreation

The Plymouth Sound and Estuaries EMS is a complex site of marine inlets and larger bays which can provide ideal conditions for a number of coastal and marine recreational activities. The sites proximity to the city of Plymouth provides water users with infrastructure to support boating communities and many access points for users to undertake a number of activities such as swimming, bait digging, crab tiling and kayaking.

Recreational activities can adversely affect habitats and disturb species, primarily through noise, abrasion / penetration of the seabed, litter, organic enrichment, contamination (synthetic compounds / organo - metal / hydrocarbon / PAH), spread of non-indigenous species; physical change (to other seabed type) and introduction of light.

2.3 Aims, objectives and approach

As the estuary management partnership, TECF is responsible for management of the EMS and must have regard to direct and indirect effects on all interest features. TECF commissioned the Marine Biological Association of the UK (MBA) to conduct a brief spatial investigation into areas of possible interaction between a number of common recreation activities as defined by data available through Plymouth City Council and EMS features of conservation importance. This report presents the method and results of this project.

3 Methods

The adopted approach aimed to determine which conservation features have possible interactions with recreational activity across the EMS, and the sensitivity that those features have to the particular recreational activity acting upon them.

3.1 Potential feature / recreation interaction

The project utilised the best available and accessible habitat, species and recreation distribution data (Table 3) to run spatial overlay analysis using ArcGIS v10.3 software. Overlay analysis determines where features overlap (Figure 2), in this case where recreational activity overlaps designated habitats and species within each management area within the EMS. The distribution of the designated features of the SAC and SPA are presented in Figures 3 and 4 and the overlap with activities is provided in Figure 5.

Table 3. Data sources for spatial analysis (see Figure 3 , Figure 4 and Figure 5 for mapping results)

Theme	Data layer	Source
Habitats	EMS_Habitats	EMODnet (2016) - all relevant datasets
Species	EMS_Species	Marine Recorder (2015) JNCC
		NBN (2015)
	SPA_Birds	Wetland Birds Survey (2003) British Trust for Ornithology
Recreation	Crab tiling	Devon and Severn IFCA
	High speed boating areas	Plymouth City Council
	Marinas	Plymouth City Council
	Mooring areas	Plymouth City Council
	Small craft anchorage	Plymouth City Council
	Swimming area	Plymouth City Council
	Slipways	Plymouth City Council

To facilitate analysis of differing spatial data types (point, line, polygon) a 200 meter diameter hexagonal cell, regular grid was created and each cell assigned a unique ID. By combining the habitat, species and recreation layers with the 200m grid using Union Analysis, attribute data from all layers were joined to the overlaying 200m cell. This data was then interrogated to determine what features might be impacted by particular recreational activities at any given location across the EMS.

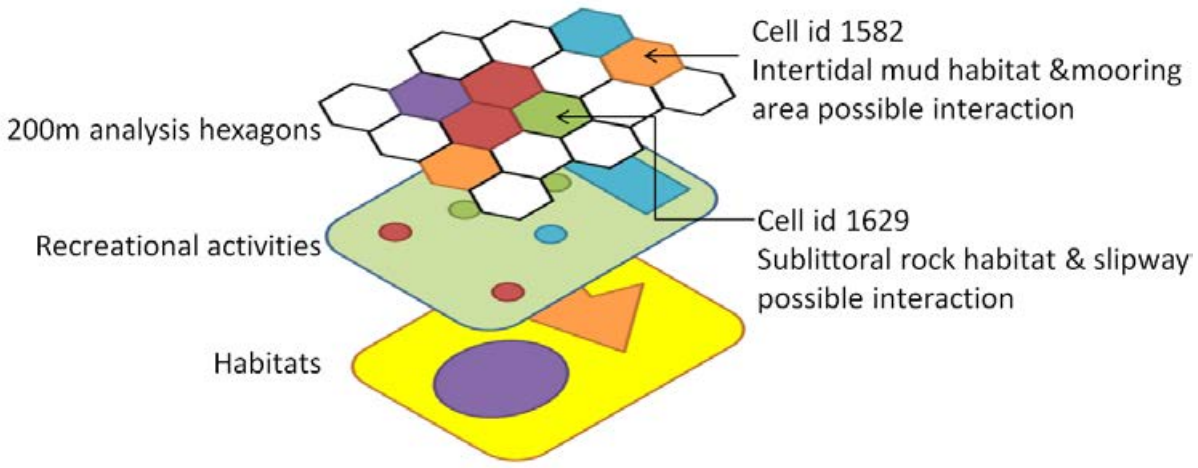

Figure 2. Schematic of overlay analysis using ArcGIS v10.3. Individual Habitat and Recreational activities layers are spatially joined to the hexagon analysis grid. Each hexagon cell then receives the attributes names of the habitat and activity.

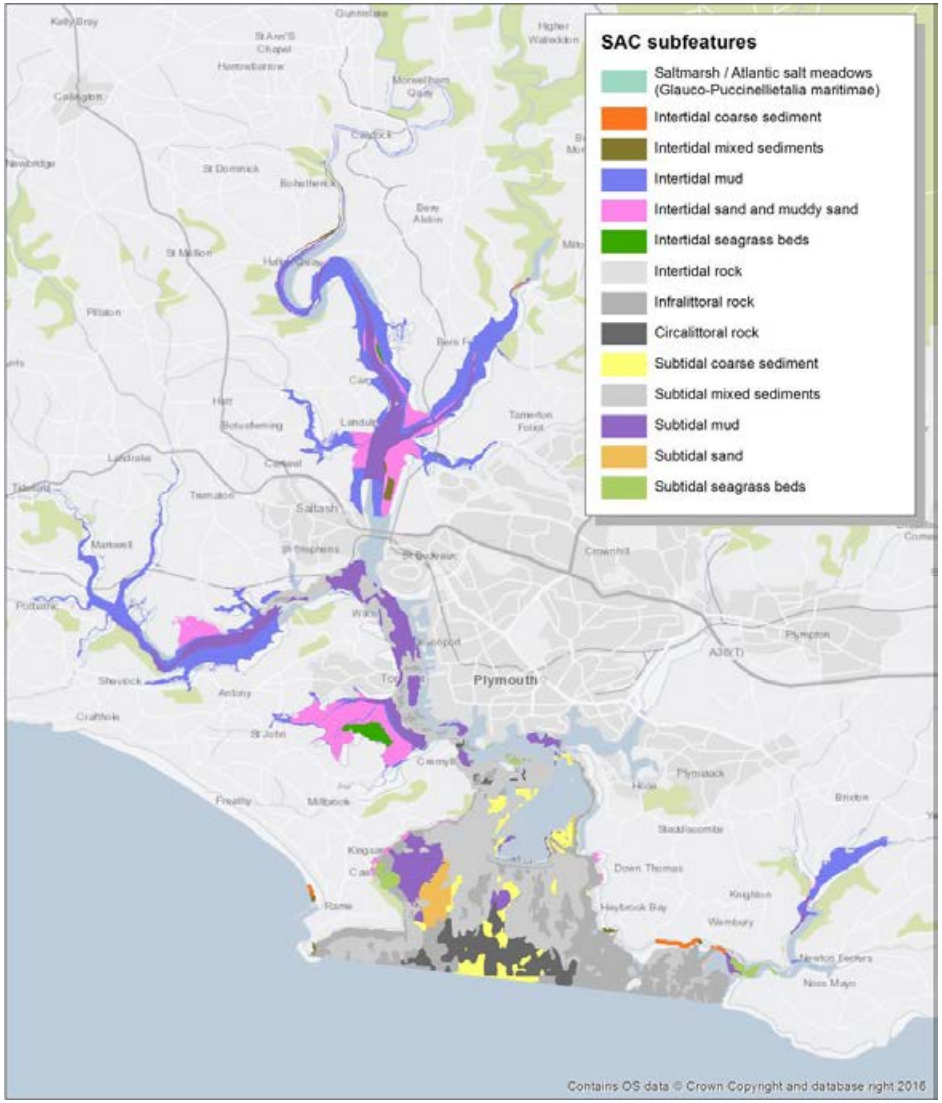

Figure 3. Designated habitat features of the SAC

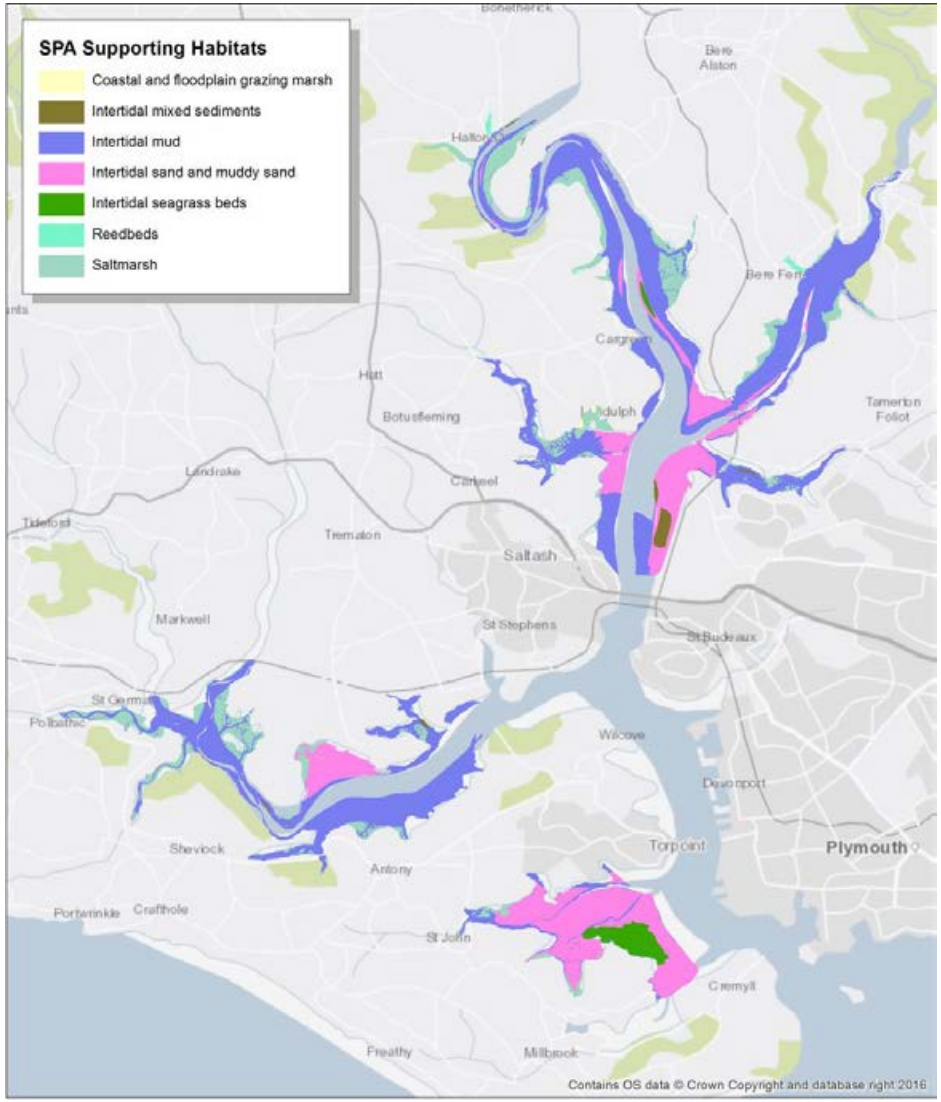

Figure 4. Designated habitat features of the SAC

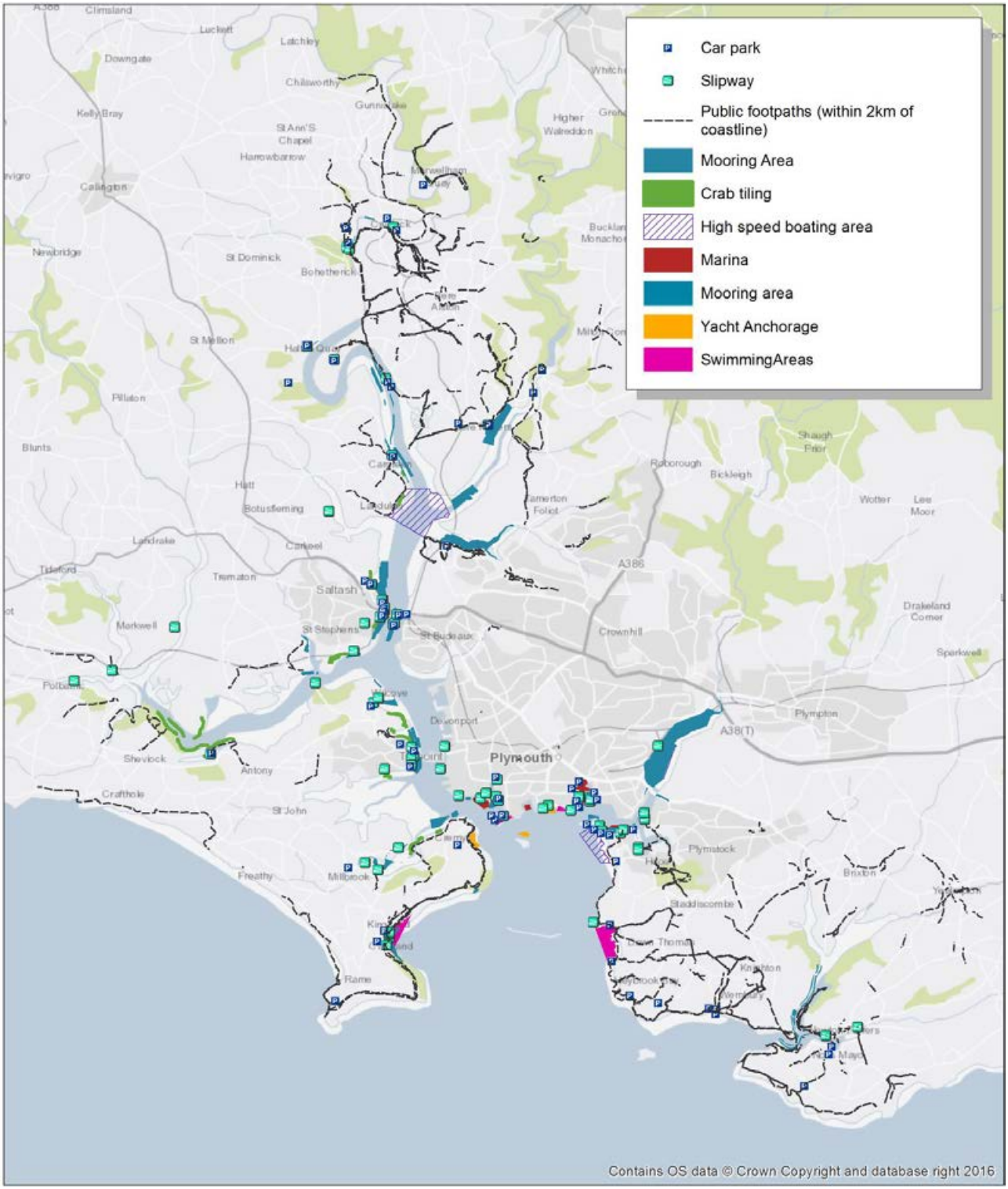

Figure 5. Recreational activities or infrastructures within the EMS

3.2 Sensitivity Assessments

The conservation advice packages for SAC and SPA sites within England are currently being updated by Natural England. The Plymouth Sound and Estuaries SAC conservation advice package (Natural England, 2015[1]) and The Tamar Estuaries Complex SPA conservation advice package (Natural England, 2015[2]), contain Advice on Operations tables which have formed the basis for our sensitivity assessment. The Advice on Operations table links activities to pressures and the sensitivity of features to these pressures at a given benchmark.

The advice states that "The sensitivity of a feature to activity-derived pressures has been assessed using information collected on their resilience (an ability to recover) and resistance (the level of tolerance) to physical, chemical and biological pressures (APEM, 2014; MarLIN, 2014 in Natural England[3], 2016, citation not provided).

All habitat, species and bird features within the EMS have been assessed against the draft Advice on Operations sensitivity assessments to identify possible pressures arising from those recreational activities outlined previously in this report. Assessment sensitivity scores are provided in Table 4. Assessment to sensitivity scores (Natural England, 2015).

Table 4. Assessment to sensitivity scores (Natural England, 2015)

SENSITIVE: The evidence base suggests the feature is sensitive to the pressure at the benchmark and taken to further assessment	S
INSUFFICIENT EVIDENCE TO ASSESS: Evidence base not developed enough for assessments to be made.	IE
NOT ASSESSED: A sensitivity assessment has not been made for the feature	NA
NOT SENSITIVE AT THE BENCHMARK: Evidence suggests the feature is not sensitive to the pressure at the benchmark	NS
Evidence suggests there is no direct interaction between the pressure and the feature under assessment OR, the activity and the feature could not interact.	

4 Results

4.1 Recreational intensity across the EMS

A cell count was run on raw recreational activity data to give a crude proxy for the number of recreation activities that co-occur across the EMS. The cell count simply adds the number of individual recreational activities that occur within a given cell (Figure 6) to show the number of activities that take place. The Kingsand / Cawsand Bay area, for example, displays high recreation intensity due to the number of slipways, moorings and swimming areas within the bay.

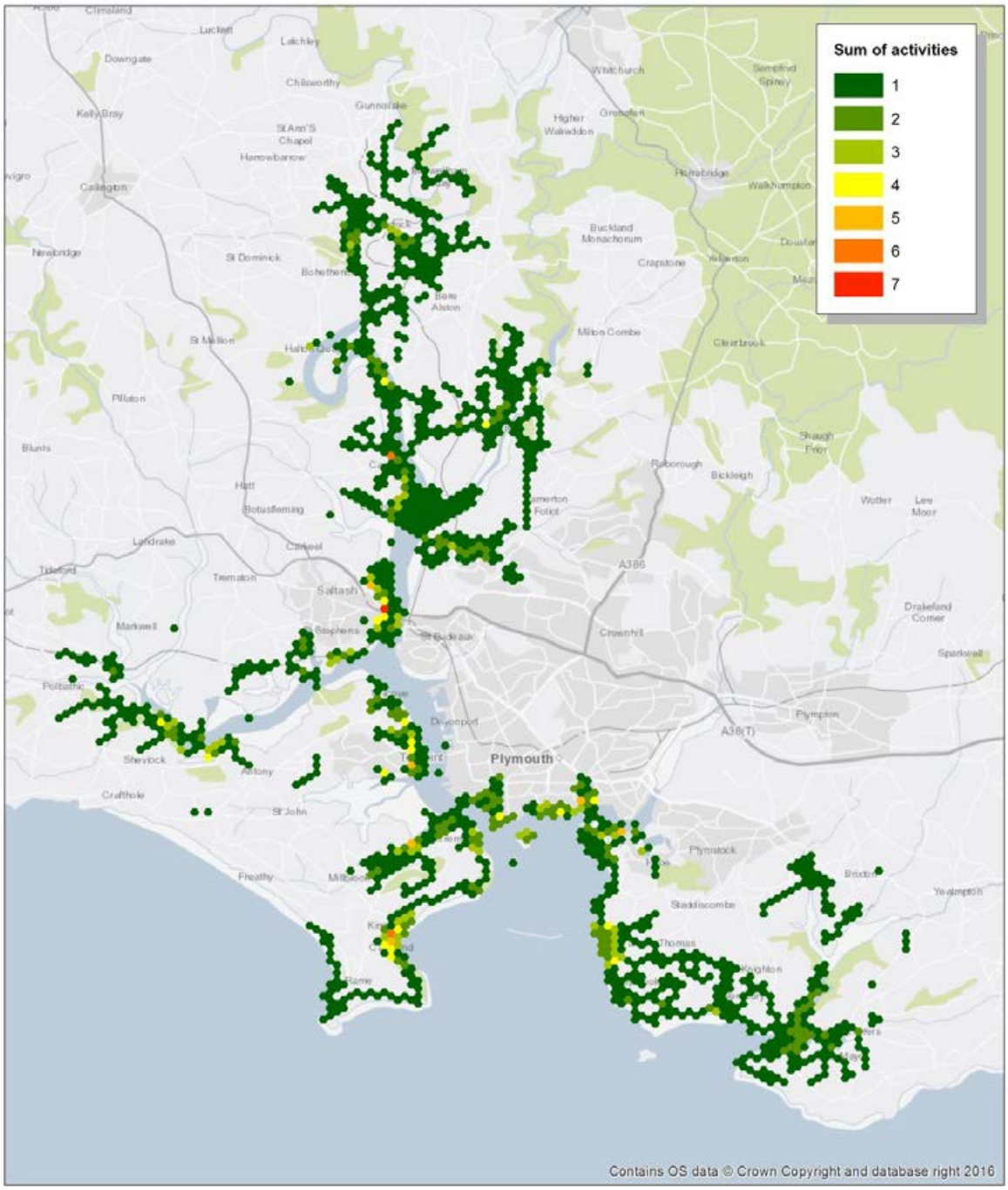

Figure 6. Location and intensity of recreational activity across the EMS

4.2 Plymouth Sound and Estuaries SAC

4.2.1 Habitat / recreation interaction

Individual maps have been created to display the distribution of each of the features across the SAC and the potential interaction between the feature and the number of recreational activities that occur across the distribution. Figure 7 provides an example of this and shows the distribution of intertidal mud and the number of recreational activities that occur within each relevant grid cell. The complete distribution maps for the Plymouth Sound and Estuaries SAC can be found in Appendix A.

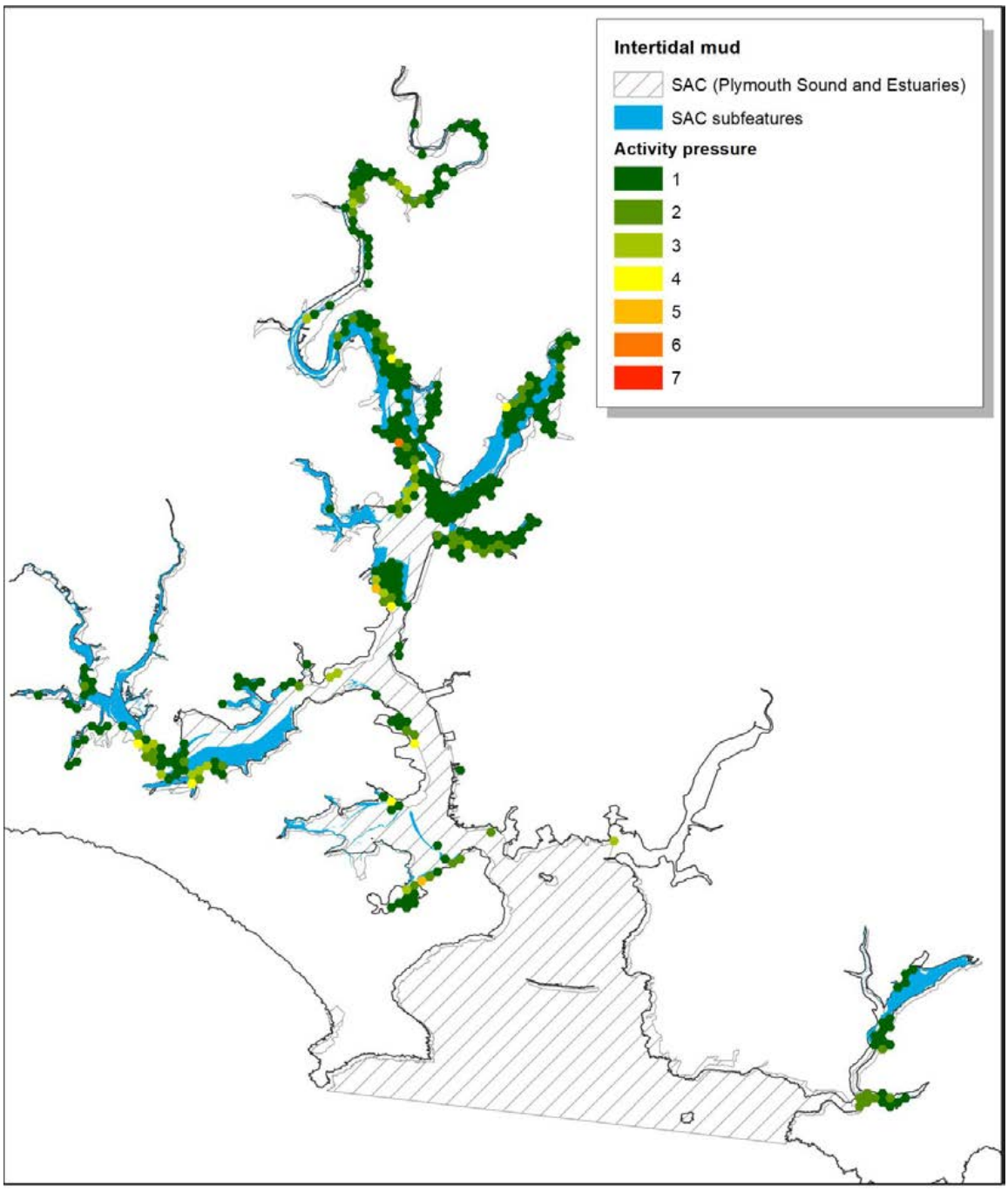

Figure 7. Distribution of intertidal mud habitat (in blue) across the SAC; the hexagons represent locations in which recreation is likely to interact with the habitat along with a crud indication of recreational pressure (green to red)

4.3 SAC habitat sensitivity assessment

Based on the overlay hexagon analysis we have identified individual hexagon cells in which subfeature habitat and recreational activity overlap, a summary of these interactions for the SAC is presented in Table 5.

Infralittoral rock, Intertidal mixed sediments, Intertidal mud, Intertidal rock, Intertidal sand and muddy sand, Saltmarsh, Subtidal mixed sediments, Subtidal mud and Subtidal seagrass beds all overlap with a number of recreational activities considered within this assessment. Infralittoral rock and intertidal mud, rock and sand and muddy sand all have a significant number of interactions. Circalittoral rock, intertidal seagrass beds and subtidal mixed sediments each only interact with one recreational activity.

Table 5. Summary of features assessed as directly interacting with particular recreational activities within the Plymouth Sound and Estuaries Special Area of Conservation

	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Saltmarsh	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal seagrass beds
Car park		X	X	X	X	X	X		X				
Crab tiling				X	X	X	X		X				
Footpaths		X	X	X	X	X	X		X				
High Speed		X			X	X	X		X	X		X	X
Marina		X			X	X	X				X	X	
Mooring area		X		X	X	X	X	X	X		X	X	X
Slipway		X		X	X	X	X		X		X	X	X
Small Craft Anchorage	X	X				X					X	X	X
Swimming Area		X		X	X	X	X				X	X	X

X	Interaction present. Habitat is sensitive to at least one pressure raised by activity.	X	Interaction present. Interaction is not relevant to sensitivity assessment
X	Interaction present. Habitat is not sensitive to any pressure raised by activity.		No interaction present.

4.3.1 Sensitive (S)

When considering these interactions in the context of the Natural England Advice on Operations for the site (Natural England[1], 2015) the subfeature habitats are assessed as sensitive to at least one of the following pressures that arise from the assessed activities:

- Abrasion/disturbance of the substrate on the surface of the seabed (***All activities considered***)
- Introduction or spread of non-indigenous species (***All on water / boat based activities***)

- Organic enrichment (***Car parks, footpaths, anchoring, mooring and marinas***)
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion (***All activities***)
- Physical change (to another seabed type) (***All anchoring or mooring activities - marina, mooring area, small craft anchorage***)
- Removal of non-target species (***Footpaths and crab tiling***)

Please see Appendix C for the full Advice on Operations table.

4.3.2 Not sensitive (NS)

Pressures that may arise from the assessed activities but that are not considered to impact the subfeatures (at the pressure benchmark) relate to the chemical contamination associated with all boating activities. Within this assessment those recreational activities are high speed powerboat areas, marinas, mooring areas, slipways and small craft anchorages. The Natural England specific pressures are:

- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.

Please see Appendix C for the full Advice on Operations table.

4.3.3 Insufficient evidence (IE)

Litter is consistently rated as having insufficient evidence to allow a sensitivity assessment within the Natural England Advice on Operations. Litter is a pressure that can be associated with all activities but sensitivity to this pressure is difficult to assess hence the lack of sensitivity assessment (Tillin & Tyler-Walters, 2015).

4.4 SAC species sensitivity assessment

4.4.1 Allis shad (*Alosa alosa*)

As a rare and under researched species the sensitivity of Allis shad (*Alosa alosa*) to pressures induced by human activity is is difficult to assess due to the paucity of data and literature (Langston et al, 2003 and Coterell & Hillman, 2016). The Advice on Operations sensitivity spreadsheet states that the following pressures have insufficient evidence to assess their potential impact on the Allis shad:

- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***All boat based activities***)
- Introduction or spread of non-indigenous species (***All on water / boat based activities***)
- Litter (***All assessed activities***)
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***All boat based activities***)
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***All boat based activities***)
- Visual disturbance (***All boat based activities***)

Allis shad is assessed as sensitive to collision below the water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery and structures), and underwater noise changes. Within this assessment those recreational activities producing sensitivity are high speed powerboat areas, marinas, mooring areas, slipways and small craft anchorages.

4.4.2 Shore dock (Rumex rupestris)

Shore dock (*Rumex rupestris*) is found well above the high water mark and as such many activities were assessed as **Not Relevant** to this coastal plant.

The following pressures however were **Not Assessed** under the Natural England Advice on Operations and should be considered under any further work:

- Abrasion/disturbance of the substrate on the surface of the seabed (***Land based and the launching and recovery phases of boat based activities***)
- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***The launching and recovery phases of boat based activities***)
- Introduction of light (***The launching and recovery phases of boat based activities***)
- Introduction or spread of non-indigenous species (***The launching and recovery phases of boat based activities***)
- Litter (***Land based and the launching and recovery phases of boat based activities***)
- Organic enrichment (***The launching and recovery phases of boat based activities***)
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion (***Land based and the launching and recovery phases of boat based activities***)
- Removal of non-target species (***Land based activities***)
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***The launching and recovery phases of boat based activities***)
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***The launching and recovery phases of boat based activities***)

4.5 Tamar Estuaries Complex SPA

4.5.1 Species and supporting habitat recreation interaction

Individual maps have been created to display the distribution of each of the features across the SPA and the location of potential interaction between the features and recreational activities. These distribution maps can be found in Appendix B.

British Trust for Ornithology (BTO) Wetlands Bird Survey data (BTO, 2015) were interrogated to indentify locations of sightings of the Avocets (*Recurvirostra avosetta)* and Little Egrets (*Egreta garzetta*) within the SPA. Sightings are reported here in mean density of sightings, that is, the count of all sightings divided by the number of days recordings took place. The areas of blue in Figure 8 and Figure 9 represent those BTO reporting areas in which the birds were counted during the 1997 - 1998 and 2002 - 2003 recording seasons. By overlaying the habitat and recreation information to these known areas of bird use we can determine what areas may require management of recreational activities to reduce impact and disturbance to the birds and their supporting habitats.

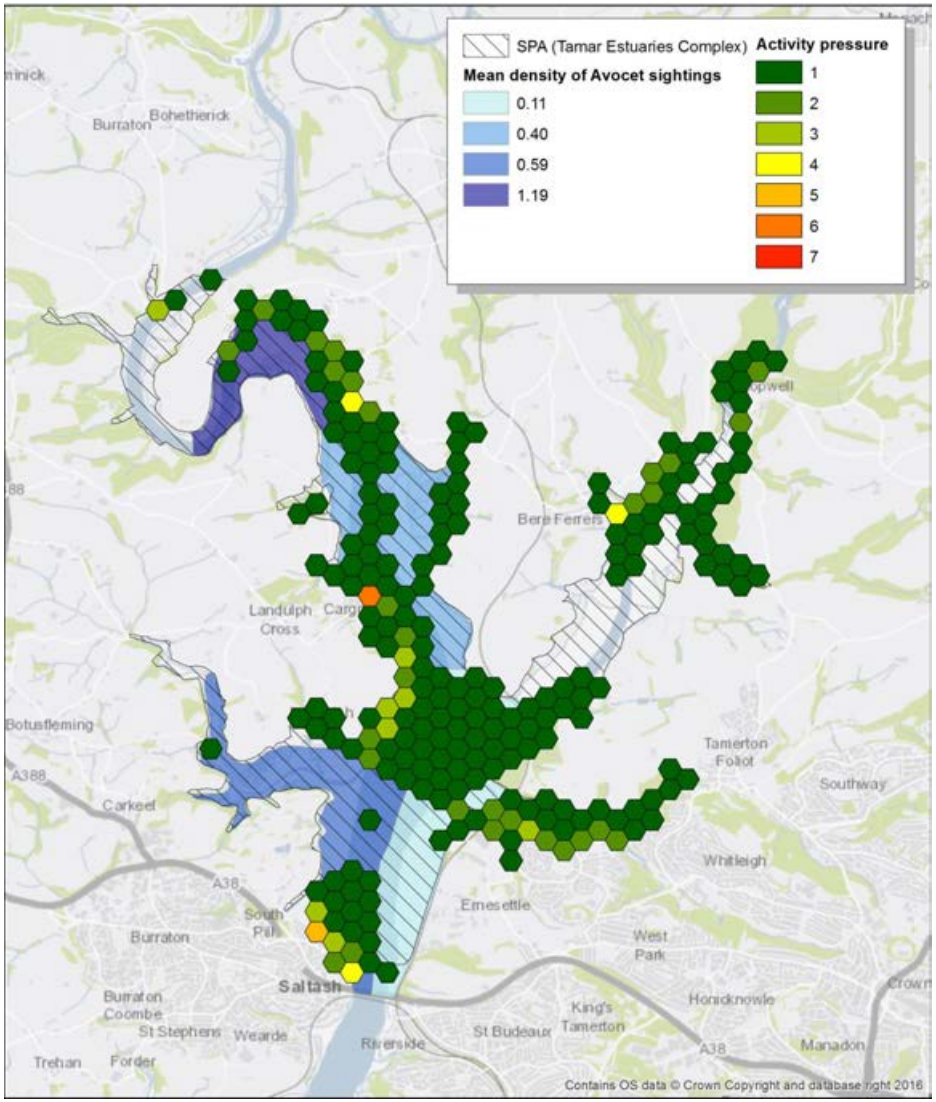

Figure 8. Mean density of Avocet sightings overlaied with location of recreational pressure within the Northern part of the Tamar Estuaries Complex SPA

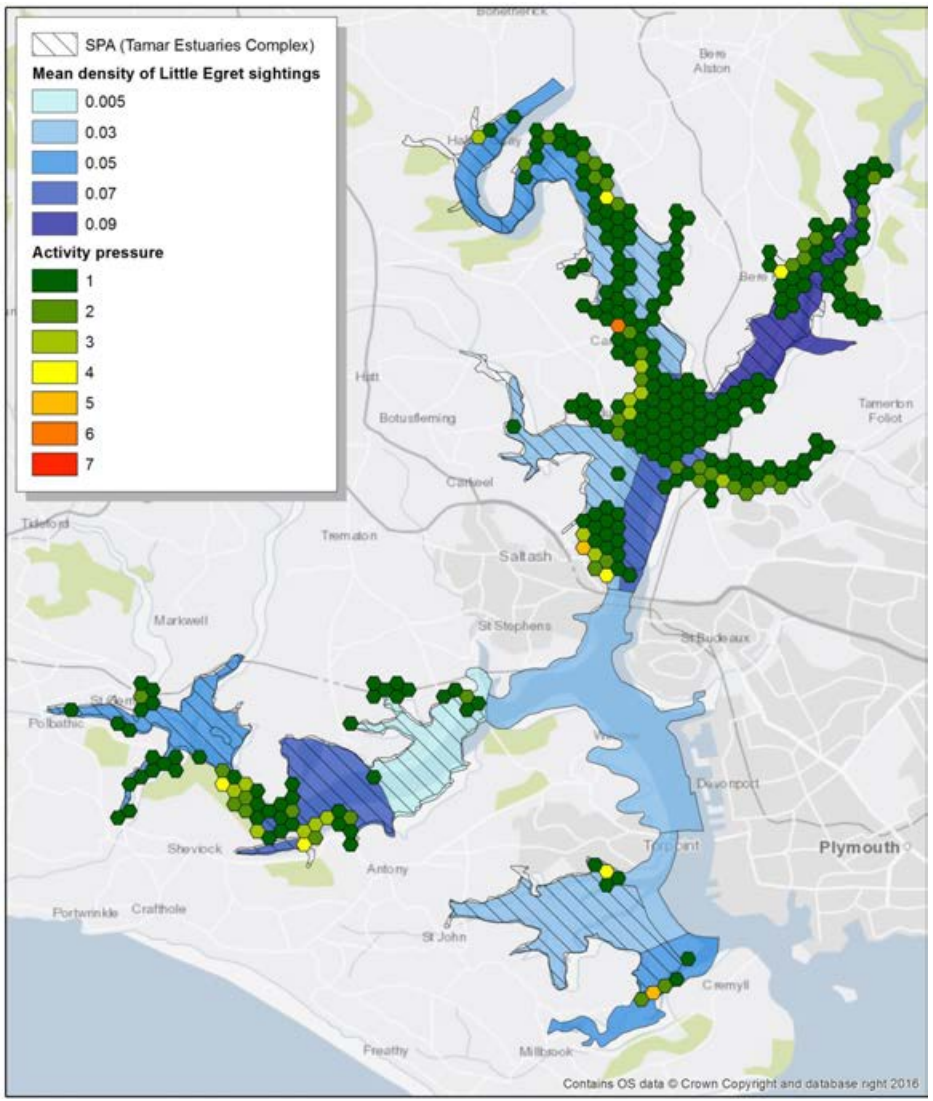

Figure 9. Mean density of Little Egret sightings overlaid with the location of recreational pressure within the Tamar Estuaries Complex SPA

4.6 SPA supporting habitat features sensitivity assessment

Based on the overlay hexagon analysis we have identified individual hexagon cells in which supporting habitat features and recreational activity are present, a summary of these interactions for the Tamar Estuaries Complex SPA is presented in Table 6.

Intertidal mixed sediments, Intertidal mud, Intertidal sand and muddy sand, reedbeds and Saltmarsh, all interact with a number of recreational activities considered within this assessment. Intertidal mud, Intertidal sand and muddy sand, and Saltmarsh all have a significant number of interactions. Coastal grazing marsh and Intertidal seagrass beds only interact with one recreational activity (footpaths and mooring areas respectively).

Table 6. Summary of features assessed as directly interacting with particular recreational activities within the Tamar Estuaries Complex SPA

	Coastal and floodplain grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Reedbeds	Saltmarsh
Car park		X	X	X		X(NA)	X
Crab tiling		X	X	X			X
Footpaths	X(NA)	X	X	X		X(NA)	X
High Speed			X	X			X
Marina			X	X			
Mooring area		X	X	X	X	X	X
Slipway			X	X		X	X

X	Interaction present. Habitat is sensitive to at least one pressure raised by activity.	X	Interaction present. Interaction is not relevant to sensitivity assessment
X	Interaction present. Habitat is not sensitive to any pressure raised by activity.	X(NA)	Interaction present. Sensitivity not assessed but should not be excluded from future work.
	No interaction present.		

4.6.1 Sensitive (S)

When considering these interactions in the context of the Natural England Advice on Operations for the site (Natural England[2]) the supporting habitats were assessed as sensitive to the following pressures:

- Abrasion/disturbance of the substrate on the surface of the seabed (***All activities***)
- Introduction or spread of non-indigenous species (***All on water / boat based activities***)
- Organic enrichment (***All boat based activities***)

- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion (***All activities***)
- Physical change (to another seabed type) (***All anchoring or mooring activities - marina, mooring area, small craft anchorage***)
- Removal of non-target species (***Footpaths and crab tiling***)

Please see Appendix D for the full Advice on Operations table.

4.6.2 Not sensitive (NS)

The pressures assessed as not giving rise to sensitivity across the board of Annex 1 subfeatures relate to the chemical contamination associated with all boating activities. Within this assessment those recreational activities are high speed powerboat areas, marinas, mooring areas, slipways and small craft anchorages. The Natural England specific pressures are:

- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.

Please see Appendix D for the full Advice on Operations table.

4.6.3 Insufficient evidence (IE)

Litter is consistently rated as having insufficient evidence to allow a sensitivity assessment within the Advice on Operations. Litter is a pressure associated with all activities.

4.7 SPA species sensitivity assessment: Non-breeding Avocet (*Recurvirostra avosetta*) and Non-breeding Little egret (*Egretta garzetta*)

4.7.1 Sensitive (S)

When considering these interactions in the context of the Natural England Advice on Operations for the site (Natural England[2]) the two bird species are assess as sensitive to the following pressures:

- Above water noise (***All activities***)
- Introduction of light (***All boat based activities***)
- Removal of non-target species (***Footpaths and crab tiling***)
- Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. (***All boat based activities***)
- Visual disturbance (***All activities***)

Please see Appendix D for the full Advice on Operations table.

4.7.2 Not sensitive (NS)

The birds have been assessed as not sensitive to the introduction or spread of non-indigenous species which arises from the deployment of any craft in the water, whether sailing boat, power boat or paddle launch.

4.7.3 Insufficient evidence (IE)

Litter is consistently rated as having insufficient evidence to allow a sensitivity assessment within the Advice on Operations. Litter is a pressure associated with all activities. Chemical contamination arising from all boating activities is also classed as having insufficient evidence to assess, these pressures arise from high speed powerboat areas, marinas, mooring areas, slipways and small craft anchorages.

- Litter
- Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.
- Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.

Please see appendix D for the full Advice on Operations table.

4.7.4 Not relevant (blank)

The following pressures were assessed as not relevant under the Advice on Operations. Not relevant is defined as "The evidence base suggests that there is no interaction of concern between the pressure and the feature OR the activity and the feature could not interact":

- Abrasion/disturbance of the substrate on the surface of the seabed (***All activities***)
- Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)
- Organic enrichment (***All boat based activities***)
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion (***All activities***)
- Physical change (to another seabed type) (***All anchoring or mooring activities - marina, mooring area, small craft anchorage***)
- Underwater noise changes (***All activities***)

Please see appendix D for the full Advice on Operations table.

4.8 Conclusions and Recommendations

The following points should be taken into consideration when planning the next phases of the recreational assessment for the Plymouth Sound and Estuaries European Marine Site.

- Update the 1999 Natural England EMS habitat features map with the data drawn on within this report and any additional data that may be relevant, in consultation with Devon and Severn IFCA and Natural England
- Include habitat quality information from monitoring activities within the EMS
- Consider extending the assessment to the Start Point to Eddystone and Plymouth Sound SAC
- Include additional recreational activities: Diving / Snorkelling; sailing areas; deep water channel; recreational angling; bait digging; stand up paddle boarding; Kayak; gig racing
- Full recreational use assessment to be undertaken at key sites across the EMS to gauge actual recreational intensity and identify additional activities taking place within the area.

5 References

BTO (2015). Survey data from the Tamar Estuaries 1997-1998 & 2002-2003.

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Natural England[1] (2015). Guidance. Plymouth Sound and Estuaries SAC: site information (draft). https://www.gov.uk/government/publications/marine-conservation-advice-for-special-area-of-conservation-plymouth-sound-and-estuaries-uk0013111/plymouth-sound-and-estuaries-sac-site-information-draft. Accessed on 01/09/2016

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Natural England (2016). Guidance note. Advice on marine operations. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/520313/advice-on-operations-guidance.pdf. Accessed on 01/09/2016

Langston, W.J, Chesman, B.S, Burt, G.R, Hawkins, S.J, Readman, J & Worsfold, P. (2003) Site Characterisation of the South West European Marine Sites. Plymouth Sound and Estuaries cSAC, SPA. Environment Agency & English Nature.

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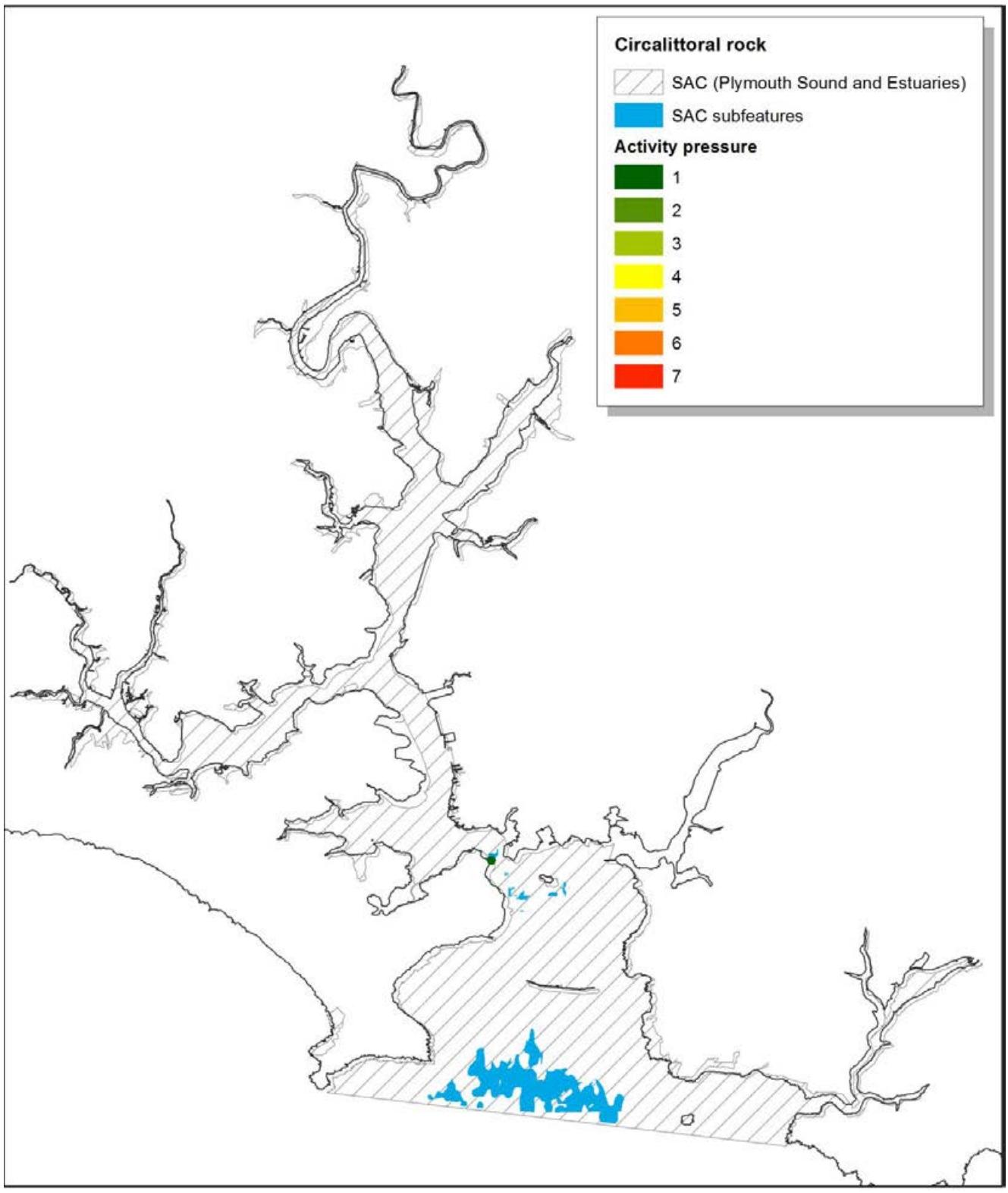
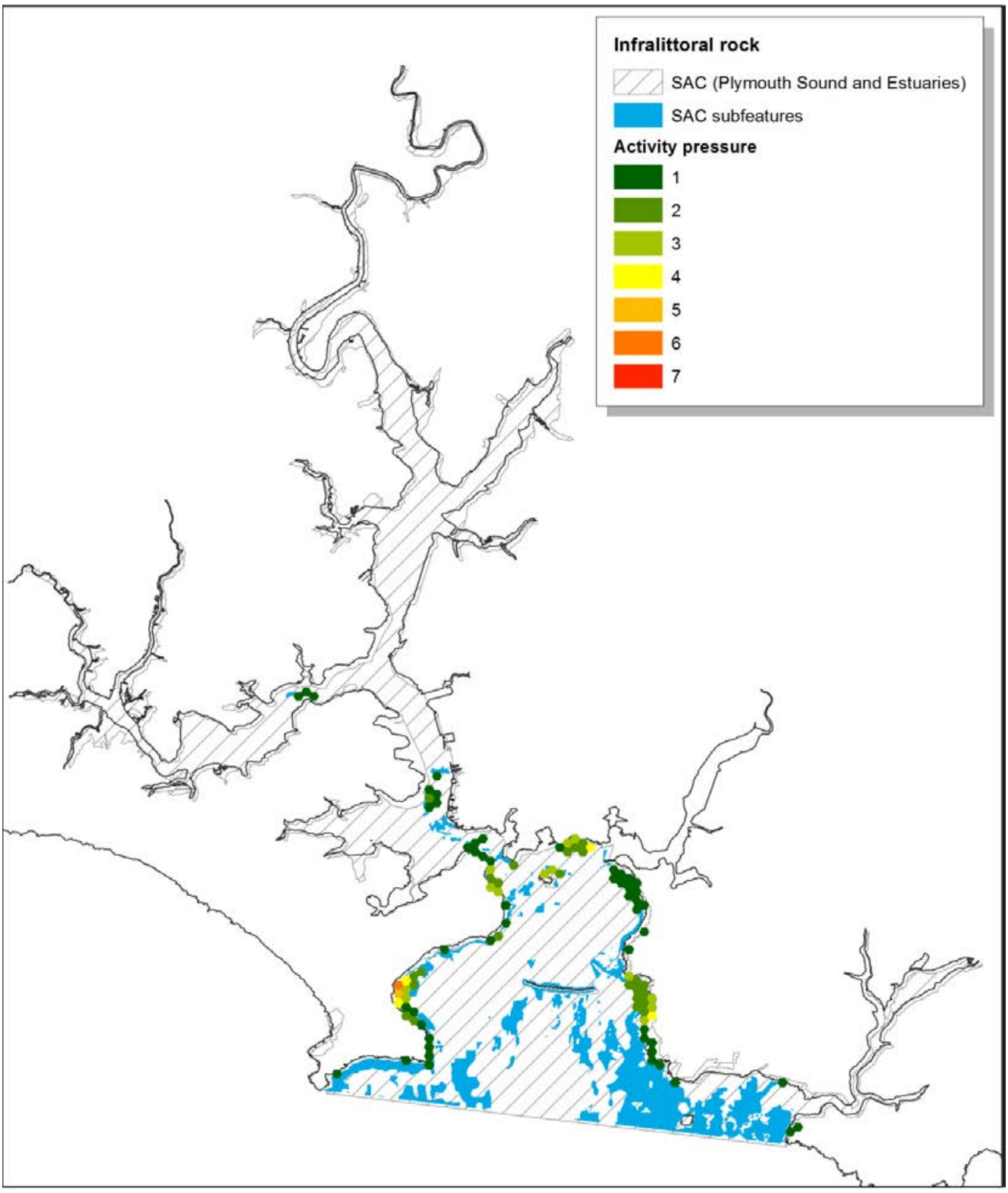
Appendix A. Habitat / Activity interaction maps for the Plymouth Sound and Estuaries SAC




Infralittoral rock
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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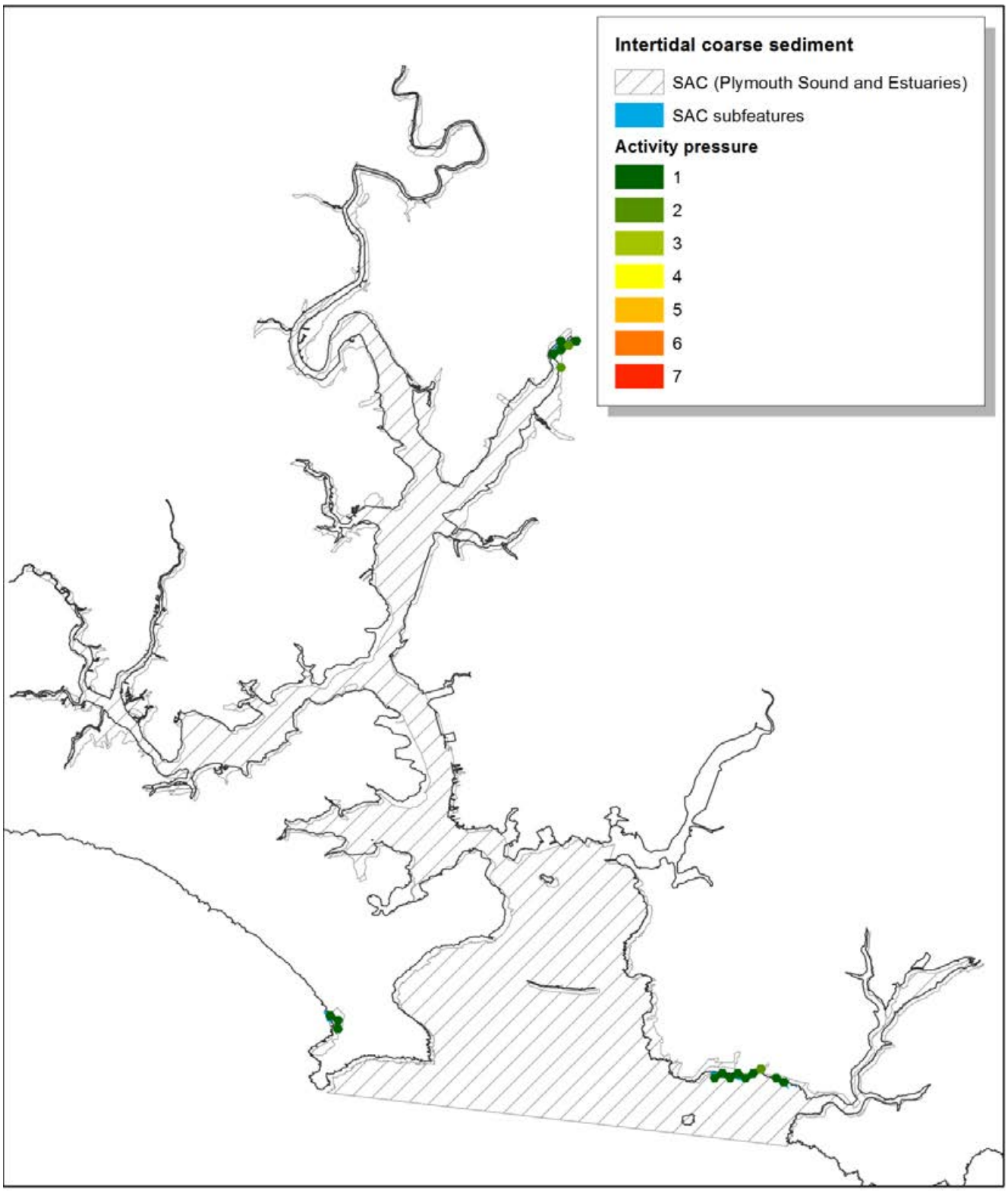
Intertidal coarse sediment
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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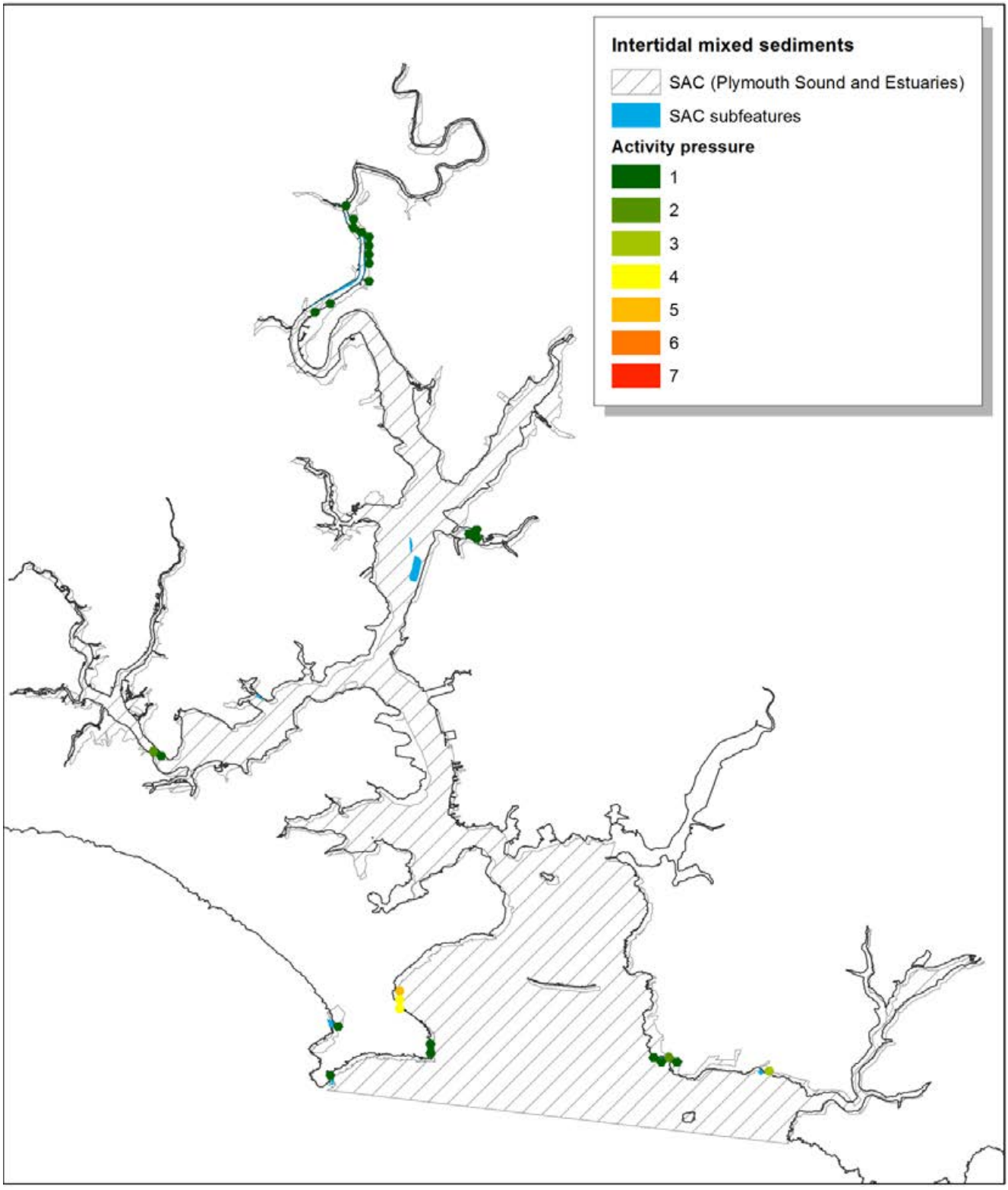
Intertidal mixed sediments
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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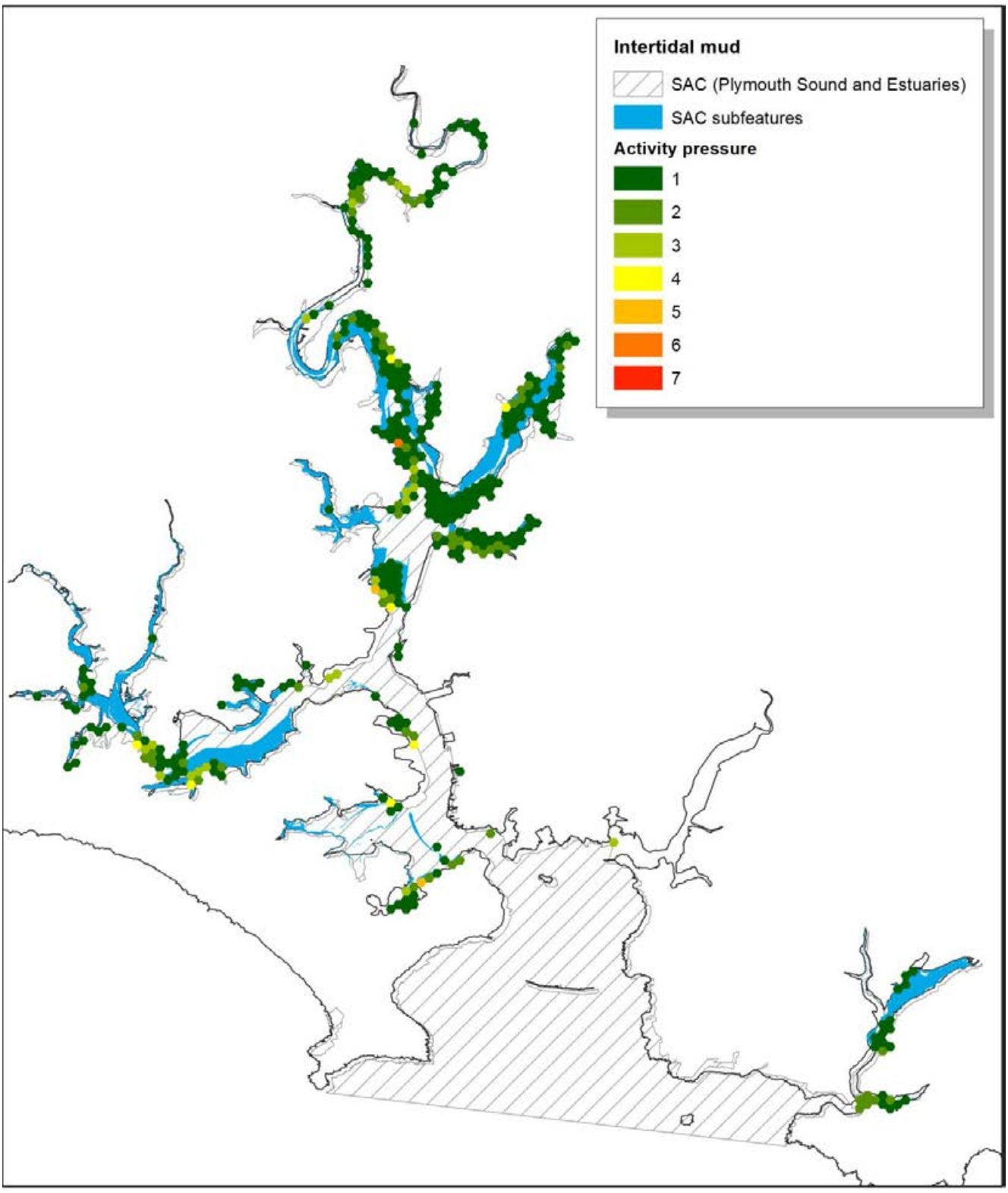
Intertidal mud
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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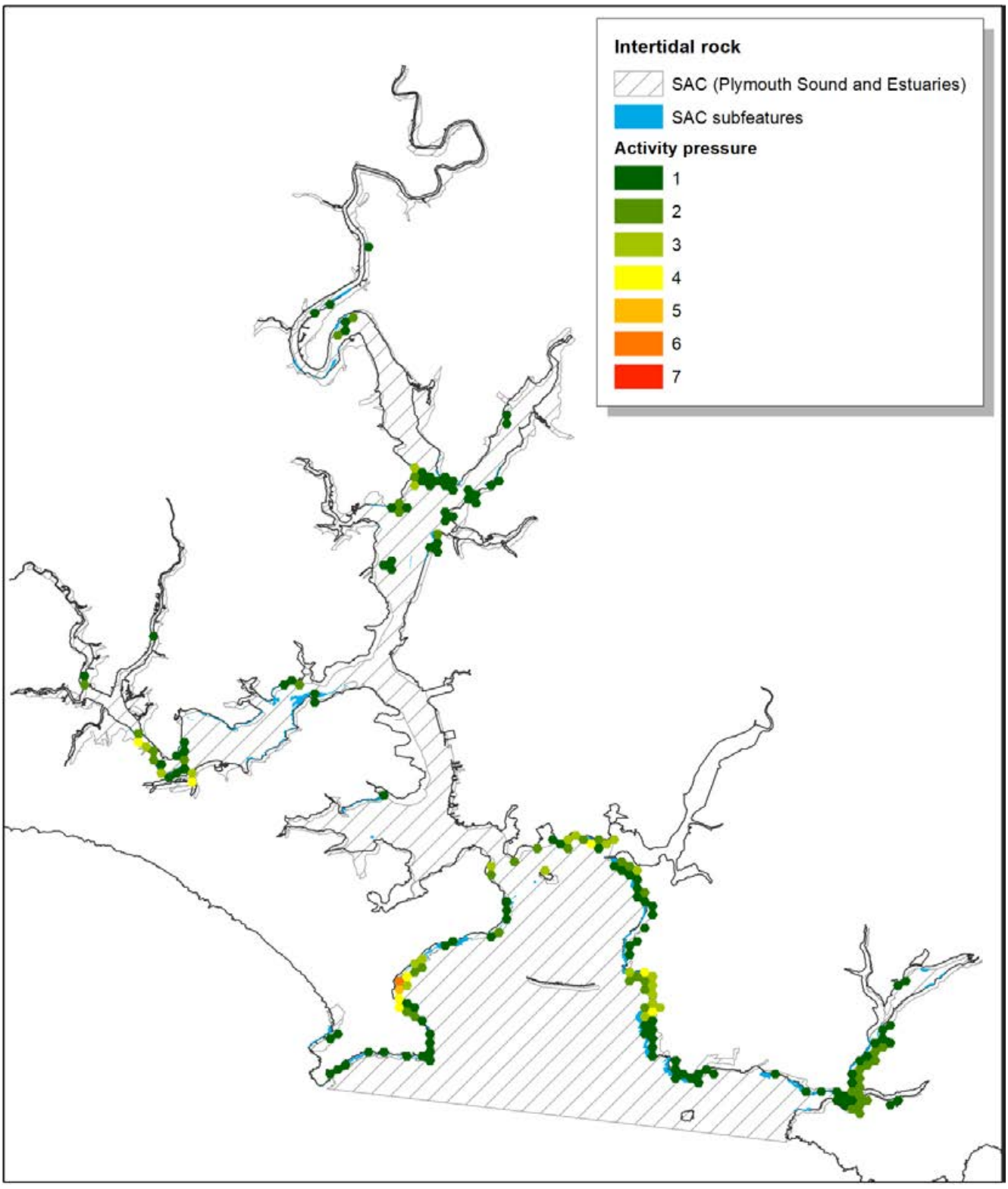
Intertidal rock
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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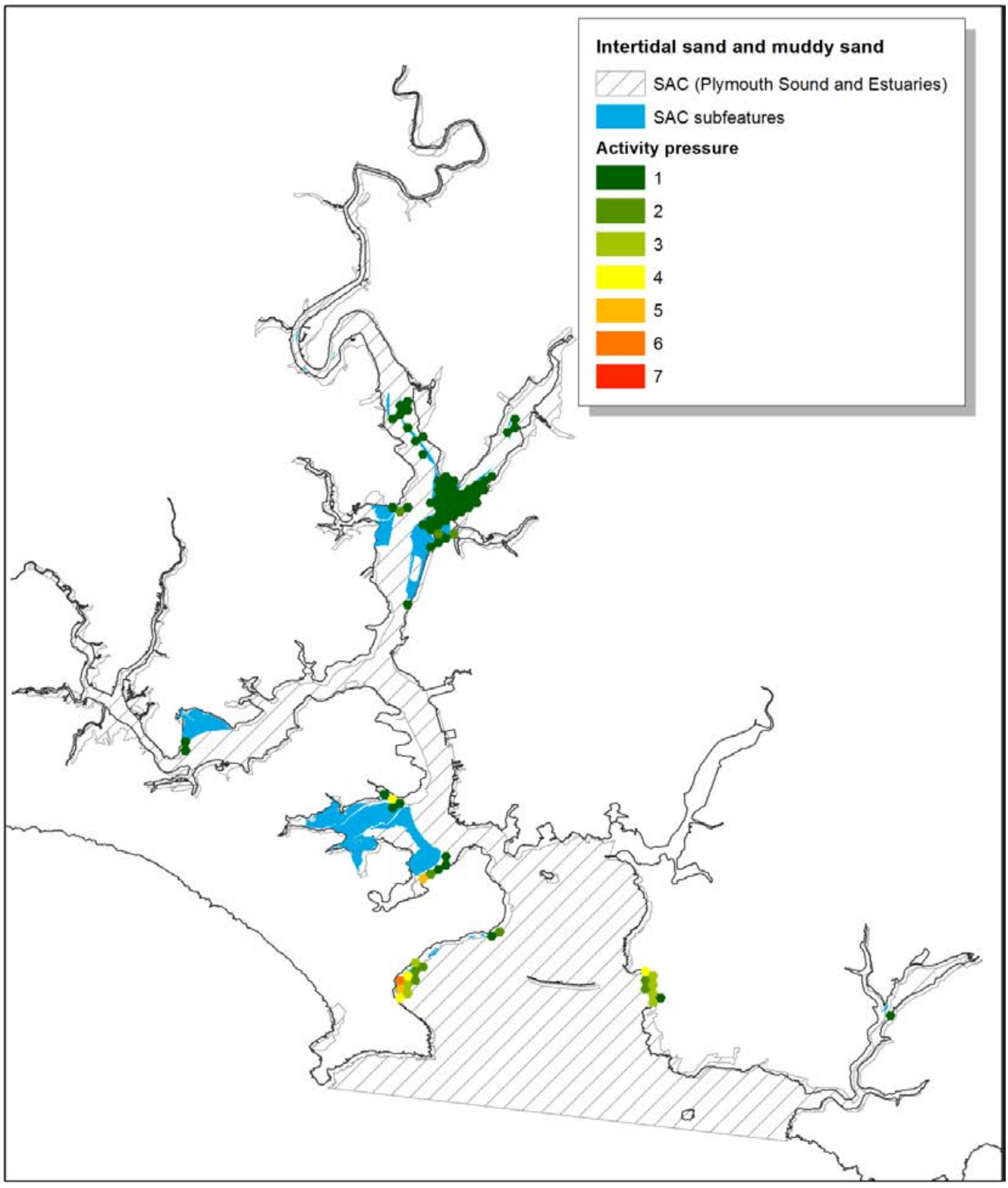
Intertidal sand and muddy sand
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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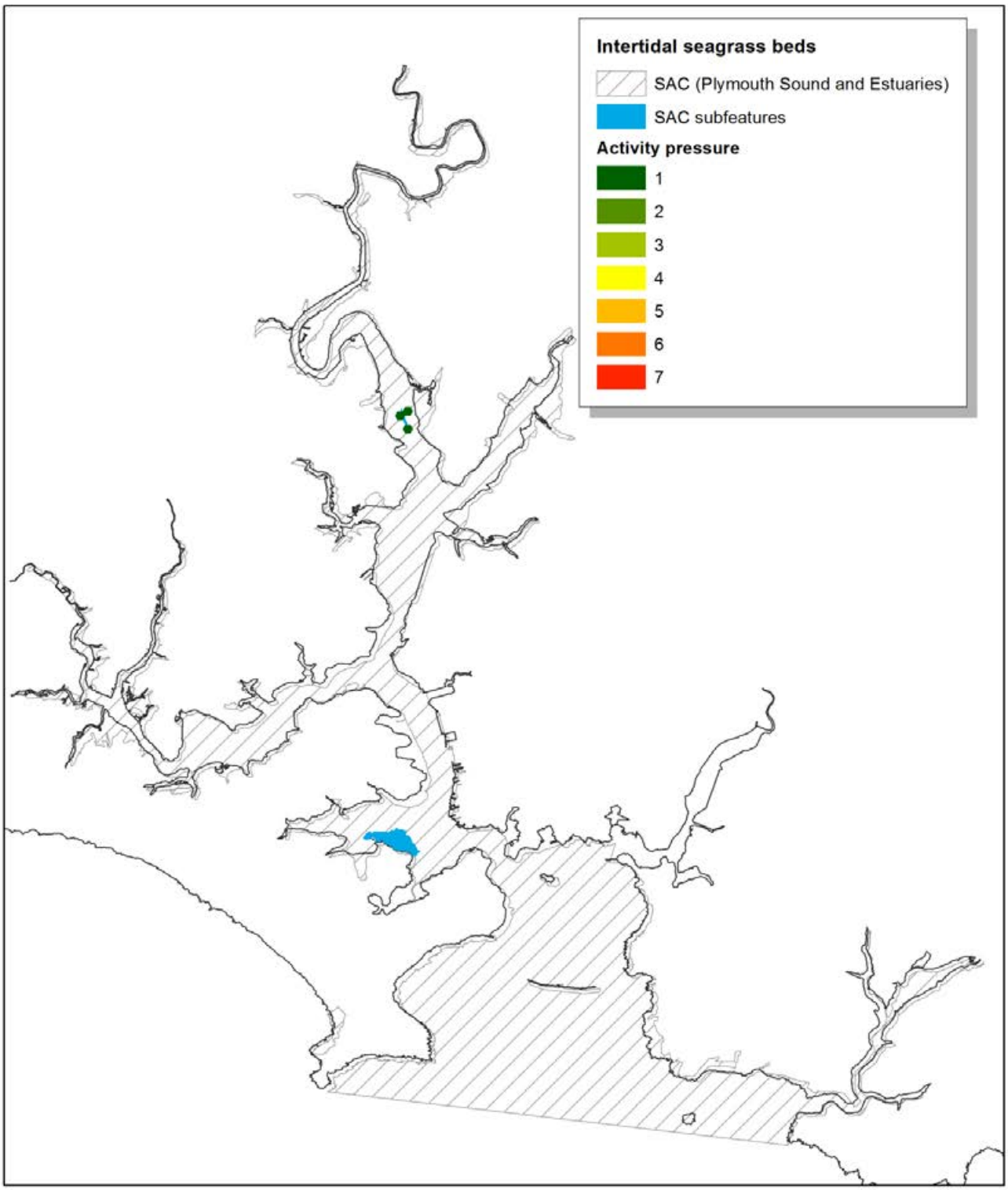
Intertidal seagrass beds
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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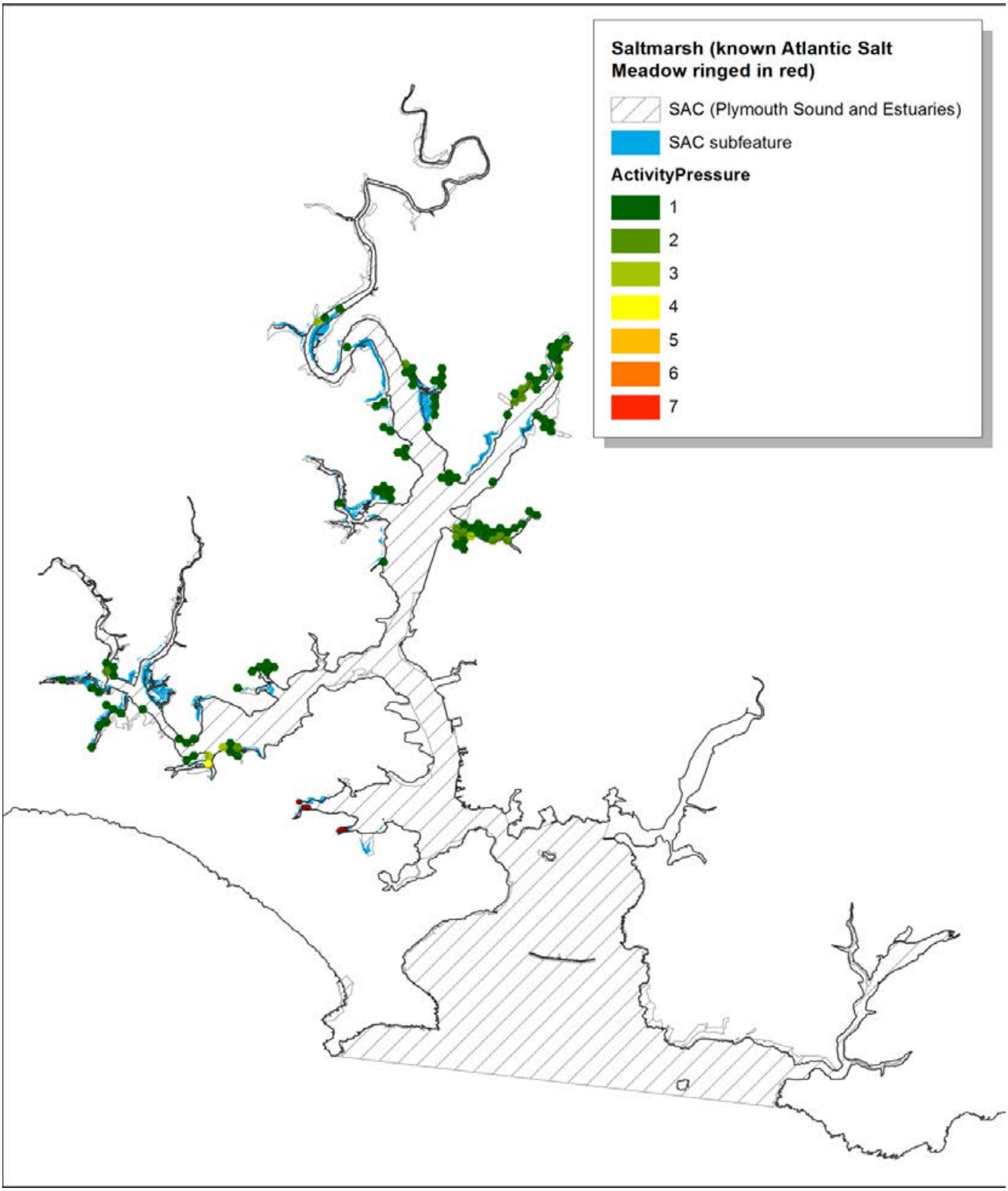
Saltmarsh (known Atlantic Salt Meadow ringed in red)
SAC (Plymouth Sound and Estuaries)
SAC subfeature
ActivityPressure
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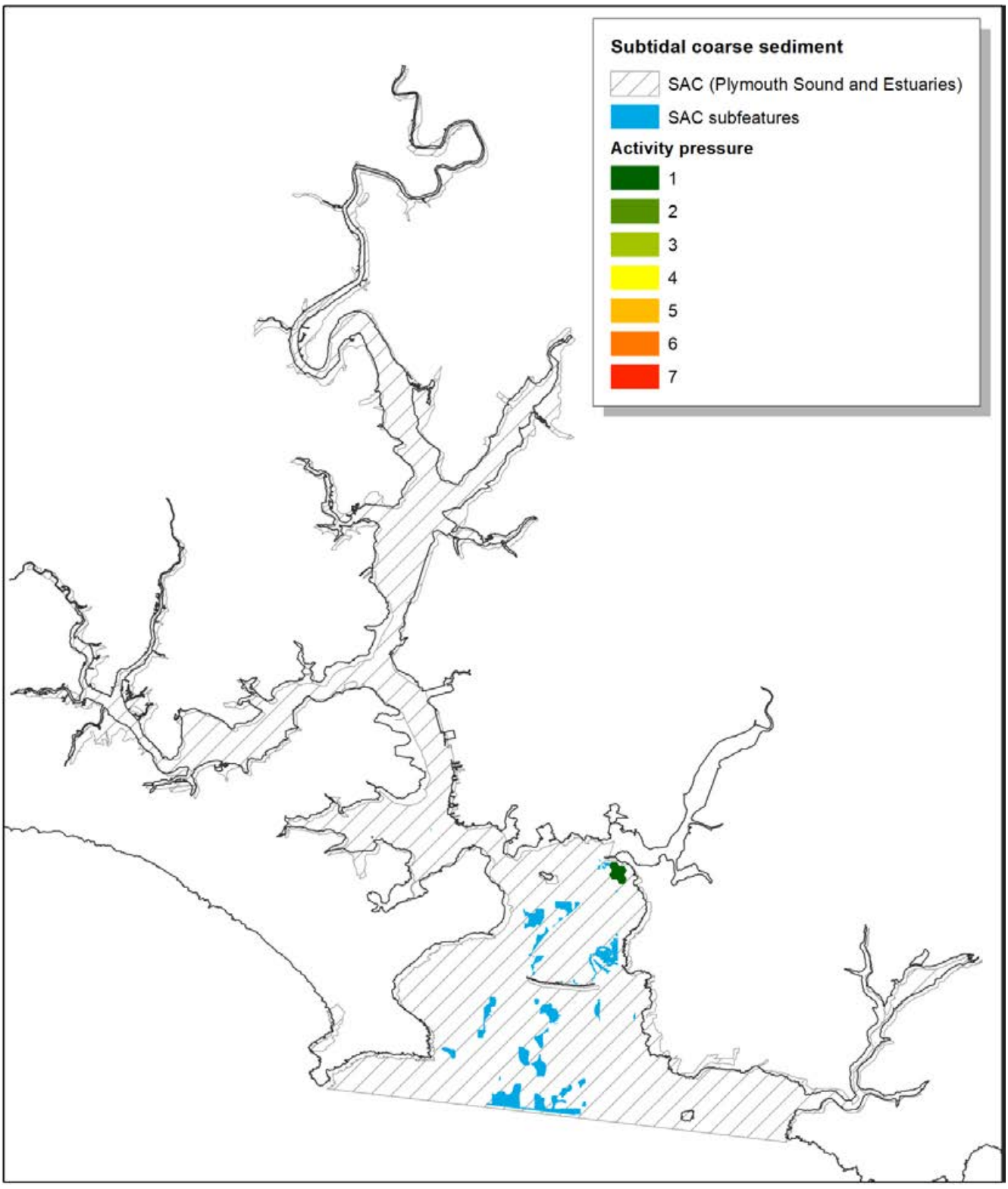
Subtidal coarse sediment
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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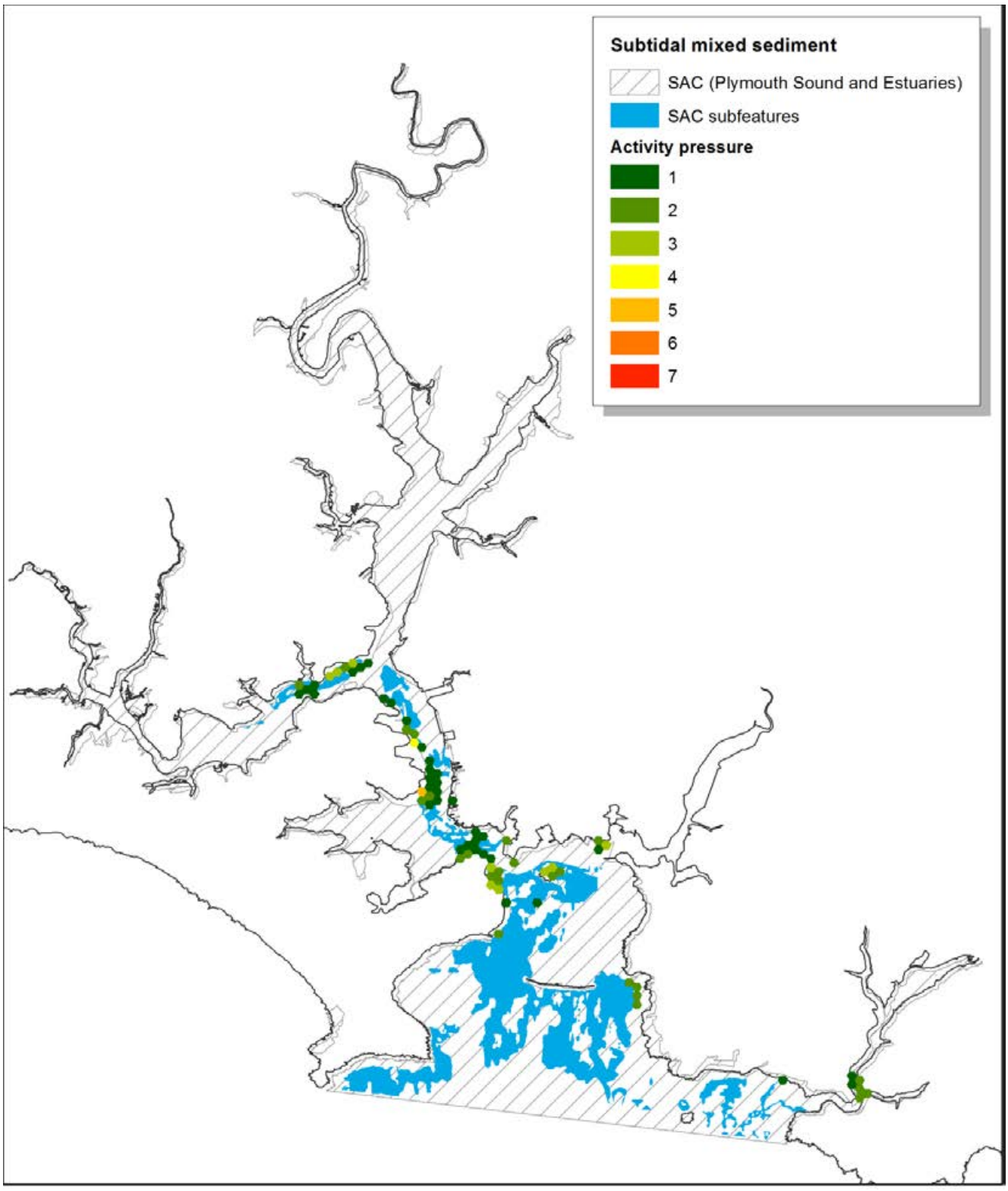
Subtidal mixed sediment
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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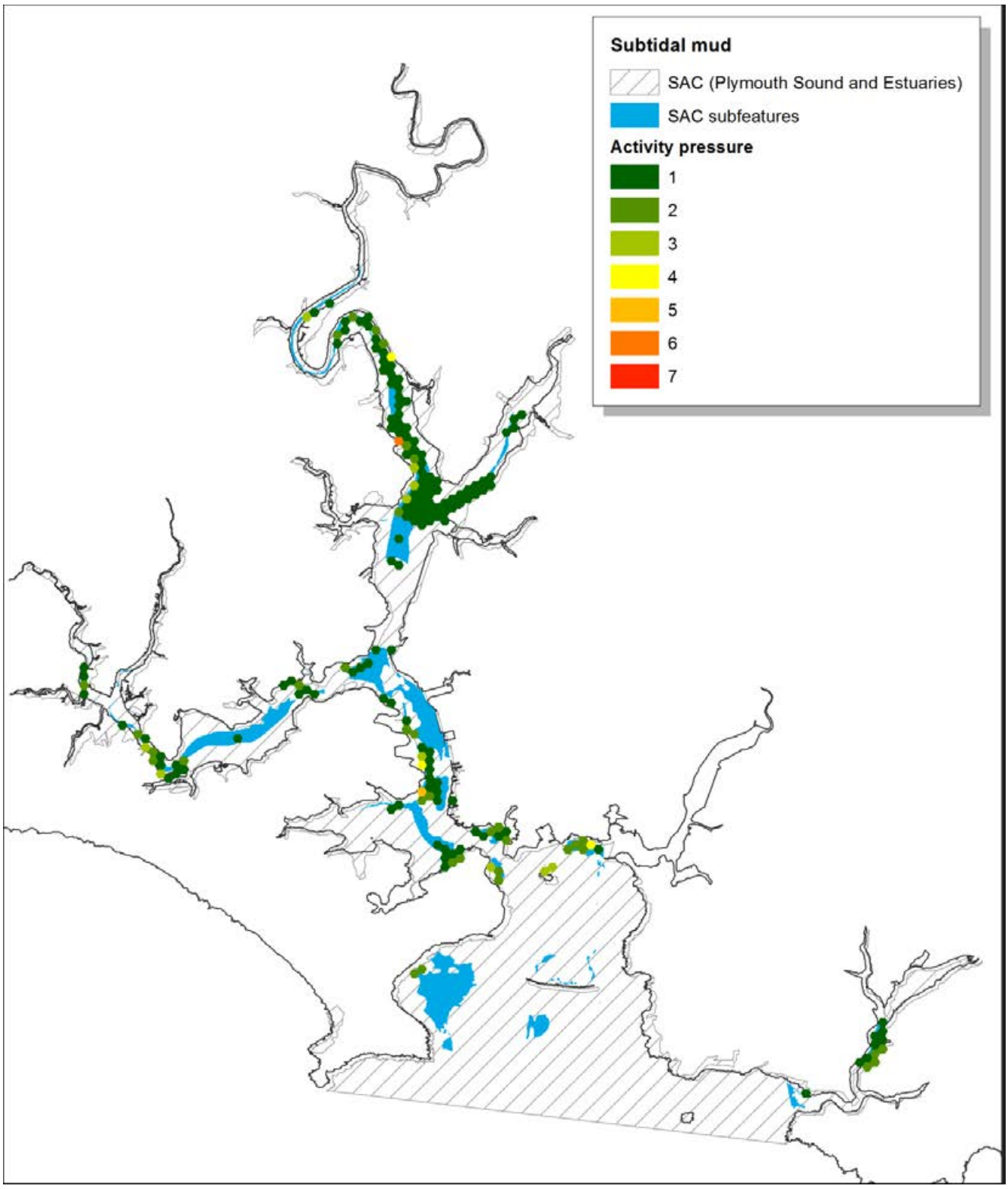
Subtidal mud
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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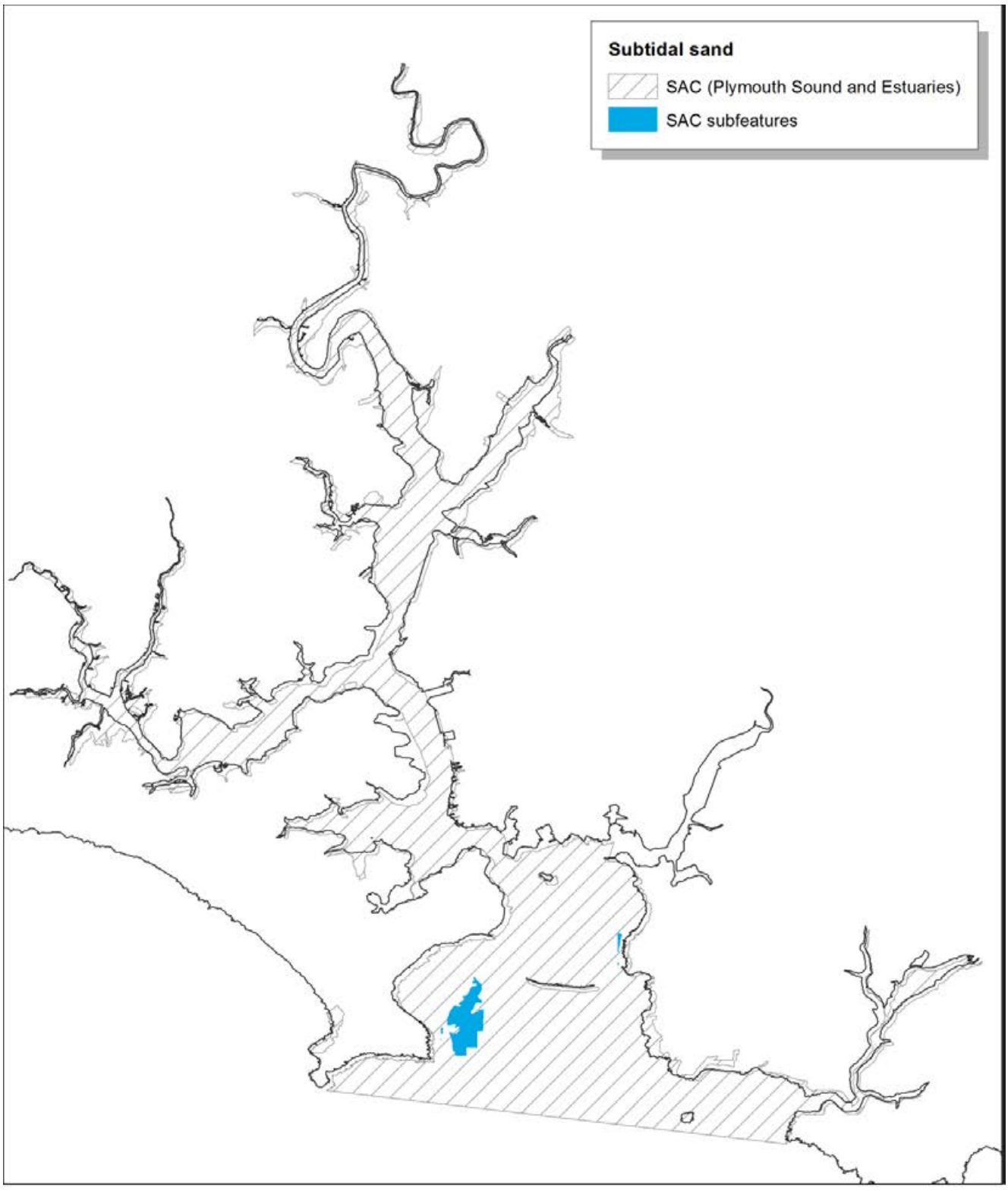
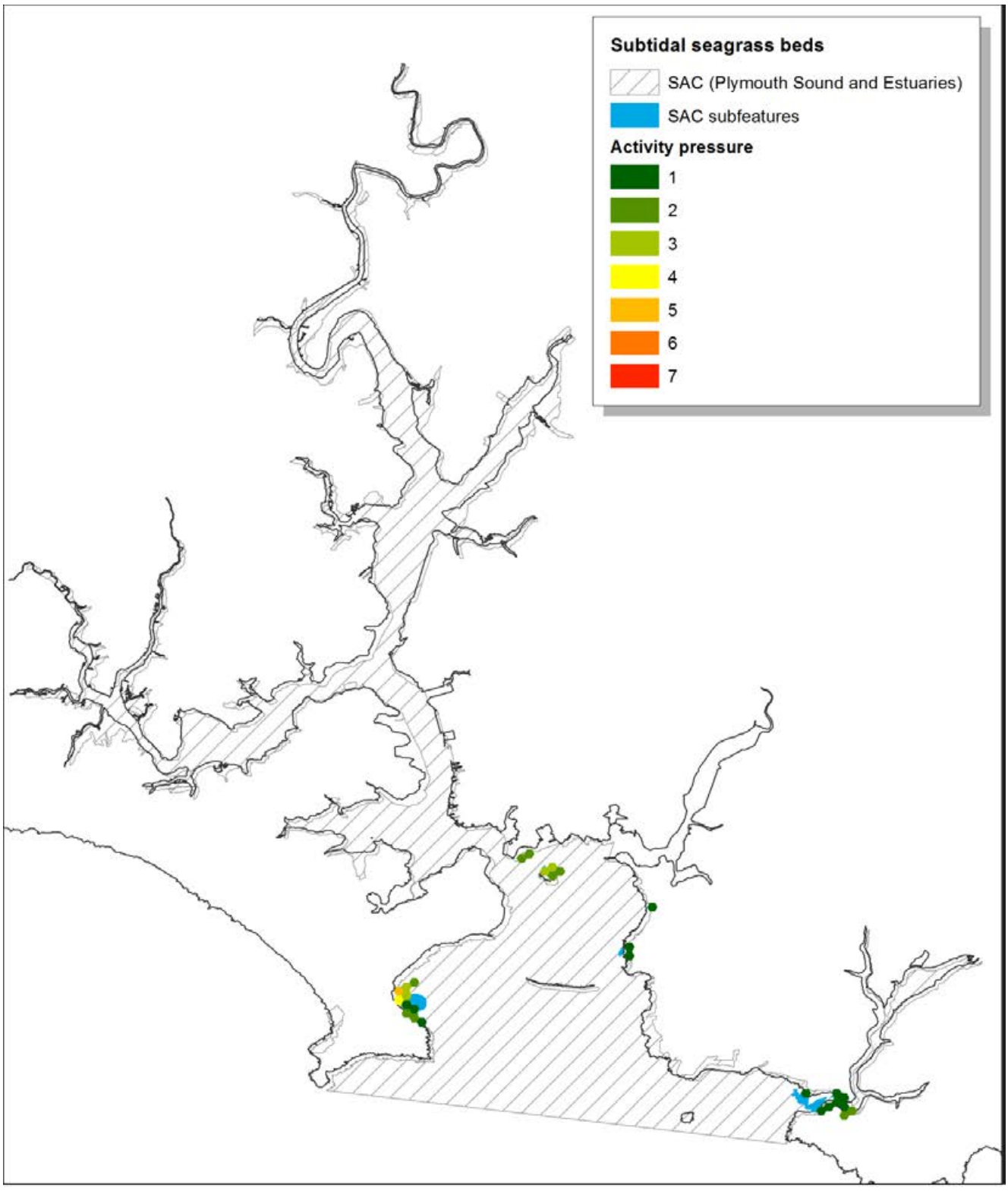

Subtidal sand
SAC (Plymouth Sound and Estuaries)
SAC subfeatures


Subtidal seagrass beds
SAC (Plymouth Sound and Estuaries)
SAC subfeatures
Activity pressure
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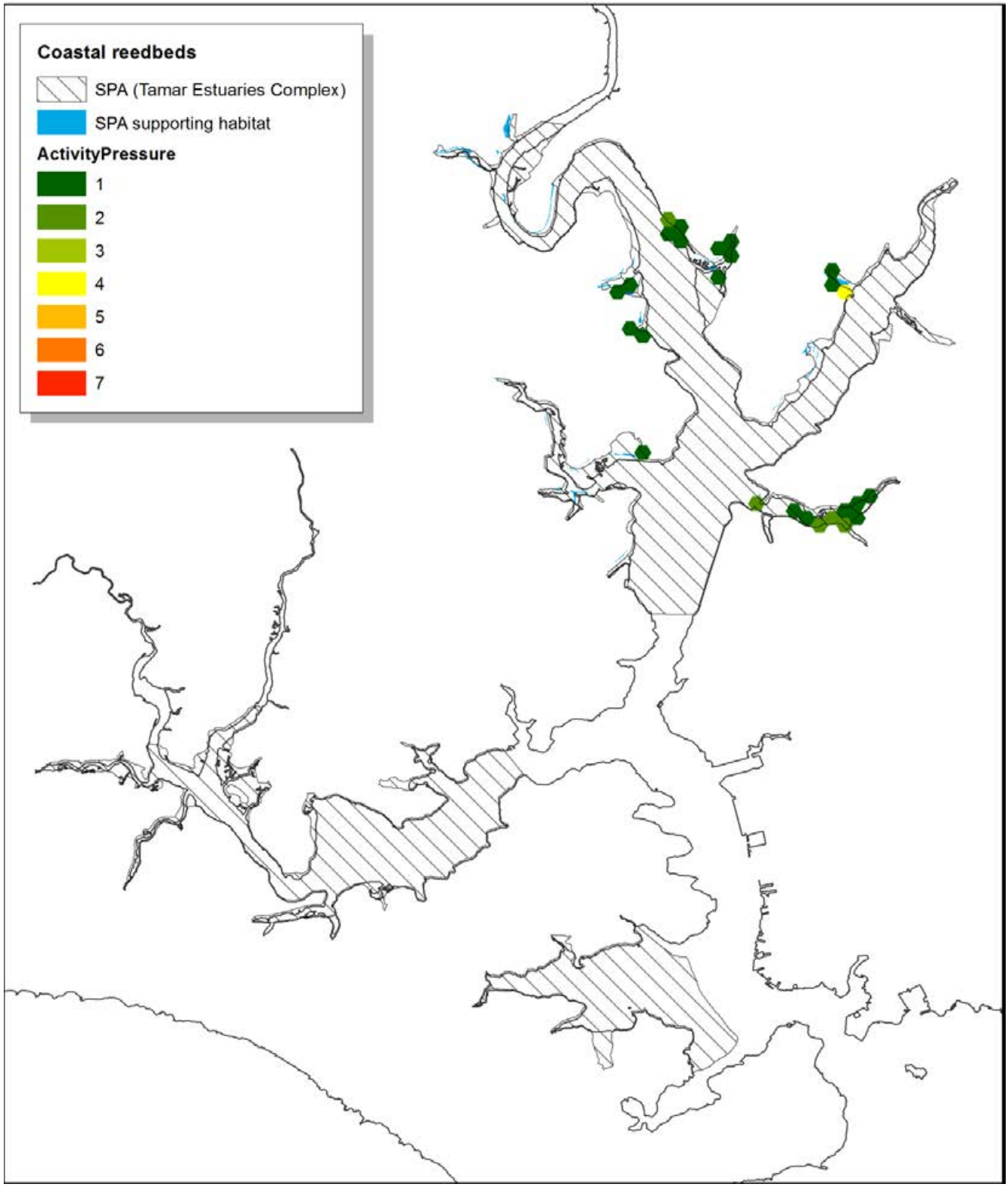
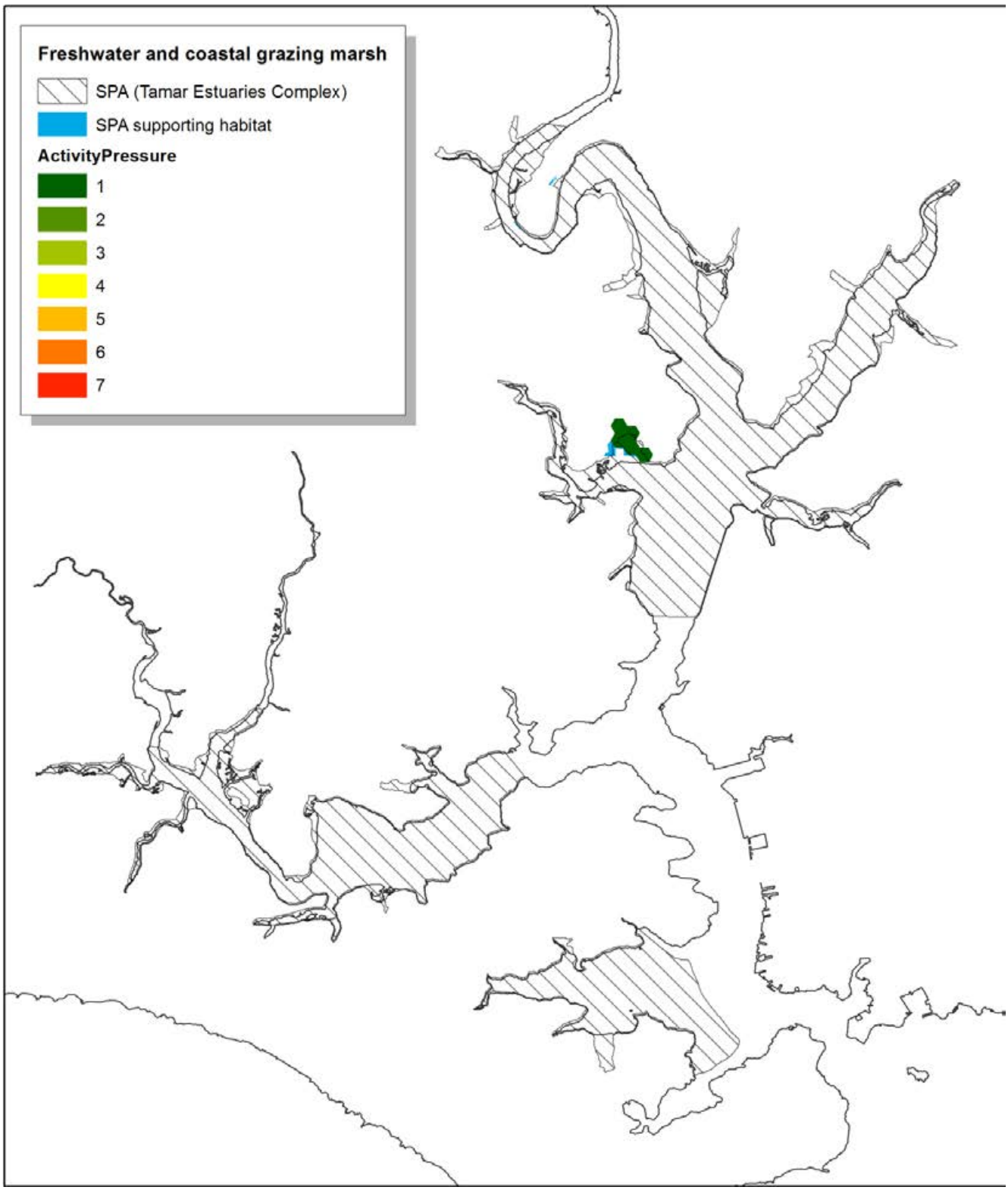
Appendix B. Habitat / Activity interaction maps for the Tamar Estuaries Complex SPA




Freshwater and coastal grazing marsh
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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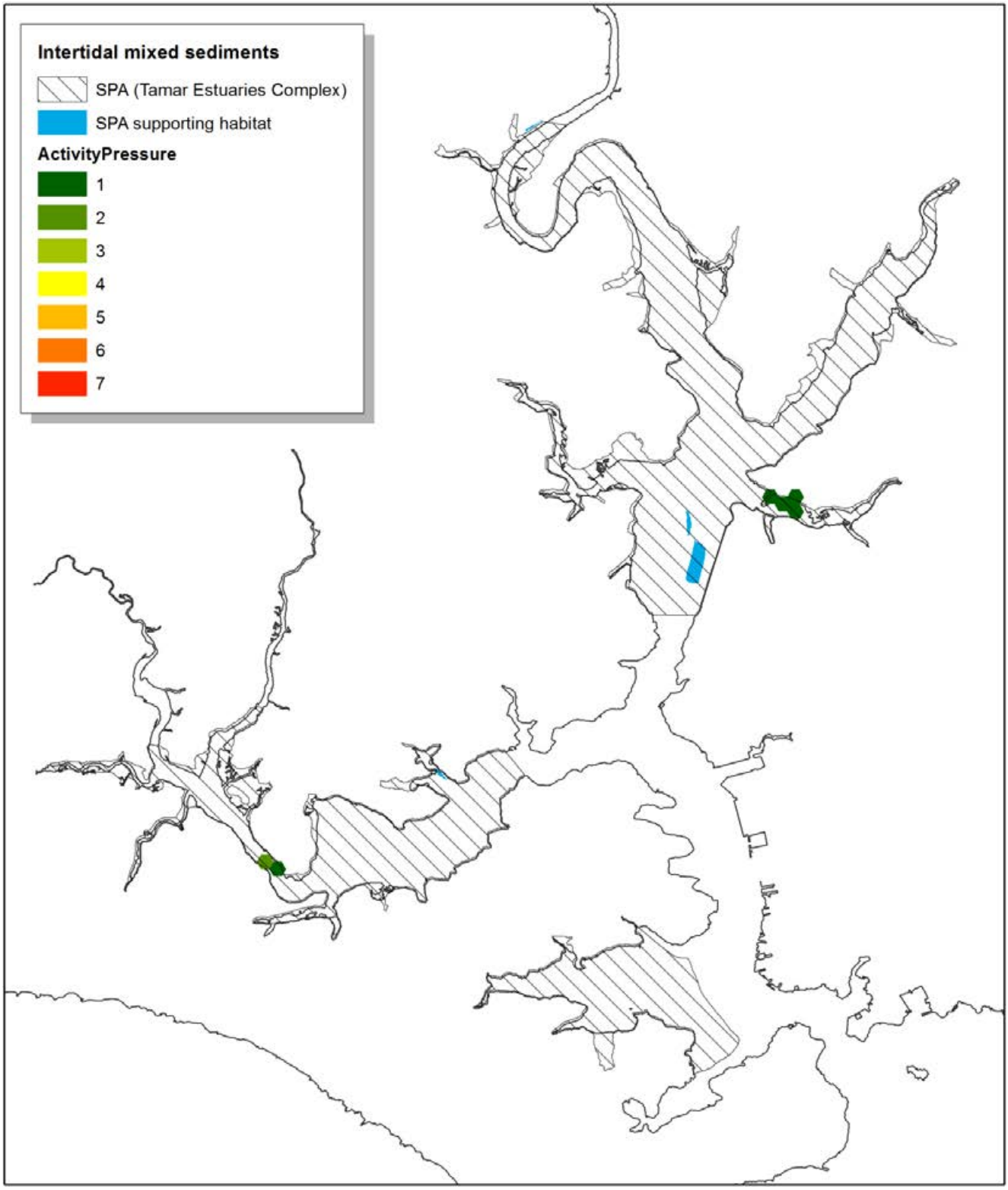
Intertidal mixed sediments
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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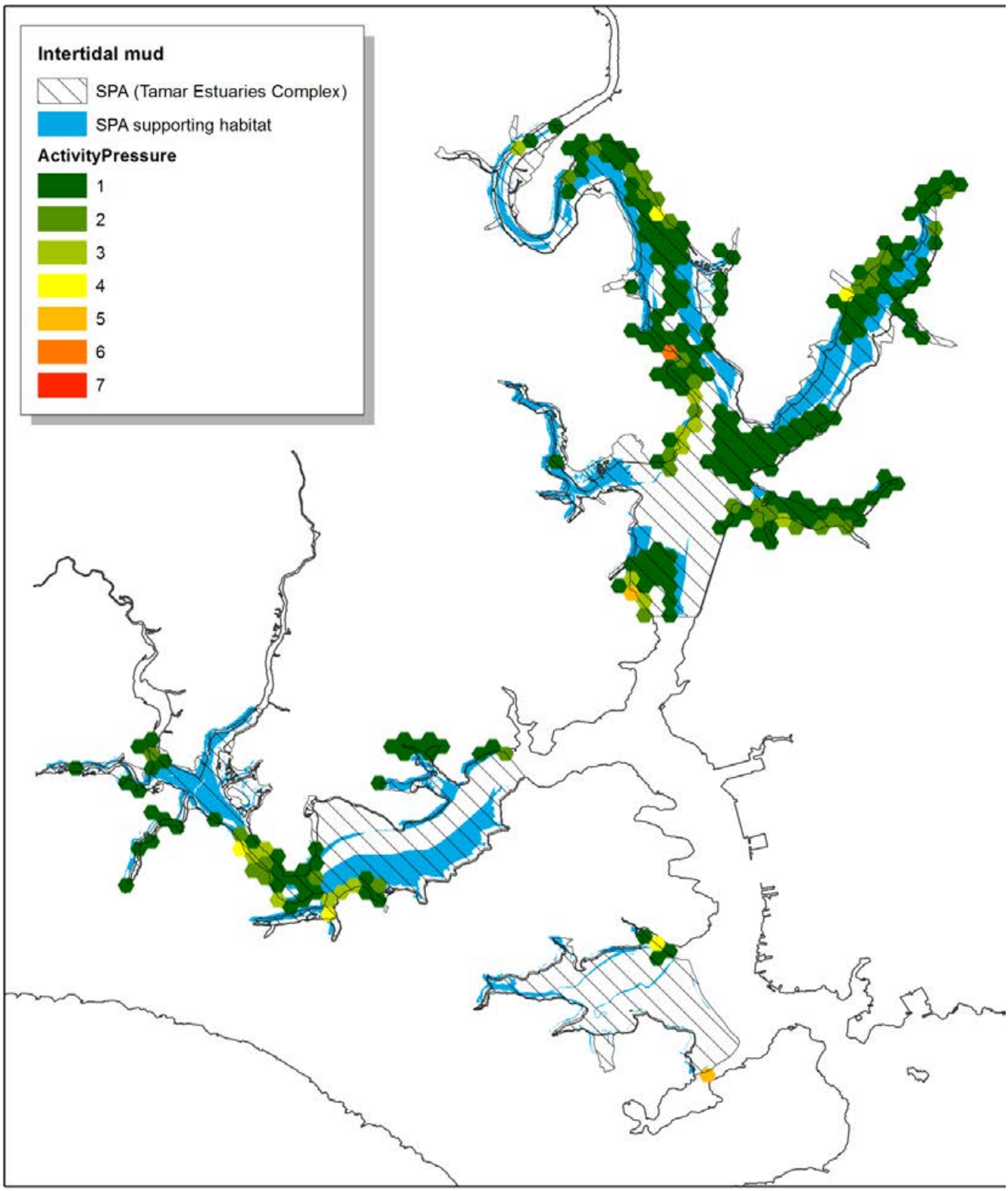
Intertidal mud
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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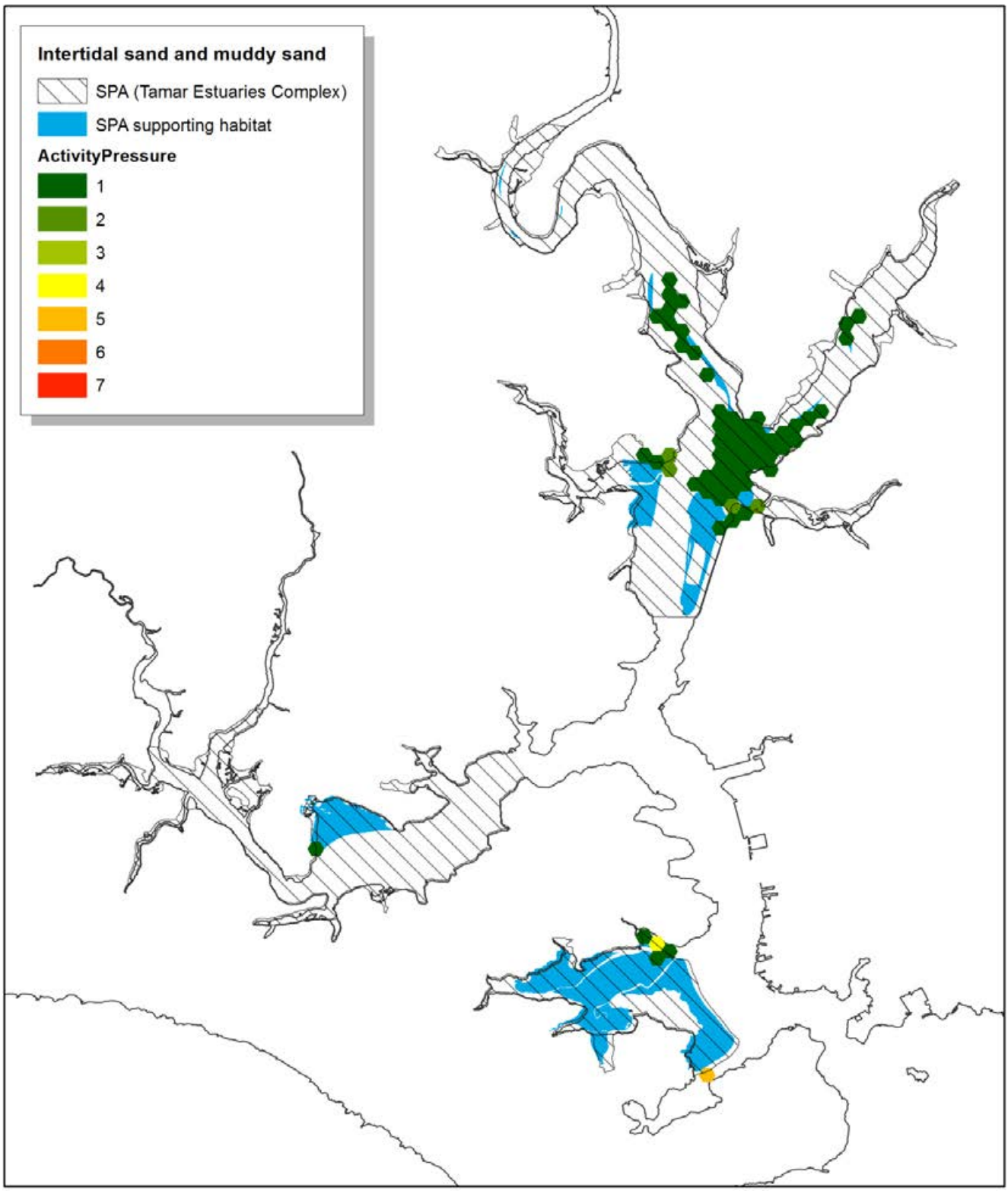
Intertidal sand and muddy sand
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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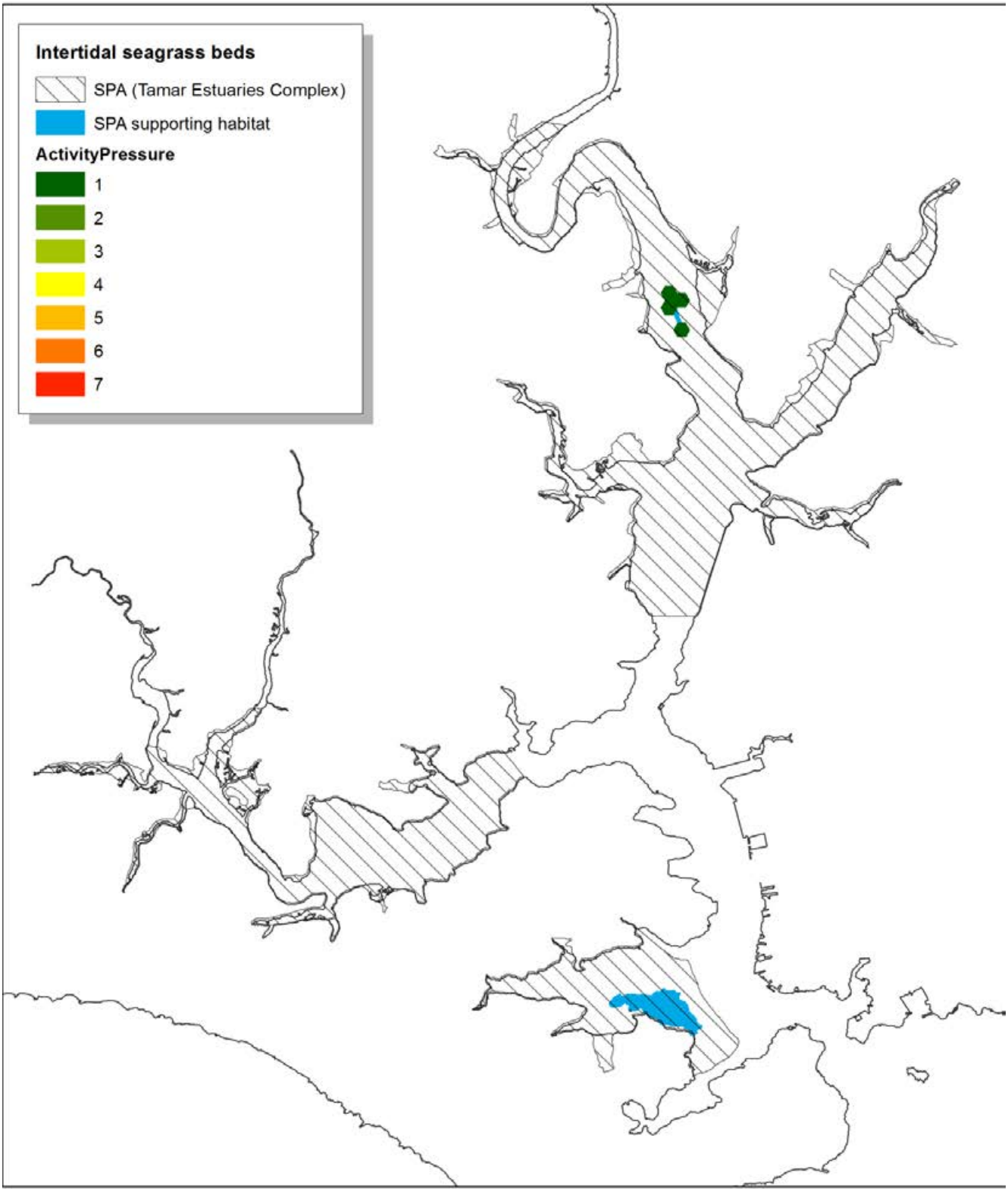
Intertidal seagrass beds
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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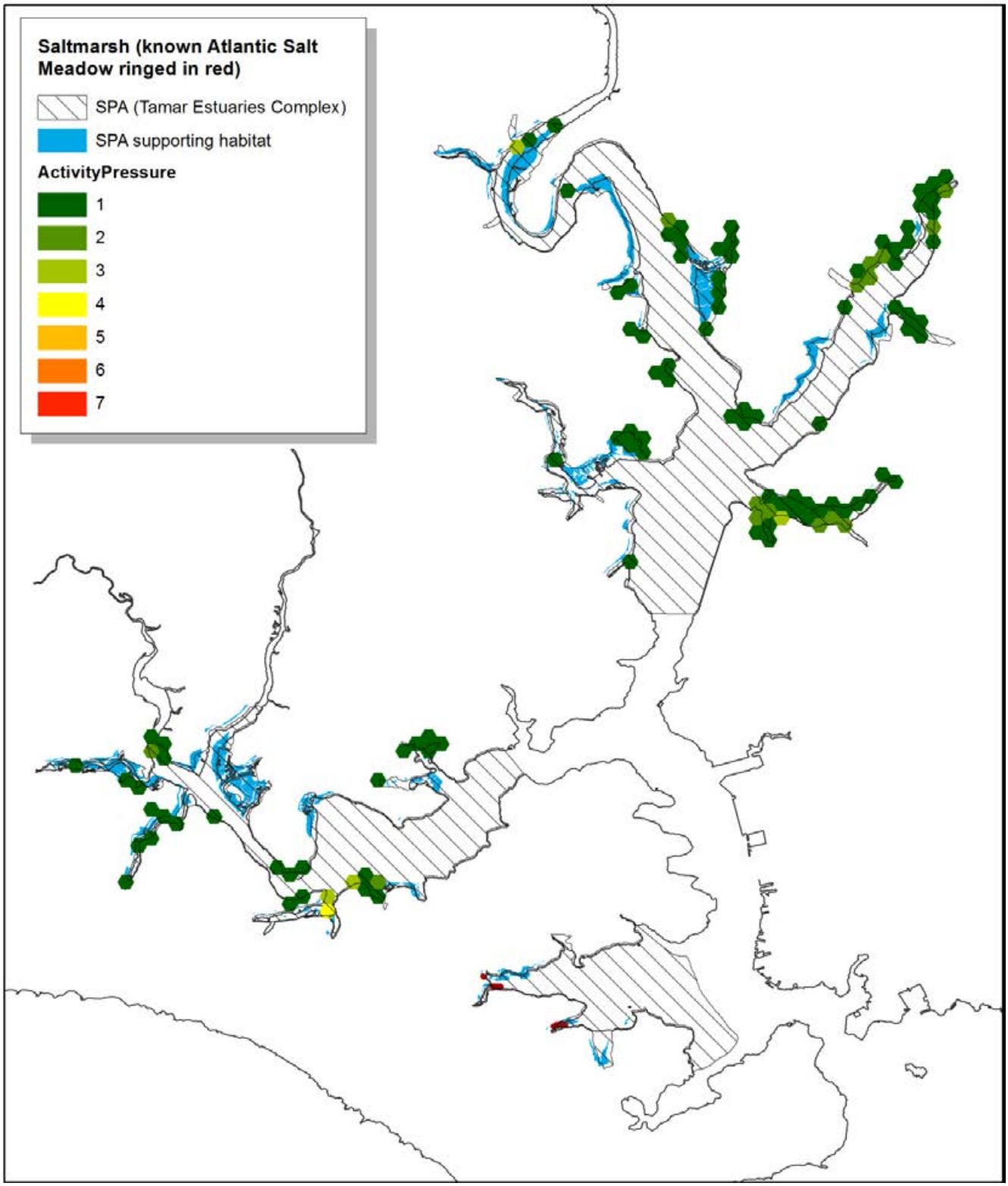
Saltmarsh (known Atlantic Salt Meadow ringed in red)
SPA (Tamar Estuaries Complex)
SPA supporting habitat
ActivityPressure
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Appendix C. Natural England Regulation 33 Advice on Operations sensitivity for all species and habitat sub-features of the Plymouth Sound and Estuaries Special Area of Conservation

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	[illegible] (Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
Footpaths	Horse riding & dog walking	Abrasion/disturbance of the substrate on the surface of the seabed		S			NS	S	S	S	S	S	NA					
		Litter		IE			IE	IE	IE	IE	IE	IE	NA					
		Organic enrichment		S			IE	IE	NS	S	IE	S	NA					
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S			NS	S	S	S	S	S	NA					
		Removal of non-target species										S	NA					
Small craft anchorage / mooring area / marina / yacht anchorage / slipways /	Hovercraft	Abrasion/disturbance of the substrate on the surface of the seabed		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	NS	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Introduction or spread of non-	IE	S		S	IE	S	IE	S	S	S	NA	IE	S	S	S	S

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
on water participation		indigenous species																
		Litter	IE	IE		IE	IE	IE	IE	IE	IE	IE	NA	IE	IE	IE	IE	IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Underwater noise changes	S															
		Visual disturbance	IE															
Swimming / crab tiling	Leisure (e.g. swimming, rock pooling)	Abrasion/disturbance of the substrate on the surface of the seabed		S			NS	S	S	S	S	S						

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
		Litter		IE			IE	IE	IE	IE	IE	IE						
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S			NS	S	S	S	S	S						
slipways / on water participation	Non-motorised water craft (e.g. kayaks, windsurfing, dinghies)	Abrasion/disturbance of the substrate on the surface of the seabed		S			NS	S	S	S	S	S						
		Introduction or spread of non-indigenous species		S			IE	S	IE	S	S	S						
		Litter		IE			IE	IE	IE	IE	IE	IE						
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S			NS	S	S	S	S	S						
slipways / on water participation	Powerboating or sailing with an engine: launching and recovery, participation	Abrasion/disturbance of the substrate on the surface of the seabed		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	S															

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	[illegible] Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	NS	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Introduction of light											NA					
		Introduction or spread of non-indigenous species	IE	S		S	IE	S	IE	S	S	S	NA	IE	S	S	S	S
		Litter	IE	IE		IE	IE	IE	IE	IE	IE	IE	NA	IE	IE	IE	IE	IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
		Underwater noise changes	S															
		Visual disturbance	IE															
Small craft anchorage / mooring area / marina / yacht anchorage / slipways	Powerboating or sailing with an engine: mooring and/or anchoring	Abrasion/disturbance of the substrate on the surface of the seabed			S	S	NS	S	S	S	S	S		S	S	S	S	S
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE		IE	NS	NS	NS	NS	IE	NS	NS		NS	NS	IE	NS	NS
		Introduction or spread of non-indigenous species	IE		S	S	IE	S	IE	S	S	S		IE	S	S	S	S
		Litter	IE		IE	IE	IE	IE	IE	IE	IE	IE		IE	IE	IE	IE	IE
		Organic enrichment			S	S	IE	IE	NS	S	IE	S		S	IE	S	S	S
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			S	S	NS	S	S	S	S	S		S	S	S	S	S
		Physical change (to another seabed type)			S	S	S	S	S	S	S	S		S	S	S	S	S

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE		IE	NS	IE	NS	NS	IE	NS	NS		NS	NS	IE	NS	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE		IE	NS	IE	NS	NS	IE	NS	NS		NS	NS	IE	NS	NS
		Visual disturbance	IE															
slipways / on water participation	Sailing without an engine: launching and recovery, participation	Abrasion/disturbance of the substrate on the surface of the seabed		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	S															
		Introduction of light											NA					
		Introduction or spread of non-	IE	S		S	IE	S	IE	S	S	S	NA	IE	S	S	S	S

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
		indigenous species																
		Litter	IE	IE		IE	IE	IE	IE	IE	IE	IE	NA	IE	IE	IE	IE	IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion		S		S	NS	S	S	S	S	S	NA	S	S	S	S	S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	NS		NS	IE	NS	NS	IE	NS	NS	NA	NS	NS	IE	NS	NS
Small craft anchorage / mooring area / marina / yacht	Sailing without an engine: mooring and/or anchoring	Abrasion/disturbance of the substrate on the surface of the seabed			S	S	NS	S	S	S	S	S		S	S	S	S	S
		Introduction or spread of non-indigenous species	IE		S	S	IE	S	IE	S	S	S		IE	S	S	S	S
		Litter	IE		IE	IE	IE	IE	IE	IE	IE	IE		IE	IE	IE	IE	IE

Council Activity	NE activity	Pressure	Allis shad (Alosa alosa)	Puccinellietalia maritimae)	Circalittoral rock	Infralittoral rock	Intertidal coarse sediment	Intertidal mixed sediments	Intertidal mud	Intertidal rock	Intertidal sand and muddy sand	Intertidal seagrass beds	Shore dock (Rumex rupestris)	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal mud	Subtidal sand	Subtidal seagrass beds
anchorage		Organic enrichment			S	S	IE	IE	NS	S	IE	S		S	IE	S	S	S
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			S	S	NS	S	S	S	S	S		S	S	S	S	S
		Physical change (to another seabed type)			S	S	S	S	S	S	S	S		S	S	S	S	S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE		IE	NS	IE	NS	NS	IE	NS	NS		NS	NS	IE	NS	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE		IE	NS	IE	NS	NS	IE	NS	NS		NS	NS	IE	NS	NS
		Visual disturbance	IE															

Appendix D. Natural England Regulation 33 Advice on Operations sensitivity for all species and habitat sub-features of the Tamar Estuaries Complex SPA.

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
Footpaths	Horse riding & dog walking	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed			NA	N	NA	S	S	S	S		S
		Litter	IE	IE	NA	N	NA	IE	IE	IE	IE		IE
		Organic enrichment			NA	N	NA	IE	NS	IE	S		S
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			NA	N	NA	S	S	S	S		S
		Removal of non-target species	S	S	NA	N	NA				S		

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Visual disturbance	S	S									
Small craft anchorage / mooring area / marina / yacht anchorage / slipways / on water participation	Hovercraft	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed			NA	N		S	S	S	S		S
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE	NA	N		NS	NS	NS	NS	S	NS
		Introduction or spread of non-indigenous species	NS	NS	NA	N		S	IE	S	S	S	S
		Litter	IE	IE	NA	N		IE	IE	IE	IE	S	IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			NA	N		S	S	S	S		S

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE	NA	N		NS	NS	NS	NS	S	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	S	S	NA	N		NS	NS	NS	NS	S	NS
		Underwater noise changes										S	
		Visual disturbance	S	S								S	
Swimming / crab tiling	Leisure (e.g. swimming, rock pooling)	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed						S	S	S	S		S
		Litter	IE	IE				IE	IE	IE	IE		IE

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion						S	S	S	S		S
		Visual disturbance	S	S									
slipways / on water participation	Non-motorised water craft (e.g. kayaks, windsurfing, dinghies)	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed						S	S	S	S		S
		Introduction or spread of non-indigenous species	NS	NS				S	IE	S	S		S
		Litter	IE	IE				IE	IE	IE	IE		IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion						S	S	S	S		S
		Visual disturbance	S	S									
slipways / on water	Powerboating or	Above water noise	S	S									

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
participation	sailing with an engine: launching and recovery, participation	Abrasion/disturbance of the substrate on the surface of the seabed			NA	N		S	S	S	S		S
		Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)											
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE	NA	N		NS	NS	NS	NS	S	NS
		Introduction of light	S	S	NA	N						S	
		Introduction or spread of non-indigenous species	NS	NS	NA	N		S	IE	S	S	S	S
		Litter	IE	IE	NA	N		IE	IE	IE	IE	S	IE

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			NA	N		S	S	S	S		S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE	NA	N		NS	NS	NS	NS	S	NS
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	S	S	NA	N		NS	NS	NS	NS	S	NS
		Underwater noise changes										S	
		Visual disturbance	S	S								S	
Small craft anchorage /	Powerboating or	Above water noise	S	S									

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
mooring area / marina / yacht anchorage / slipways	sailing with an engine: mooring and/or anchoring	Abrasion/disturbance of the substrate on the surface of the seabed						S	S	S	S		
		Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE				NS	NS	NS	NS	S	
		Introduction of light	S	S								S	
		Introduction or spread of non-indigenous species	NS	NS				S	IE	S	S	S	
		Litter	IE	IE				IE	IE	IE	IE	S	
		Organic enrichment						IE	NS	IE	S	S	
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion						S	S	S	S		
		Physical change (to another seabed type)						S	S	S	S	S	

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE				NS	NS	NS	NS	S	
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	S	S				NS	NS	NS	NS	S	
		Visual disturbance	S	S								S	
slipways / on water participation	Sailing without an engine: launching and recovery, participation	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed			NA	N		S	S	S	S		S
		Collision BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats,											

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		machinery, and structures)											
		Introduction of light	S	S	NA	N						S	
		Introduction or spread of non-indigenous species	NS	NS	NA	N		S	IE	S	S	S	S
		Litter	IE	IE	NA	N		IE	IE	IE	IE	S	IE
		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion			NA	N		S	S	S	S		S
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE	NA	N		NS	NS	NS	NS	S	NS

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	S	S	NA	N		NS	NS	NS	NS	S	NS
		Visual disturbance	S	S								S	
Small craft anchorage / mooring area / marina / yacht anchorage	Sailing without an engine: mooring and/or anchoring	Above water noise	S	S									
		Abrasion/disturbance of the substrate on the surface of the seabed						S	S	S	S		
		Introduction of light	S	S								S	
		Introduction or spread of non-indigenous species	NS	NS				S	IE	S	S	S	
		Litter	IE	IE				IE	IE	IE	IE	S	
		Organic enrichment						IE	NS	IE	S	S	
		Penetration and/or disturbance of the substrate below the surface of the seabed, including						S	S	S	S		

Council Activity	NE activity	Pressure	Non-breeding Avocet (*Recurvirostra avosetta*)	Non-breeding Little egret (*Egretta garzetta*)	Annual vegetation of drift lines	Coastal reedbeds	Freshwater and coastal grazing marsh	Intertidal mixed sediments	Intertidal mud	Intertidal sand and muddy sand	Intertidal seagrass beds	Water column	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		abrasion											
		Physical change (to another seabed type)						S	S	S	S	S	
		Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC.	IE	IE				NS	NS	NS	NS	S	
		Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC.	S	S				NS	NS	NS	NS	S	
		Visual disturbance	S	S								S	

Section 2. EMS Recreation Study Document 03. Survey of recreational use within the Plymouth Sound and Estuaries European Marine Site.

Olivia Langmead, Heidi Tillin, Charly Griffiths, Eliane Bastos, Hannah Milburn & Matt Arnold

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Executive Summary

The Plymouth Sound and Estuaries EMS is a complex site of marine inlets and larger bays which provides conditions for a number of coastal and marine recreational activities. The proximity of the site to the city of Plymouth provides recreational users with infrastructure and many access points to undertake a number of land and water based recreational activities including coastal walking, sailing, rowing, swimming, kayaking, sea angling and rock-pooling.

Recreational activities can adversely affect habitats and disturb species, through a range of pressures arising from activities such as noise, abrasion and penetration of the seabed, litter, organic enrichment, contamination, physical change to other seabed types and introduction of light. It is therefore important to balance use of the site for recreational purposes while maintaining the conservation objectives for the designated site features.

Tamar Estuaries Consultative Forum (TECF), as the estuary management partnership, is responsible for management of the EMS and must have regard to direct and indirect effects on all designated features. To date, no comprehensive survey of recreational use of the site has been undertaken, representing a gap in our understanding of the use of the site and the potential for interactions with protected features. Thus this survey of recreational activities was designed to provide evidence to support the management of the site using three complementary methods: on-site visitor surveys, targeted workshops for key recreational activities and online questionnaires. This work builds on two previous reports commissioned by TECF; an initial scoping report which identified the sensitivity of the European Marine Site features and an interim report providing the results of the spring on-site survey season.

The combined reach of the three approaches was as follows: a total of 644 on-site surveys were conducted across 19 sites, in each of the four seasons and this constituted a total of 314 volunteer survey hours. A total of 4222 people were recorded entering the site accompanied by 422 dogs. The interview success rate averaged 60% acceptance across the sites and seasons. The targeted workshops focused on recreational angling (boat and shore based), sailing (dinghy, yacht) and power-boating, sub-aqua diving and paddle-sports (rowing, canoeing / kayaking, stand-up paddle-boarding) and were attended by a total of 35 participants, many of which represented clubs and societies with large memberships. The online survey had a total of 655 responses over the period from 18th November until 3rd January 2017.

What emerged from these three approaches combined was that predominantly recreational users are local to Devon and Cornwall (87% of visitor groups in the on-site survey and 82% on online survey respondents). There were seasonal trends in the data with more non-local visitors in summer as would be expected with tourists visiting the area from further afield.

Terrestrial activities accounted for the majority of visitors surveyed both on-site and online. There were clear preferred locations that emerged from the on-site surveys within the EMS (upper Tamar (Calstock-Cotehele area), the Tavy (Lopwell Dam – Bere Ferrers area), Hoe (Devil's Point to Barbican) and the coast path between Mount Batten and Wembury. The online survey indicated that the Outer

Estuary (management zone M) and the Open Coast (zone P) were most used, with much lower patterns of use in the upper Tamar and Tavy. This pattern likely reflects the main access points to the EMS and proximity to the main population centre of Plymouth.

The most popular marine-based recreational activities were canoeing/kayaking, angling, sailing and swimming and was consistent between the on-site and online surveys. Most activities showed similar distribution and intensity between the approaches used to gather the spatial data, aside from paddle-sports which had contrasting patterns of use between the on-site surveys (showing high intensities of activity in the upper parts of the estuaries (Tamar, Tavy, Yealm), and the targeted workshops and online survey which indicated most activity was going on in the Plymouth Sound. In this specific case, most confidence would be place in the results of the targeted workshop on paddle-sports which was likely most representative of the activity.

As well as providing a picture of what activities are distributed at which locations in the EMS and their seasonality and intensity, an indication on what makes the site attractive to visitors was gained. 'Attractive scenery' and 'Close to home' were consistently the highest scoring responses in both the on-site (26% and 23% of responses) and online surveys (17% and 15%), indicating the strong association for the site by local residents. This was also consistent for SPA sites as well as the wider EMS. This insight into site preferences is also supported by the responses to the question about what factors would lead to an alternative site being chosen. In the on-site survey, 17% of local resident visitor groups stated that no features of another site would make it more attractive to visit over the EMS, and 15% of responses in the online survey, suggesting again, the strong relationship that local visitors have with the EMS. Responses to speculative changes to the site yielded a similar finding in that 54% of local residents stating that none of the suggested changes would alter the amount of time they spent at the site (on-site survey). Again this reiterates the value of the EMS to local users, and their strong site fidelity.

To identify the core visitor area where most of the visitors to the EMS originate a sequence of maps is presented detailing different options for a Zone of Influence (ZoI) around the Plymouth Sound and Estuaries EMS. Using the home postcodes supplied by local resident visitors (resident in Devon or Cornwall) to each site, we calculated the shortest distance by road between their postcode and the site that they visited. Three Zone of Influence scenarios are presented in the report, each is based on a different type of treatment or variable selection of the underlying distance data. For each scenario from the distance data we identified the 3rd quartile point (the point between the middle distance and the maximum distance travelled by visitors). The 3rd quartile point distance separates the closest 75% of visitors from the 25% that travel further. The closest 75% are considered to be the core local visitors.

Three Zone of Influence scenarios were developed to identify core groups of visitors based on the distance travelled by 1) all local visitors weighted by number of visits 2) local visitors that arrive by car or motorbike 3) visitors using all forms of transport that visit once a month or more.

The Zone of Influence based on all visitors with the distances weighted by visit frequency clearly skews the core visitor catchment area much closer to the SAC and SPA (based on buffers of 5.4 and 7

km respectively). The other ZoI options presented drew larger buffers around the EMS (12.3-9.4 for the SAC and 12.1-8.7 km for the SPA). The smaller, distance weighted buffer may be considered to accurately reflect that the majority of vistis to the EMS are by people that live locally and visit frequently. However, as 50% of site survey respondents originate outside of this boundary and account for 25% of visits (wthin the ZoI analysis) it could be considered that this boundary is relatively small.

This study provides a snapshot of the patterns of recreational use of the EMS. Three approaches were used in combination to ensure that the most comprehensive picture of recreational use was obtained, each method contributing a different aspect to the overall picture. However there are limitations to the study as a whole, mostly relating to the use of volunteer surveyors (e.g. gaps in coverage and uneven effort), but also to the external factors that predict visit rates (e.g. weather, tides, holidays).

This study comprises the most comprehensive survey of recreational use of the Plymouth Sound and Estuaries EMS to date and has provided detailed information about recreational activities and recreational users of the site. Future work that needs to be done in order to build on this understanding and identify where management needs to be focussed in relation to the conservation objectives of the site would comprise the sensitivity assessment of the site features against the pressures that arise from the distribution and intensity of recreational activities shown here.

6 Introduction

6.1 Plymouth Sound and Estuaries European Marine Site

The Plymouth Sound and Estuaries European Marine Site (EMS) consists of the Plymouth Sound and Estuaries Special Area of Conservation (SAC), and the Tamar Estuaries Complex Special Protection Area (SPA) (see Figure 1), and is designated for those habitat and species features listed in Table 1 and Table 2**.**

Figure 10. The Plymouth Sound and Estuaries European Marine Site, incorporating the Plymouth Sound and Estuaries Special Area of Conservation (SAC), and the Tamar Estuaries Complex Special Protection Area (SPA)

Table 7. Designated Features of the Plymouth Sound and Estuaries SAC

Designation Type	Feature	Subfeature
SAC Annex I habitat	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	
	Estuaries	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
		Circalittoral rock
		Infralittoral rock
		Intertidal mixed sediments
		Intertidal mud
		Intertidal rock
		Intertidal seagrass beds
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
	Large shallow inlets and bays	Circalittoral rock
		Infralittoral rock
		Intertidal rock
		Subtidal coarse sediment
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
	Mudflats and sandflats not covered by seawater at low tide	Intertidal coarse sediment
		Intertidal mixed sediments
		Intertidal mud
		Intertidal sand and muddy sand
		Intertidal seagrass beds
	Reefs	Circalittoral rock
		Infralittoral rock
		Intertidal rock
	Sandbanks which are slightly covered by sea water all the time	Subtidal coarse sediment
		Subtidal mixed sediments
		Subtidal mud
		Subtidal sand
		Subtidal seagrass beds
SAC Annex II species	Allis shad (*Alosa alosa*)	
	Shore dock (*Rumex rupestris*)	

Table 8. Designated Features of the Tamar Estuaries Complex SPA

Designation Type	Feature	Subfeature
SPA Bird features	Non-breeding Avocet (*Recurvirostra avosetta*)	
	Non-breeding Little egret (*Egretta garzetta*)	
SPA Supporting habitat	Annual vegetation of drift lines	
	Coastal reedbeds	
	Freshwater and coastal grazing marsh	
	Intertidal mixed sediments	
	Intertidal mud	
	Intertidal sand and muddy sand	
	Intertidal seagrass beds	
	Water column	
	Saltmarsh	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

6.2 Conservation features and impacts from recreation

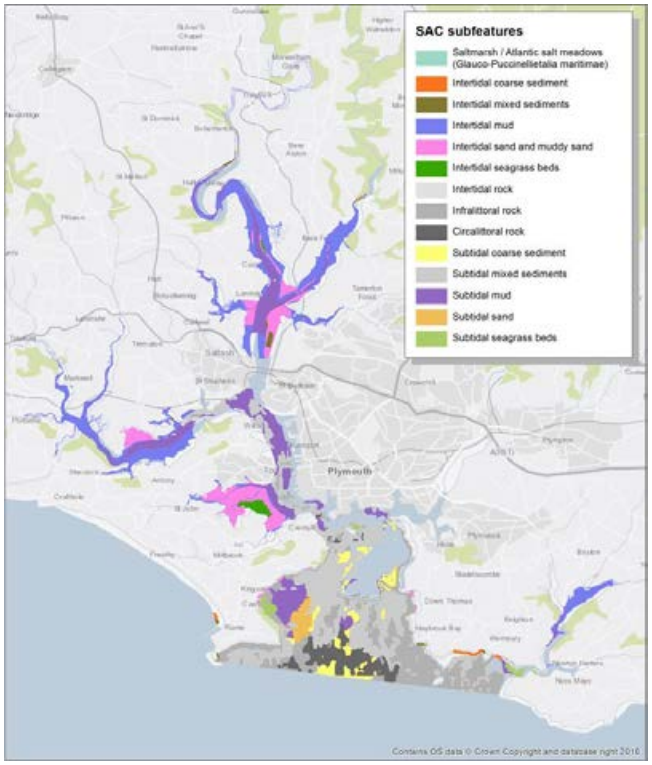
The Plymouth Sound and Estuaries EMS is a complex site of marine inlets and larger bays which provides conditions for a number of coastal and marine recreational activities. The proximity of the site to the city of Plymouth provides recreational users with infrastructure and many access points to undertake a number of land and water based recreational activities including sailing, rowing, swimming, coastal walking, kayaking, sea angling and rock-pooling.

Recreational activities can adversely affect habitats and disturb species, through a range of pressures defined in the Advice on Operations guidance produced by Natural England. Relevant pressure pathways arising from activities include noise, abrasion / penetration of the seabed, litter, organic enrichment, contamination (synthetic compounds / organo - metal / hydrocarbon / PAH), spread of non-indigenous species; physical change (to other seabed types) and introduction of light. It is therefore imperative to balance use of the site for recreational purposes while maintaining the conservation objectives for the designated site features.

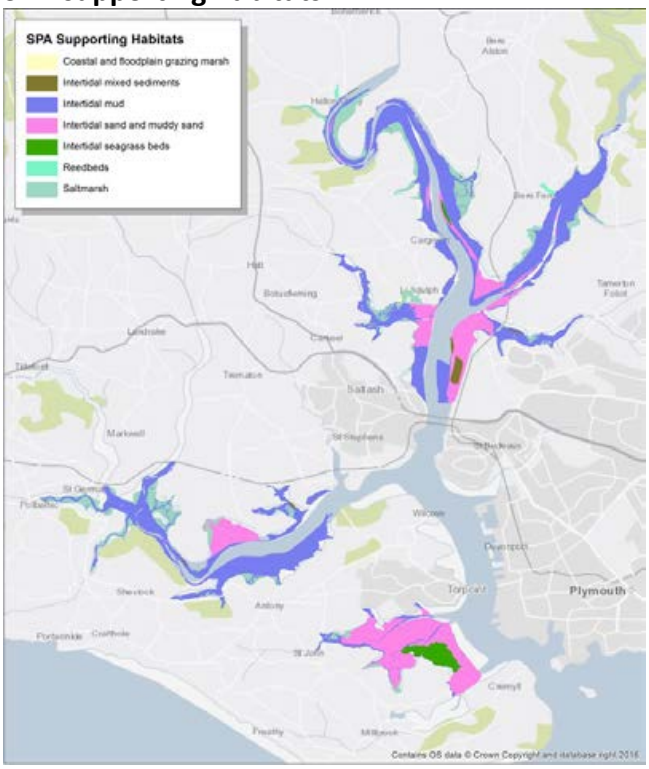
7 Progression of the assessment of recreational activities

An initial scoping study was undertaken (Griffiths et al., 2016a, Section 1 of this report); this provided the context for the current study by identifying potential areas for interaction between designated features of the SAC and SPA and recreation (Griffiths et al. 2016a). This was done by mapping available data for feature distribution (and abundance in the case of the protected bird species in the SPA) within the EMS, and overlaying these maps with a recreation intensity layer (Figure 11). This layer was constructed by aggregating 1) the number of different recreational activities, and 2) infrastructure that would permit access for recreational users, within a 200m grid cell (recreational layers used included, car parks, slipways, public footpaths within 2km of the coastline, mooring areas, crab tiling, high speed boating areas, marinas, yacht anchorages and swimming areas) (Figure 11).

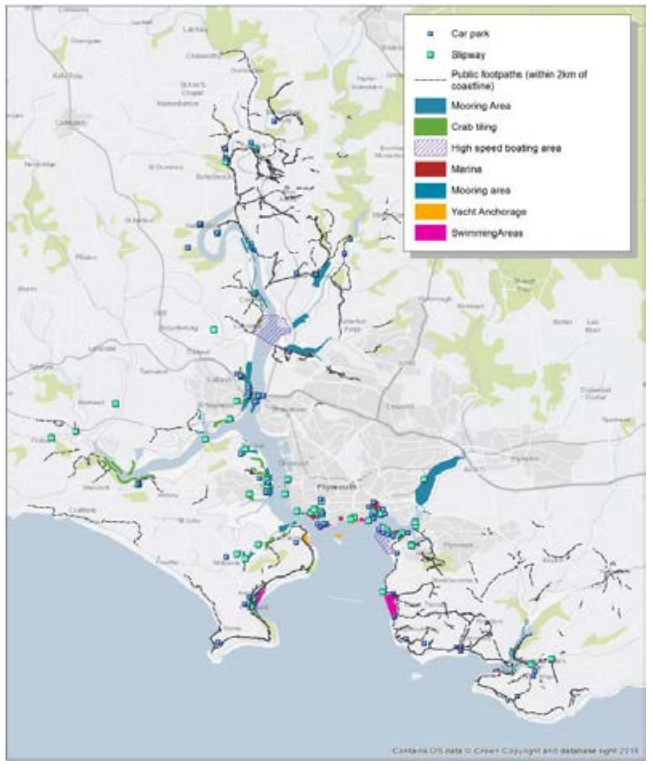
SAC subfeatures



SPA supporting habitats



Recreational activities and infrastructure



Recreation activity intensity layer

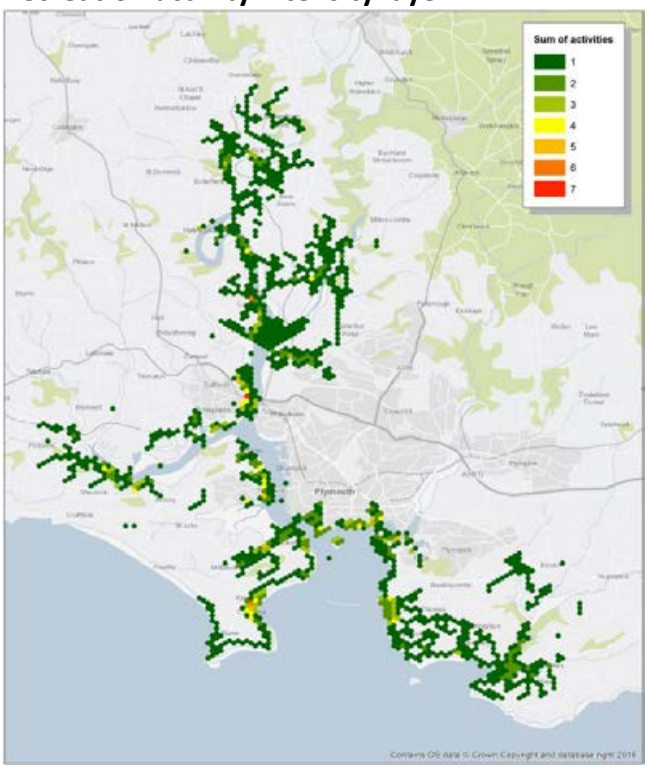
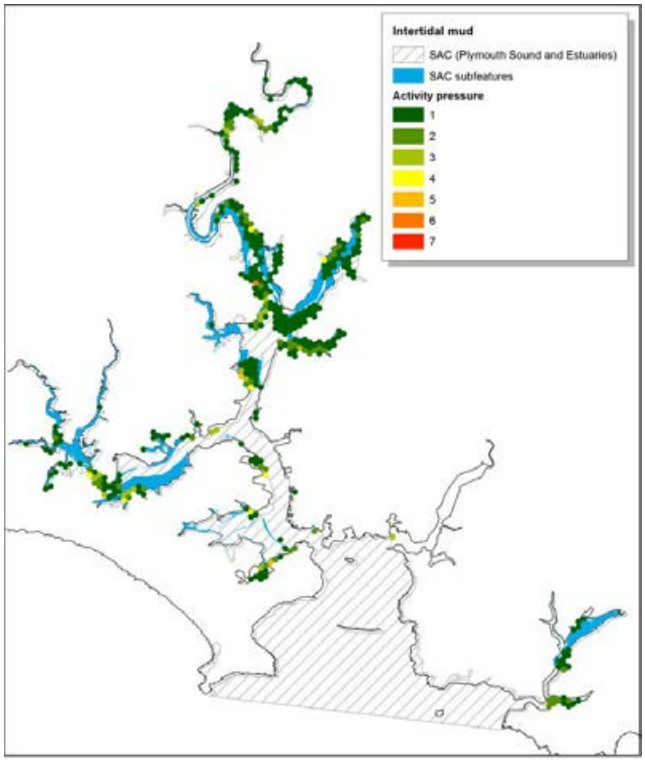


Figure 11. Distribution of SAC subfeatures, SPA supporting habitat, location of recreation activities and infrastructure and the recreation activity layer (constructed from aggregating the number of activities per cell as an indication of intensity).

The interaction between the number of recreation activities and habitat features within the EMS were examined by 1) mapping both layers to visually identify key areas of interaction (Figure 12); and 2) summarising interactions by constructing a matrix of activities and habitats and categorising interactions. Habitats that were sensitive to at least one pressure raised by the activity (using the Advice on Operations for the site provided by Natural England (Natural England 2015)), as were habitats that were not sensitive to any pressures raised by the activities, and where the interaction was not relevant to the sensitivity assessment. Using this method, and proxy data for recreation intensity, all but one of the habitat subfeatures were sensitive to at least one activity (Subtidal course sediment was the exception), and one habitat (Intertidal rock, showed sensitivity to all the activities/proxies) (Griffiths et al. 2016a). SAC species (*Alosa alosa*) is sensitive to collision below water and underwater noise changes (Natural England 2015) indicating interactions with high speed boating areas, marinas, slipways, mooring areas and small craft anchorages. Shore dock (*Rumex rupestris*) is found well above the high water mark; many activities were assessed as Not Relevant (Natural England 2015). The SPA bird features were sensitive to at least one pressure from all activities (Griffiths et al. 2016a), and the supporting habitat features identified sensitivity of the intertidal habitats and saltmarsh to the recreation activities.

Intertidal mud



Avocet sightings

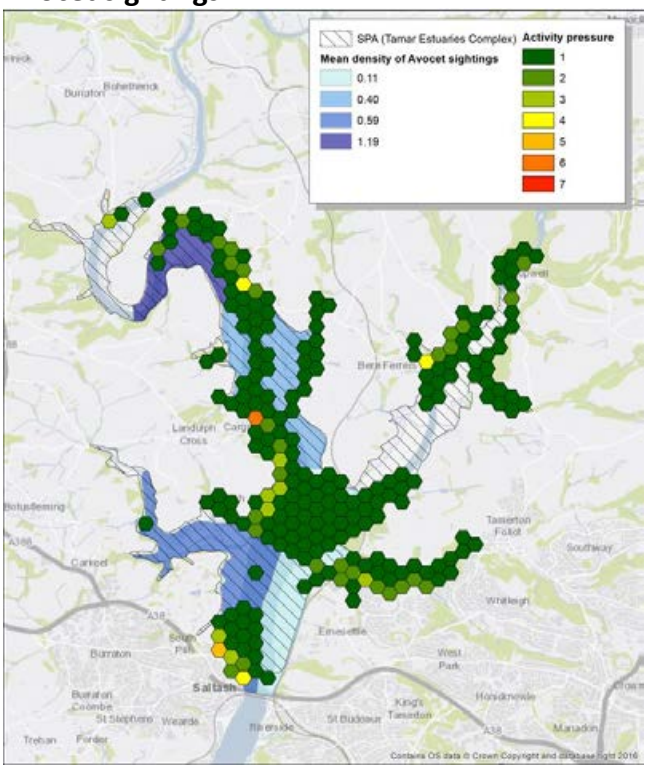


Figure 12. Distribution of intertidal mud habitat across the SAC, and avocet sightings across the SPA, overlain with the recreation intensity layer (number of activities within a 200m grid cell).

However, while this assessment provided some indication of the intensity of recreation in the EMS by using proxy data, it did not capture the actual activities being undertaken (and completely omitted some activities such as diving / snorkelling, sailing areas, recreational angling, bait digging, stand-up paddle-boarding, canoe/kayaking and gig racing), or their distribution and intensity across the EMS.

In addition, using the proxy recreation activity layer, there was no way of assessing a seasonal pattern, which is important given that the bird features are overwintering populations.

7.1 Aims, objectives and approach

The purpose of the work is to inform the Habitats Regulations Assessment of the local plans for all four local planning authorities in relation to potential impacts on the Plymouth Sound and Tamar Estuaries European Marine Site. This report presents the results of the site based visitor survey, targeted workshops and online questionnaire into recreational activities across the Plymouth Sound and Estuaries European Marine Site.

As the estuary management partnership, TECF is responsible for management of the EMS and must have regard to direct and indirect effects on all designated features. Gathering evidence on site use by recreational visitors is fundamental to achieve a greater understanding of potential impacts and disturbance to the features of conservation importance present within both the Plymouth Sound and Estuaries Special Area of Conservation (hereafter termed 'SAC') and the Tamar Estuaries Complex Special Protection Area (hereafter termed 'SPA').

This understanding was gained using three complementary methods:

1) Visitor survey data was collected via site-use observations and structured questionnaires. These provided information on visitor numbers, activities undertaken, routes taken on site, visitor origin, and motivations for visits.

2) Targeted workshops with key activity groups (recreational anglers, paddle sports, dinghy and yacht sailors and sub-aqua divers) yielded detailed information about site use and seasonal trends.

3) Online recreational use questionnaires captured information about visitor origin and preferred sites for visits.

From these three data gathering exercises, a picture of the recreational use of the Plymouth Sound and Estuaries EMS can be built up, in order to determine how well used particular locations are, the identity of specific locations where potentially damaging activities occur. This is key to underpin management responses to recreational pressures (Fearnley et al, 2012).

This report details and interprets the results from the three methods (site based visitor surveys, targeting workshops and online recreational use questionnaires). The spring results from the first on-site survey season were previously published as an interim report (Griffiths et al., 2016b). This report provides these results and the final seasonal and aggregated survey information.

8 On-site visitor survey

8.1 Rationale

The objective of this component of the study was to obtain a seasonal picture of the recreational use of the Plymouth Sound and Estuaries European Marine Site. This included understanding the different types of activities that are undertaken by recreational users, their frequencies and intensities across the site, and any damaging activities that may have interactions with the protected features of the site. There was also a separate objective to build up an understanding of where the visitors originated from in order to identify a Zone of Influence for the site.

8.2 Methods

8.2.1 Survey locations

Using the information collated for the scoping report on the key locations throughout the site where different activities take place such as access points (e.g. car parks and slipways, coastal footpaths, swimming areas, boat moorings and marinas) (Griffiths et al. 2016) 28 initial survey locations were identified across the Plymouth Sound and Estuaries EMS. As the on-site surveys would be conducted by a small pool of volunteers, this number was reduced to a more tractable 20 key sites. All 28 sites were visited to assess their ease of access and general use patterns and a final list of 19 locations was agreed (Figure 13). These were selected to include a number of known key areas for activities e.g. popular angling sites such as Mount Batten, Mount Wise Barbican and Torpoint, beaches including Cawsand/Kingsand, Wembury, Bovisand Bay and Devil's Point (Firestone Bay), the busiest slipways (Mount Batten, Oreston, Saltash, Riverside) and the access points in the upper estuaries (Bere Ferrers and Lopwell Dam on the Tavy), Cargreen, Weir Quay, Cotehele and Calstock on the Tamar and Wacker Quay on the Lynher), Noss Mayo/Newton Ferrers on the Yealm).

8.3 Survey structure

The on-site visitor surveys comprised counts of people visiting the location plus interviews with a random sample of visitors. Counts and interviews were designed to capture the range of recreational use occur within each part of the EMS. Each of the 19 sites within the EMS were surveyed once in each of the four seasons during 2016:

- Spring – March, April and May;
- Summer – June, July and August;
- Autumn – September, October and November; and
- Winter – December.

At each location, a trained volunteer surveyor undertook surveys in two-hour sessions. Surveyors were asked to spend a minimum of four hours on site, and to complete a minimum of two full two-hour sessions between 07:00 - 09:00, 09:00-11:00, 11:00- 13:00, 13:00-15:00, 15:00-17:00 and 17:00-

19:00. Each site was surveyed once at a time suitable to the volunteers but also wherever possible on either a weekend, bank holiday or school holiday day with good weather to gain as many responses and capture representative patterns of recreational use.

Recreational activity at some sites is tide dependent due to 1) access (most slipways dry at low water) and 2) preference for anglers for fishing on a flood tide. To build this into the design of the survey, guidance was given to volunteer surveyors regarding the preferred tidal conditions for each of the survey sites (Table 9).

Table 9. Guidance on preferred tidal conditions for each site included jn the on-site survey

N	Site Name	Tide State	Survey Timing
1	Newton Ferrers/Noss Mayo	Either side high tide	3 hours either side of high tide
2	Wembury	All tides	
3	Bovisand	From Low to high	Arrive at time of low tide, leave just after high tide
4	Mount Batten	Either side high tide	3 hours either side of high tide
5	Oreston	Either side high tide	3 hours either side of high tide
6	Barbican	From Low to high	Arrive at time of low tide, leave just after high tide
7	Devils Point	Either side high tide	3 hours either side of high tide
8	Mount Wise	From Low to high	Arrive at time of low tide, leave just after high tide
9	Riverside	From Low to high	Arrive at time of low tide, leave just after high tide
10	Lopwell Dam	From Low to high	Arrive at time of low tide, leave just after high tide
11	Bere Ferrers	Either side high tide	3 hours either side of high tide
12	Weir Quay	Either side high tide	3 hours either side of high tide
13	Cotehele	Either side high tide	3 hours either side of high tide
14	Calstock	Either side high tide	3 hours either side of high tide
15	Cargreen	Either side high tide	3 hours either side of high tide
16	Saltash	All tides	
17	Wacker Quay	Either side high tide	3 hours either side of high tide
18	Torpoint	All tides	
19	Kingsand/Cawsand	All tides	

During each two-hour period, the surveyor recorded the number of people and the number of groups passing their location, and also noted the recreational activity undertaken by that group. The number of dogs was also noted. Interviews were conducted on people passing the surveyors location; the sample of people interviewed was randomised through the surveyor approaching all people passing (as long as they were not already interviewing others). Only one person (selected at random) from each group / party was interviewed.

Figure 13. On-site visitor survey locations across the Plymouth Sound EMS

The following survey protocol was followed:

- No unaccompanied minors were approached or interviewed;
- Surveyors were polite and courteous at all times;
- Surveyors were trained in the questionnaire and interview approach, ensuring standard sampling;
- All surveyors read and signed a risk assessment and carried a mobile phone at all times;

- Days with inclement weather were avoided, and flexibility into the survey schedule was incorporated to allow for such days.

8.3.1 Visitor survey questionnaire

The questionnaire was designed to capture the following visitor information (see Appendix A):

- Activities undertaken;
- Route travelled around the site, on land and on the water;
- Frequency of visits to the site and times of usual visits;
- Opinions relating to management issues and potential changes;
- Features that influenced choice of visit site; and
- Home postcode of the visitor and whether a local resident or visiting tourist.

8.3.2 Visitor routes

Information on visitor routes was collected by interviewers asking visitors to draw their routes on paper maps (during the Spring season), and write a supplementary description. All routes were individually cross-referenced to each questionnaire. In many cases the map drawing was supplemented with a thorough written description of the route around the site to aid the digitisation process. These data were subsequently digitised and ArcGIS was used to generate 'most direct route' lengths in km. In Summer, Autumn and Winter surveys the route information was taken solely through a written description (since interpreting maps proved difficult and time consuming). Unfortunately, this change in method led some confusion with the volunteer surveyors and a number of questionnaires were returned without any route information (12, 19 and 13 for Summer, Autumn and Winter respectively, representing 10%, 13% and 11% of all visitor group questionnaires).

8.3.3 Zone of Influence

European site strategic mitigation schemes for recreational pressure typically use visitor surveys to define a zone of influence based on the core area (or catchment area) from which visitors originate. The Zone of Influence (ZoI) is the zone within which it is considered that an impact on European site interest can be identified (Fearnley et al., 2014). It defines the geographical area within which potential impacts need to be avoided or mitigated for, and outside which it can be concluded that significant effects on the European site are unlikely.

Visitor surveys, including those conducted for this study typically identify a core visitor area (one of Influence) close to the site from where the majority of visitors originate. Although tourists or people visiting the site for a particular purpose may travel further than the majority of visitors these are typically a minority of visitors to the site and the ZoI is based on the distance travelled by most local residents visiting the site (defined in this study as people living in Cornwall or Devon).

A range of options (scenarios) are presented in Section 2.3.13 to define the Zone of Influence based on buffers around the site defined by distance travelled by site visitors. For each option the Zone of Influence calculations are based on the postcode data gathered during the face to face visitor surveys (see On-Site survey, Section 2.2.3) and visitor frequency with other information including transport to the site and selected visitor frequencies used to define the zone in subsequent iterations that explore the results (Section 2.3.13). The scenarios represent different options for defining the ZoI and explore the underlying patterns in the visitor catchment or core area.

In some interviews the visitors did not provide valid place name or postcode information. The visitor origin data for the remaining interviews (489) with relevant information was used for the ZoI assessment. The step-by-step methodology used to calculate the ZoI is outlined below:

Step 1) Select from all the surveys the visitors that identify themselves as local based on the answer 'Living in Devon/Cornwall on a day trip or short visit'

Step 2) For all local visitors collect the postcode and using GIS (ESRI ArcMap 10.3) identify the shortest distance travelled by road from that postcode to the site where they were surveyed. Distances were calculated for both the SAC and SPA site boundary as appropriate.

Step 3) If no postcode was recorded but the person has provided an address e.g. 'Wembury' calculate the shortest distance between the centre of that hamlet/town/village or parish and the site boundary where they were surveyed. Again distances were calculated for both the SAC and SPA site boundary as appropriate.

Step 4) Weight the distances travelled by each person by the estimated number of visits that they make in a year. The site survey respondents were asked how many visits they made to the site during the year. The answers were recorded based on a range of categories (see Table 10 below). From the answers we estimated the maximum number of visits they might make (Table 10) and used this to weight the distances for the (ZoI). For example if the shortest distance travelled by a respondent to the site was 12 km and they indicated that they visited the site several times a month, the distance travelled would be entered into the calculation spreadsheet 60 times.

Table 10 On-site survey questionnaire options to the question how many visits they made to the site during the year and how many estimated visits were used for each categoring in the ZoI distance weighting.

Questionnaire options	Distance weighting
Most days (>180 visits)	365
A few times a week (60-180 visits)	180
Several times a month (20-60 visits)	60
About once a month (12-20 visits)	20
Less than once a month (2-12 visits)	12
Don't know	1
First time	1

Step 5) From the full data set of distances travelled by local residents, calculate the 3rd quartile value. This distance is mid-way between the median distance (the middle of the range distance) and the furthest distance travelled by a local visitor. The third quartile point separates the visitors into the 75% of closest visitors from the 25% that live furthest away. Note that this distance is based on the road network not the straight distance ('as the crow flies') between the home location and the SPA or SAC site boundary. The 75% of local visitors are considered to be the core visitor group.

Step 6) Using GIS software (ESRI ArcMap 10.3) create the convex hull analysis. The convex hull analysis creates the smallest polygon to encompass the home postcodes of the 75% of closest visitors.

Step 7) Create figures to illustrate the ZoI. The Figures (see results section 2.3.13) show:

- All the local visitor postcodes surrounding the EMS site
- The convex hull boundary (dark green for the SAC, dark blue for the SPA). The convex hull boundary is the smallest distance that encloses the home postcodes or locations that were used to calculate the 3rd quartile distance and, therefore, is drawn around the nearest (based on road distances) 75% of the surveyed local visitors.
- To put the convex hull into context we have also drawn a straight-line (Euclidean) buffer zone, based on the area enclosing a straight line drawn from the site boundary out to the 3rd quartile distance.

The two buffer options 9convex hull and Euclidean) represent different methods of calculating the ZoI and each has advantages and disadvantages. The convex hull is a better representation of the data as it is based on the home locations of survey respondents. However, this also means it is very sensitive to the data captured and it therefore reflects the underlying data limitations and biases as outlined in Section 2.2.4. For example, as it is based on land-based surveys visits by water users will be under represented. The straight-line (Euclidean) boundary is conceptually more straightforward

but is also subject to the same limitations and biases (as it is based on the same survey data as the convex hull). As it is a straight line buffer drawn from the site boundary it is likely to include most of the core visitor area. However, it should be noted that it doesn't reflect journey/travel times so it can be considered to be a poorer representation of the distance data.

The ZoI was drawn using the above steps to represent the following scenarios (all using the home location recorded in the on-site survey):

Scenario 1: analysis of the ZoI for the SAC and SPA based on:

- local respondents arriving by all forms of transport e.g., ferry, train, foot, car, motorcycle, bus that were recorded

- distances travelled by each respondent weighted by the highest number of visits for each range (see Table 10), i.e. if a respondent indicated that they visited the site 20 times a year the distance between their home postcode and the site visited would be entered 20 times into the Zone of Influence calculations.

Scenario 2: analysis of the ZoI for the SAC and SPA based on local respondents arriving by car or motorcycle:

- all visitor frequencies included but unweighted by number of visits (each distance was entered into the calculation spreadsheets once)

Scenario 3: analysis of the ZoI for the SAC and SPA based on:

- local respondents arriving by car or motorcycle:

- using visitor frequencies once a month or more but unweighted by number of visits (each distance was entered into the calculation spreadsheets once)

The scenarios were designed to explore the underlying patterns in site use to investigate what area might be considered to represent the core visitor area, from which most visitors originate and therefore the zone from which recreational impacts on the site may arise.

8.4 Results

Initial results from the first survey season (Spring) were presented in Griffiths et al., 2016. The results presented in this report build on these results by adding the other three survey seasons to allow for seasonal comparison, and aggregate across the seasons to enable comparison by different visitor types (notably local residents vs non-local visitors) to take place.

8.4.1 Survey effort

- **On-site surveys were conducted by volunteer surveyors at 19 sites around the Plymouth Sound and Estuaries SAC, in each of the four seasons**
- **In total 314 volunteer hours were spent at the 19 sites across the four seasons**
- **Survey effort was not equal across the 19 sites, and four seasons due to volunteers occasionally being unable to carry out allocated surveys**
- **MBA staff filled the gaps wherever they could, contributing 78 staff hours (39 surveys)**
- **Volunteer surveyors conducted a total 562 interviews with visitor groups with an interview success rate overall of 60%**

The overall on-site survey coverage was good with a few exceptions. Surveys were missed in the Spring survey at four sites (Oreston, Barbican, Devils Point and Mount Wise) due to volunteers failing to carry out their allocated surveys (Table 11). This is a risk of using volunteers, and it was unfortunate that this occurred near the end of the season so there was insufficient time to reallocate the sites. In Summer, data were lost from Riverside (which was surveyed twice), and in Autumn, data were lost from Saltash and the survey at Newton Ferrers was not conducted. Again, this was due to the volunteers failing to carry out their allocated surveys. The winter survey (conducted entirely in December of 2016) comprised 14 out of the 19 sites, with no surveys undertaken at Wembury, Barbican, Riverside, Cotehele and Torpoint.

MBA staff conducted surveys to fill gaps in the volunteer coverage, contributing 39 surveys or 78 staff hours in total. This was particularly the case for the Winter survey, when the short survey season (Dec 1st-20th) coupled with holidays meant few of the trained volunteer surveyors were available.

However, in total 314 volunteer hours were spent at the 19 sites across Spring, Summer, Autumn and Winter of 2016.

The survey effort was not evenly spread across the day, and was concentrated more in the centre of the day. In addition, the days were longer in Summer and Autumn, with the data collected in the 17.00-19.00 window (which was not the case in the Spring and Winter surveys). The colder weather for the winter surveys further restricted the time that surveyors could safely spend on site.

Table 11. Distribution of survey effort across the sites for the four seasons and time of day windows. Values show tidal height (m) rounded to the nearest m, calculated from the midpoint of the survey period using Devonport tide tables, red indicates ebb (outgoing) tide, blue indicates flood (incoming) tide.

Site number	Site Name	Spring						Summer						Autumn						Winter					
		7.00-9.00	9.00-11.00	11.00-13.00	13.00-15.00	15.00-17.00	17.00-19.00	7.00-9.00	9.00-11.00	11.00-13.00	13.00-15.00	15.00-17.00	17.00-19.00	7.00-9.00	9.00-11.00	11.00-13.00	13.00-15.00	15.00-17.00	17.00-19.00	7.00-9.00	9.00-11.00	11.00-13.00	13.00-15.00	15.00-17.00	17.00-19.00
1	Newton Ferrers			2						1	3	5										3	5		
2	Wembury				0					2	4					1	3								
3	Bovisand	5	3	1						1	4	5			2	1	3					1	3	5	
4	Mount Batten			4	2							4	5			3								3	
5	Oreston								2	2	4				5	4	2					3			
6	Barbican								5	4	2					1	2	4							
7	Devils Point									2	4	5					4	5				1	2	5	
8	Mount Wise								2	2	4							5				3	1		
9	Riverside*				3	2			2	1							1	1							
9	Riverside*				4	3				3	4	5													
10	Lopwell Dam			4	3	2				1	1	2				3	1	1				1	1	3	
11	Bere Ferrers		4	4	3				5	3	1				4	5	4				5	4	3		
12	Weir Quay				4				5	4	2				3	4	4				5	5	4		
13	Cotehele*		4	2	1	2					3	5					4								
13	Cotehele*		4	4		3																			
14	Calstock			4	4	3						5	5			3	2					3	1		
15	Cargreen			4	4							4	5		5	5						2			
16	Saltash			4								2	4							4	5				
17	Wacker Quay		4	4	4					3	4	4			5	4	2						2		
18	Torpoint			4	4					2	4														
19	Kingsand / Cawsand			2	4					2	2	1					4					3			

*indicates site that were repeat surveyed twice in one season

In total, the surveyors conducted 562 interviews with individual groups during their site visits (Table 12). The most interviews were conducted during the Summer season (183) and the least during Winter (92). There were 377 refusals; this represents an interview success rate of overall of 60%. Interestingly the success rate varied considerably across the different survey seasons; Spring 72%, Summer 63%, Autumn 56% and Winter 47%. The lower interview success rate in Autumn and Winter may be related to the weather conditions, with visitor groups preferring not to stand around to complete the interviews.

Across all survey seasons, 523 visitor groups (48%) confirmed that they had previously been interviewed, which would indicate that the survey has captured representative data from regular and repeat visitors from the site.

Table 12. Summary of total visitor survey effort across the 19 sites in both the SAC and SPA, presented for each of the four seasons surveyed

	Number of sites surveyed	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
Spring	1	7.00-9.00	3	3	3	10	3	2
	4	9.00-11.00	4	7	22	74	14	28
	13	11.00-13.00	28	46	73	437	116	97
	13	13.00-15.00	16	39	36	358	68	39
	8	15.00-17.00	7	45	12	128	18	22
	0	17.00–19.00	-	-	-	-	-	-
	39	**TOTAL**	**58**	**140**	**146**	**1007**	**219**	**188**
Summer	0	7.00-9.00	-	-	-	-	-	-
	6	9.00-11.00	6	7	22	71	24	27
	15	11.00-13.00	20	43	65	434	116	43
	15	13.00-15.00	42	64	50	744	200	63
	12	15.00-17.00	28	55	37	392	121	46
	4	17.00-19.00	11	7	9	51	32	9
	52	**TOTAL**	**107**	**176**	**183**	**1692**	**493**	**188**
Autumn	0	7.00-9.00	-	-	-	-	-	-
	6	9.00-11.00	23	8	23	108	24	29
	11	11.00-13.00	26	29	47	310	119	77
	13	13.00-15.00	34	54	54	484	92	80
	5	15.00-17.00	22	24	15	96	25	9
	0	17.00-19.00	NA	NA	NA	NA	NA	NA
	35	**TOTAL**	**105**	**115**	**139**	**998**	**260**	**195**
Winter	1	7.00-9.00	3	0	4	9	1	5
	3	9.00-11.00	2	4	4	31	10	17
	13	11.00-13.00	57	18	53	256	95	74
	10	13.00-15.00	24	42	20	188	65	47
	4	15.00-17.00	21	28	13	41	15	8
	0	17.00-19.00	-	-	-	-	-	-
	31	**TOTAL**	**107**	**92**	**94**	**525**	**186**	**151**
TOTAL ALL SEASONS			**377**	**523**	**562**	**4222**	**1158**	**722**

A breakdown of the survey effort by location complete with tally information is given in Table 13, Table 14, Table 15 and Table 16 for the Spring, Summer, Autumn and Winter season respectively.

Table 13. Summary of Spring visitor survey effort at each survey location across both the SAC and SPA

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
*Bere Ferrers	11.00 - 13.00	4	-	4	34	9	7
*Bere Ferrers	13.00 - 15.00	2	-	-	16	4	3
*Bere Ferrers	15.00 - 17.00	-	-	-	28	8	6
Total		6	-	4	78	21	16
Bovisand	7.00-9.00	3	3	3	10	3	2
Bovisand	9.00 - 11.00	3	3	9	32	9	6
Bovisand	11.00 - 13.00	11	12	8	80	6	22
Total		17	18	20	122	18	30
Calstock	11.00 - 13.00	-	1	-	17	-	2
Calstock	13.00 - 15.00	-	1	3	32	1	3
Calstock	15.00 - 17.00	-	4	3	6	-	-
Total		-	6	6	55	1	5
*Cargreen	11.00 - 13.00	-	-	5	3	15	-
*Cargreen	13.00 - 15.00	-	-	-	-	-	-
Total		-	-	5	3	15	-
Cawsand	11.00 - 13.00	4	4	1	12	2	3
Cawsand	13.00 - 15.00	6	4	4	63	7	2
Total		10	8	5	75	9	5
Cotehele1	9.00 - 11.00	-	1	1	18	1	10
Cotehele1	11.00 - 13.00	-	1	4	40	2	16
Cotehele1	13.00 - 15.00	-	5	2	52	2	5
Cotehele1	15.00 - 17.00	1	7	1	26	-	5
Total		1	14	8	136	5	36
Cotehele2	9.00 - 11.00	-	-	9	17	4	8
Cotehele2	11.00 - 13.00	-	4	4	70	21	20
Cotehele2	15.00 - 17.00	2	9	-	50	2	5
Total		2	13	13	137	27	33
*Lopwell Dam	11.00 - 13.00	1	-	10	15	9	4
*Lopwell Dam	13.00 - 15.00	-	10	8	2	17	1
*Lopwell Dam	15.00 - 17.00	-	18	4	10	7	2
Total		1	28	22	27	33	7
Mount Batten	11.00 - 15.00	5	24	20	49	9	9
TOTAL		5	24	20	49	9	9
Newton Ferrers	11.00 - 13.00	-	-	7	62	16	3
Total		-	-	7	62	16	3
*Riverside1	13.00 - 15.00	2	-	4	7	1	4
*Riverside1	15.00 - 17.00	-	4	-	2	1	2
Total		2	4	4	9	2	6
*Riverside2	13.00 - 15.00	2	-	3	3	-	-
*Riverside2	15.00 - 17.00	4	3	4	6	-	2
Total		6	3	7	9	-	2
*Saltash	11.00 - 13.00	-	-	5	34	13	7
Total		-	-	5	34	13	7
Torpoint	11.00 - 13.00	3	-	-	6	13	-
Torpoint	13.00 - 15.00	-	-	-	16	-	2
Total		3	-	-	22	13	2
*Wacker Quay	9.00 - 11.00	1	3	3	7	-	4
*Wacker Quay	11.00 - 13.00	-	-	5	15	1	4
*Wacker Quay	13.00 - 15.00	-	11	5	20	-	7
Total		1	14	13	42	1	15
*Weir Quay	13.00 – 15.00	1	-	-	3	-	-
Total		1	-	-	3	-	-
Wembury	13.00 – 15.00	3	8	7	144	36	12
Total		3	8	7	144	36	12
* Note those sites with an asterisk represent SAC and SPA, all other sites just the SAC							

Table 14 Summary of Summer visitor survey effort at each survey location across both the SAC and SPA.

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
Barbican	9.00-11.00	1	*	5	11	15	*
Barbican	11.00-13.00	1	*	5	30	51	5
Barbican	13.00-15.00	7	*	4	19	50	3
Total		9	*	14	60	116	8
*Bere Ferrers	9.00-11.00	2	3	*	18	1	10
*Bere Ferrers	11.00-13.00	*	4	*	13	*	5
*Bere Ferrers	13.00-15.00	*	*	*	7	*	1
Total		2	7	*	38	1	16
Bovisand	11.00-13.00	0	0	5	3	6	1
Bovisand	13.00-15.00	1	5	6	9	9	5
Bovisand	15.00-17.00	2	2	10	15	10	2
Total		3	7	21	27	25	8
Calstock	15.00-17.00	*	*	*	51	12	9
Calstock	17.00-19.00	*	*	*	11	17	6
Total		*	*	*	62	29	15
*Cargreen	15.00-17.00	0	0	0	14	9	*
*Cargreen	17.00-19.00	0	0	3	18	10	2
Total		*	*	*	32	19	2
Cawsand/Kingsand	13.00-15.00	10	0	5	150	30	6
Cawsand/Kingsand	15.00-17.00	7	5	5	18	3	0
Total		17	5	10	168	33	6
Cotehele	11.00-13.00	0	0	4		6	
Cotehele	13.00-15.00	*	*	*	73	25	12
Cotehele	15.00-17.00	*	*	*	91	40	15
Total		0	0	4	164	71	27
Devil's Point	11.00-13.00	4	5	5			0
Devil's Point	13.00-15.00	6	11	4	106	15	
Devil's Point	15.00-17.00	1	14	3	102	21	3
Total		11	30	12	208	36	3
*Lopwell Dam	11.00-13.00	1	6	6	2	6	3
*Lopwell Dam	13.00-15.00	2	6	8	1	7	
*Lopwell Dam	15.00-17.00	0	14	6		6	2
Total		3	26	20	3	19	5
Mount Batten	15.00-17.00	15	0	5	58	11	7
Mount Batten	17.00-19.00	10	5	4	22	5	1
Total		25	5	9	80	16	8
Mount Wise	9.00-11.00	1	0	7	7	1	4
Mount Wise	11.00-13.00	1	7	7	7	*	2
Mount Wise	13.00-15.00	3	14	2	4	1	1
Total		5	21	16	18	2	7
Newton Ferrers	11.00-13.00	*	*	*	44	12	4
Total		*	*	*	44	12	4
Noss Mayo	13.00-15.00	1	*	*	35	11	4
Noss Mayo	15.00-17.00	*	*	*	18	6	2
Total		1	*	*	53	17	6
Oreston	9.00-11.00	0	2	2	22	5	11
Oreston	11.00-13.00	11	4	4	19	2	2
Oreston	13.00-15.00	4	2	2	38	13	9
Total		15	8	8	79	20	22
*Riverside 1	9.00-11.00	2	0	8	6	*	2
*Riverside 1	11.00-13.00	1	8	6	11	*	5
Total		3	8	14	17	*	7
*Riverside 2	11.00-13.00	0	0	11	8	*	4

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
*Riverside 2	13.00-15.00	3	11	8	5	2	3
*Riverside 2	15.00-17.00	3	20	6	3	*	1
Total		6	31	25	16	2	8
*Saltash	15.00-17.00	0	0	2	6	2	*
*Saltash	17.00-19.00	1	2	2	0	0	0
Total		1	2	3	6	2	0
Torpoint	11.00-13.00	0	4	4	7	2	5
Torpoint	13.00-15.00	1	4	0	11	4	6
Total		1	8	4	18	6	11
*Wacker Quay	11.00-13.00	0	5	5	14	1	3
*Wacker Quay	13.00-15.00	0	11	6	23	3	4
*Wacker Quay	15.00-17.00	*	*	*	16	1	5
Total		*	16	11	53	5	12
*Weir Quay	9.00-11.00	*	2	*	18	2	2
*Weir Quay	11.00-13.00	*	*	*	26	*	2
*Weir Quay	13.00-15.00	*	*	*	13	*	4
Total		*	2	*	57	2	8
Wembury	11.00-13.00	1	*	5	250	30	2
Wembury	13.00-15.00	4	*	5	250	30	5
Total		5	*	10	500	60	7
* Note those sites with an asterisk represent SAC and SPA, all other sites just the SAC							

Table 15 Summary of Autumn visitor survey effort at each survey location across both the SAC and SPA

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
Barbican	11.00-13.00	7	*	6	28	25	3
Barbican	13.00-15.00	7	3	11	6	20	2
Barbican	15.00-17.00	4	*	1	6	8	0
Total		18	3	18	40	53	5
*Bere Ferrers	9.00-11.00	*	*	*	19	5	7
*Bere Ferrers	11.00-13.00	*	*	*	23	5	10
*Bere Ferrers	13.00-15.00	*	*	*	5	0	1
Total		*	*	*	47	10	18
Bovisand	9.00-11.00	11	0	8	26	8	4
Bovisand	11.00-13.00	11	8	9	51	13	13
Bovisand	13.00-15.00	0	17	3	28	4	5
Total		*	*	*	100	25	22
Calstock	11.00-13.00	1	4	4	1	11	6
Calstock	13.00-15.00	*	4	0	4	5	5
Total		1	8	4	5	16	11
*Cargreen	9.00-11.00	11	8	8	8	4	3
*Cargreen	11.00-13.00	1	11	3	5	3	2
Total		12	19	11	13	7	5
Cawsand/Kingsand	13.00-15.00	2	3	3	18	2	4
Total		2	3	3	18	2	4
Cotehele	13.00-15.00	1	0	18	156	7	23
Total		1	0	18	156	7	23
Devil's Point	15.00-17.00	10	14	6	75	8	4
Devil's Point	13.00-15.00	11	0	14	111	22	12
Total		22	14	20	191	30	16
*Lopwell Dam	11.00-13.00	1	*	*	3	3	3
*Lopwell Dam	13.00-15.00	1	5	4	13	5	2
*Lopwell Dam	15.00-17.00	0	9	3	2	5	2
Total		2	14	7	18	13	7
Mount Batten	11.00-13.00	3	0	4	17	3	3

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
Total		3	0	4	17	3	3
Mount Wise	15.00-17.00	5	0	4	11	2	1
Total		5	0	4	11	2	1
Oreston	9.00-11.00	1	0	6	17	1	8
Oreston	11.00-13.00	1	6	12	18	1	6
Oreston	13.00-15.00	*	18	*	5	1	3
Total		2	24	18	40	3	17
*Riverside	13.00-15.00	11	0	1	9	3	0
*Riverside	15.00-17.00	3	1	1	2	2	2
Total		14	1	2	11	5	2
*Wacker Quay	9.00-11.00	0	*	1	4	2	*
*Wacker Quay	11.00-13.00	*	*	5	1	7	5
*Wacker Quay	13.00-15.00	0	*	0	*	2	*
Total		0	*	6	5	11	5
*Weir Quay	9.00-11.00	*	*	*	34	4	7
*Weir Quay	11.00-13.00	*	*	*	20	3	3
*Weir Quay	13.00-15.00	*	*	*	13	*	2
Total		*	*	*	67	7	12
Wembury	11.00-13.00	1	0	4	143	45	23
Wembury	13.00-15.00	1	4	*	116	21	21
Total		2	4	4	259	66	44
* Note those sites with an asterisk represent SAC and SPA, all other sites just the SAC							

Table 16 Summary of Winter visitor survey effort at each survey location across both the SAC and SPA

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
*Bere Ferrers	9.00-11.00	*	*	*	7	5	7
*Bere Ferrers	11.00-13.00	*	*	*	9	1	1
*Bere Ferrers	13.00-15.00	*	*	*	10	2	4
Total		*	*	*	26	8	12
Bovisand	11.00-13.00	1	0	9	2	11	7
Bovisand	13.00-15.00	*	9	*	1	5	1
Bovisand	15.00-17.00	0	17	4	*	5	*
Total		1	26	13	3	22	8
Calstock	11.00-13.00	1	3	3	11	6	9
Calstock	13.00-15.00	1	4	1	4	2	9
Total		2	7	4	15	8	18
*Cargreen	11.00-13.00	0	2	2	5	*	1
Total		0	2	2	5	*	1
Cawsand/Kingsand	11.00-13.00	5	*	8	17	1	6
Cawsand/Kingsand	11.00-13.00	2	*	*	5	*	4
Total		7	*	8	22	1	10
Devil's Point	11.00-13.00	22	4	4	66	16	5
Devil's Point	13.00-15.00	17	4	4	16	7	4
Devil's Point	15.00-17.00	14	2	2	22	7	3
Total		53	10	10	104	30	12
*Lopwell Dam	11.00-13.00	2	0	4	6	2	4
*Lopwell Dam	13.00-15.00	0	4	5	12	1	5
*Lopwell Dam	15.00-17.00	1	9	3	5	*	*
Total		3	13	12	23	3	9
Mount Batten	15.00-17.00	6	0	4	14	3	5
Total		6	0	4	14	3	5
Mount Wise	13.00-15.00	4	11	9	20	8	7
Mount Wise	11.00-13.00	6	0	10	40	20	10
Total		10	11	19	60	28	17
Newton Ferrers	11.00-13.00	11	6	6	27	6	10

Location	Time period	Refusals	Already interviewed	Interviews	Entering site (People)	Entering site (Groups)	Entering site (Dogs)
Newton Ferrers	13.00-15.00	0	7	1	16	2	2
Total		11	13	7	43	8	12
Noss Mayo	11.00-13.00	0	3	3	56	29	6
Noss Mayo	13.00-15.00	2	3	*	91	38	10
Total		2	6	3	*	*	*
Oreston	11.00-13.00	4	*	4	10	2	10
Total		4	*	4	10	2	10
*Saltash	7.00-9.00	3	0	4	9	1	5
*Saltash	9.00-11.00	2	4	4	17	2	7
Total		5	4	8	26	3	12
*Wacker Quay	13.00-15.00	*	*	*	17	*	5
Total		*	*	*	17	*	5
*Weir Quay	9.00-11.00	*	*	*	7	3	3
*Weir Quay	11.00-13.00	3	*	*	2	1	1
*Weir Quay	13.00-15.00	0	*	*	1	*	*
Total		3	*	*	10	4	4

*** Note those sites with an asterisk represent SAC and SPA, all other sites just the SAC**

8.4.2 Numbers of visitors

- **4,222 people were recorded entering the site**
- **The greatest number of people were recorded in Summer and the least in Winter**
- **722 dogs were recorded accompanying site visitors**
- **The ratio of people per dog was greatest in Winter (3.5:1) and least in Summer (9:1) suggesting dog walkers are a greater component of the winter visitors**

In total, 4222 people were recorded entering the site; the largest number of people recorded entering the site occurred in summer (1,692 individuals) and the lowest in Winter (525 individuals) (Table 17).

A total of 722 dogs were recorded accompanying site visitors. The number of dogs was comparable across the seasons (in both Spring and Summer – 188 dogs were recorded, in Autumn – 195 dogs were recorded and in Winter 151 (which may reflect the lower survey effort for Winter 31 completed surveys compared with 52 in Summer). However, since there was a greater number of visitors entering the sites during the Summer period, the ratio of individuals per dog is much greater in the Winter (3.5 people per dog) than in summer (9 people per dog) with Spring and Autumn having ratios of 5.4 and 5.1 respectively, suggesting that dog walkers use the site all year round but there is a much wider use of the site by non-dog walkers in the warmer seasons, particularly during Summer.

Table 17 Seasonal summary of survey effort and visitor patterns

	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Interviews	156	221	139	118	644
Refusals	58	107	105	107	377
Already interviewed	140	176	115	92	523
Entering site (People)	1007	1692	998	525	4222
Entering site (Groups)	219	493	260	186	1158
Entering site (Dogs)	188	188	195	151	722

8.4.3 Visit purpose

- **87% of visitor groups local residents, with 10% visiting from outside of Devon and Cornwall, and 3% classified as 'Other'**
- **In Winter 96% of visitor groups interviewed in the SAC were local residents, while in Summer 85% were local residents, reflecting seasonal trends in visitors from outside Devon and Cornwall**
- **Less of a seasonal signal in the % local residents was seen in the SPA sites, with the proportion of local residents visiting consistently greater than 91%**

Visitor groups were asked the purpose of their visit in order to establish whether they were local residents (living in Devon or Cornwall) or were visiting from further away. Data from all survey locations were pooled to give an overview of visitor origin within the EMS, then the SPA locations were analysed separately to see if the visitors differed.

The overwhelming majority of visitor groups to the SAC live locally within the local Devon and Cornwall area, generally visiting on a day trip or short visit (Table 18). Overall, 87% of visits to the SAC were made by local residents, with 10% visiting from outside of Devon and Cornwall, and 3% classified as 'Other'.

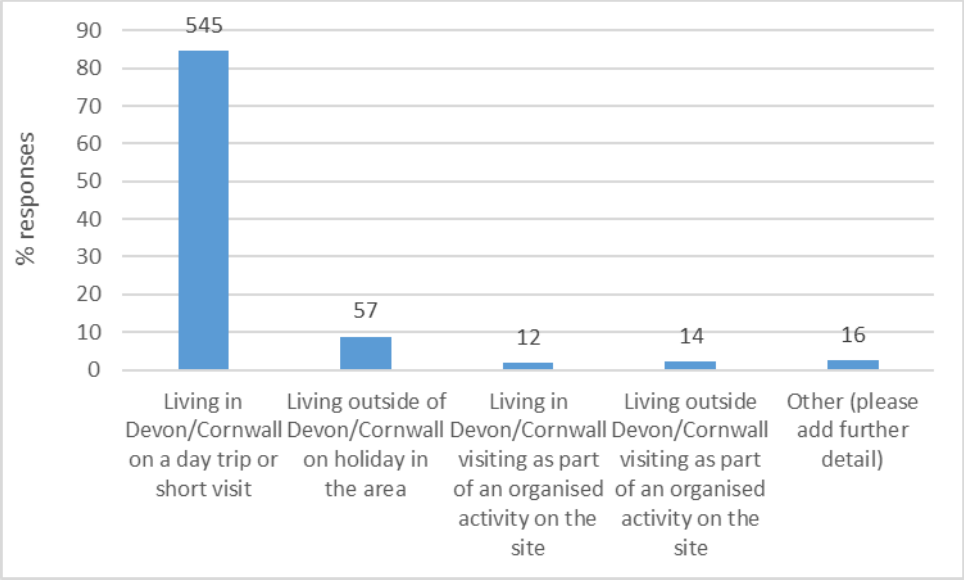


Figure 14 Response of visitor groups within EMS locations when asked about the purpose of their visit. Data originate from all 19 survey locations with all seasons aggregated. Values represent the % of responses with # responses above each column.

The highest percentage of local residents was found in Winter (95.7% - 94% on a day trip or short visit plus 1.7% visiting as part of an organised group) and the lowest in Autumn (79%). However the value for Autumn is distorted by a large proportion of visitor groups that responded 'Other', reducing the percentage of local residents. In all other seasons, visitor groups responding 'other' did not exceed 0.5%. With this group removed the percentage of local residents in Autumn (day trips and organised groups combined was 88%, similar to the value obtained for Spring (86.5%). So with this adjustment the seasonal pattern shows the largest percentage of local residents in Winter (96%), and the lowest in Summer (85%), with Autumn and Winter with intermediate percentages (89% and 90%) (Figure 15).

Visitor groups to the SPA constituted more local residents (93% in the SPA compared with 85% in the SAC). There was less of a seasonal pattern in the number of local residents compared with visitors from further afield with the greatest proportion of local residents again in Winter (97%) but the other seasons having 91% or above local residents (Table 19).

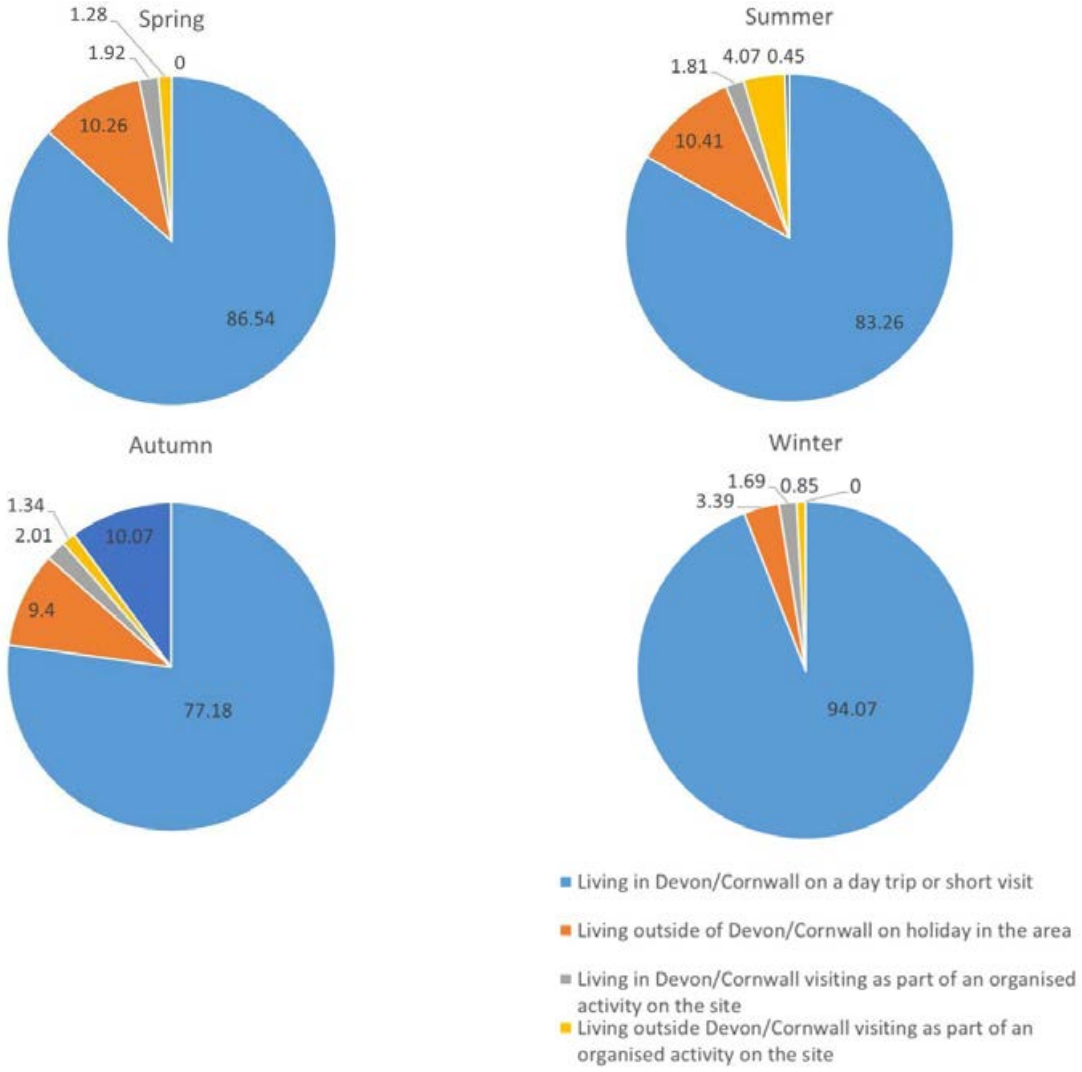


Figure 15. Seasonal pattern in visitor groups by origin (percentage)

Table 18. Response of visitor groups within SAC locations when asked about the purpose of their visit. Data originate from all 19 survey locations and are classified by survey season. The values represent the count of responses per category and as (%) of the season totals, and mean % of season total when all seasons are aggregated. Values in [] represent the average % across all seasons.

What is the purpose of your visit today?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Living in Devon/Cornwall on a day trip or short visit	135 (87) [21]	184 (83) [29]	115 (77) [18]	111 (94) [17]	545 (85) [21]
Living outside of Devon/Cornwall on holiday in the area	16 (10) [2]	23 (10) [4]	14 (9) [2]	4 (3) [1]	57 (8) [2]
Living in Devon/Cornwall visiting as part of an organised activity on the site	3 (2) [0]	4 (2) [1]	3 (2) [0]	2 (2) [0]	12 (2) [0]
Living outside Devon/Cornwall visiting as part of an organised activity on the site	2 (1) [0]	9 (4) [1]	2 (1) [0]	1 (1) [0]	14 (2) [0]
Other	0 (0) [0]	1 (0) [0]	15 (10) [2]	0 (0) [0]	16 (3) [0]
Total local	**138 (88) [21]**	**188 (85) [29]**	**118 (79) [18]**	**113 (96) [18]**	**557 (87) [22]**
Total non-local	**18 (12) [3]**	**32 (14) [5]**	**16 (11) [2]**	**5 (4) [1]**	**71 (10) [3]**
Total	156 [24]	221 [34]	149 [23]	118 [18]	644 [100]

Table 19. Response of visitor groups within SPA locations (a subset of 7 of the 19 SAC locations) when asked about the purpose of their visit. Data originate from the following locations: Riverside, Lopwell Dam, Bere Ferrers, Weir Quay, Cargreen, Saltash and Wacker Quay, and are classified by survey season. The values represent the count of responses per category and as (%) of the season totals, and mean % for 'All'. Values in [] represent the average % across all seasons.

What is the purpose of your visit today?	Spring	Summer	Autumn	Winter	All
Living in Devon/Cornwall on a day trip or short visit	61 (91) [26]	90 (93) [38]	36 (92) [15]	33 (97) [14]	220 (93) [26]
Living outside of Devon/Cornwall on holiday in the area	6 (9) [3]	4 (4) [2]	3 (8) [1]	0 (0) [0]	13 (5) [3]
Living in Devon/Cornwall visiting as part of an organised activity on the site	0 (0) [0]	2 (2) [1]	0 (0) [0]	0 (0) [0]	2 (1) [0]
Living outside Devon/Cornwall visiting as part of an organised activity on the site	0 (0) [0]	0 (0) [0]	0 (0) [0]	1 (3) [0]	1 (1) [0]
Other	0 (0) [0]	1 (1) [0]	0 (0) [0]	0 (0) [0]	1 (0) [0]
Total local residents	**61 (91) [26]**	**92 (95) [39]**	**36 (92) [15]**	**33 (97) [14]**	**222 (94) [23]**
Total non-local visitors	**90 (9) [3]**	**4 (4) [2]**	**3 (8) [1]**	**1 (3) [0]**	**14 (6) [1]**
Total per season	**67 [28]**	**97 [41]**	**39 [16]**	**34 [14]**	**237 [100]**

8.4.4 Visitor activities

- **Walking was the most common activity in the SAC (28% of visitor groups) and overall more people stated they were engaged in terrestrial activities than marine activities (approximately 2/3)**
- **Other important terrestrial activities included dog walking (21% of visitor groups) and outing with family (12%)**
- **Other terrestrial activities undertaken included birdwatching, cycling, horse riding and jogging.**
- **Hotspots for terrestrial activities include the upper Tamar (Calstock-Cotehele area), the Tavy (Lopwell – Bere Ferrers), Hoe (Devils Point to Barbican) and the coast from Mount Batten to Wembury**
- **The most popular marine activities were Canoeing and kayaking (4% of visitor groups), rock-pooling (4%), Fishing – angling (3%), sailing yacht and swimming (3%).**
- **Key areas for marine activities varied by activity type; the upper parts of the estuaries were important for paddle-sports while the Outer Estuary around Drake's Island is important for sailing and motor vessels.**

Visitors were asked to confirm the main activities they were undertaking during their visit to the site. Respondents could cite multiple activities, for example a group may be dog walking and angling (fishing), or swimming, kayaking and wildlife watching. All EMS sites were considered together and then the SPA sites were analysed separately to draw out any differences. Finally differences between local residents of Devon and Cornwall were compared with visitors from further afield (non-local visitors).

The most common activities recorded from the visitor surveys within the EMS were walking (41% of terrestrial activities and 28% overall), dog walking (29% of terrestrial activities and 21% overall) (Figure 16, Table 23), and outing with children/family (17% of terrestrial activities and 12% overall). The other important terrestrial activity was bird watching/nature watching. Cycling, Horse riding and jogging were less common and there were no respondents visiting the site to fly kites. Because terrestrial activities are more popular than marine, the activity types are considered separately.

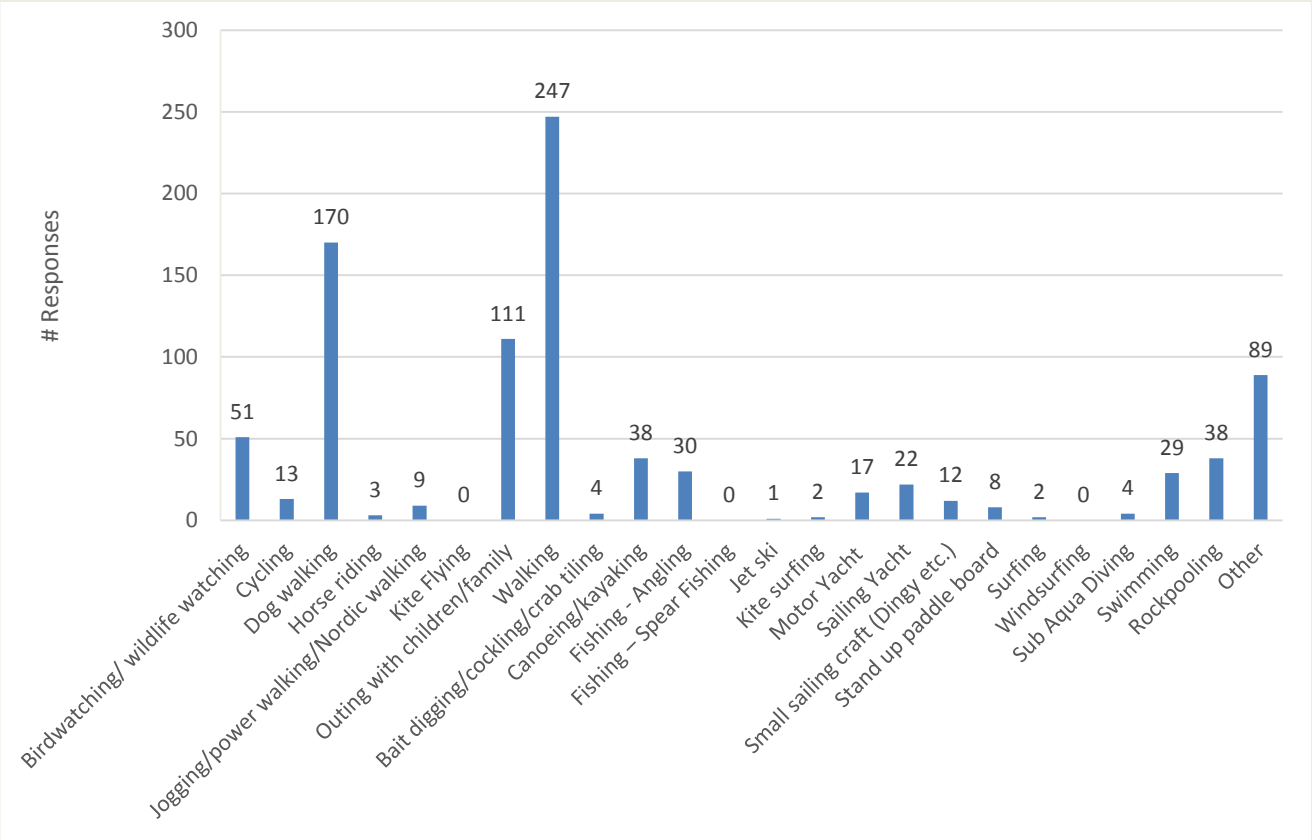


Figure 16 Frequency of activities stated by respondents in on-site surveys within the EMS, aggregated for all sites and seasons (data labels indicate numbers of responses).

Table 20 Response of visitor group when asked to identify their main activity (terrestrial only) undertaken during their visit to SAC locations (all 19 locations pooled, classified by season. The values represent the count of responses per category and as [% of terrestrial activity values], (% of the season totals), with means of these values presented for all seasons in column 'All'.

Terrestrial activity type	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Birdwatching/ wildlife watching	18 [13] (8)	19 [9] (6)	9 [6] (5)	5 [4] (3)	51 [8] (6)
Cycling	2 [1] (1)	4 [2] (1)	3 [2] (2)	4 [3] (3)	13 [2] (2)
Dog walking	28 [20] (12)	48 [24] (16)	49 [34] (25)	47 [39] (30)	172 [29] (21)
Horse riding	0 [0] (0)	1 [0] (0)	1 [1] (1)	1 [1] (1)	3 [1] (1)
Jogging/power walking/Nordic walking	0 [0] (0)	4 [2] (1)	3 [2] (2)	2 [2] (1)	9 [2] (1)
Kite Flying	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Outing with children/family	24 [17] (10)	53 [26] (17)	23 [16] (12)	11 [9] (7)	111 [17] (12)
Walking	68 [49] (29)	75 [37] (24)	55 [38] (28)	49 [41] (31)	247 [41] (28)
TERRESTRIAL SEASONAL TOTALS	**140**	**204**	**143**	**119**	**606**

From the information given by visitor groups, clear hotspots for terrestrial activities emerge (Figure 17). These include: Lopwell Dam, Riverside and along the Eastern bank of the Tamar near the bridges, Mount Wise, Devil's Point, Mount Batten and Bovisand. All of these sites are readily accessible from the city, which may explain their popularity.

In terms of seasonal patterns, the central part of the Tamar around the bridges (survey sites Riverside and Saltash) shows use during Spring and Summer but .less so in the other two months. The seafront along the Hoe is well used year round, as would be expected due to its proximity to the city and ease of access (survey sites Devils Point, Mount Wise and Barbican), as is Oreston, and the coastal path from Mount Batten to Wembury on the Eastern side of the outer Sound. On the Western shore of the Sound, the coastal path from Mount Edgecombe to Cawsand/Kingsand (Spring / Summer) and Cawsand/Kingsand to Rame Head (Winter).

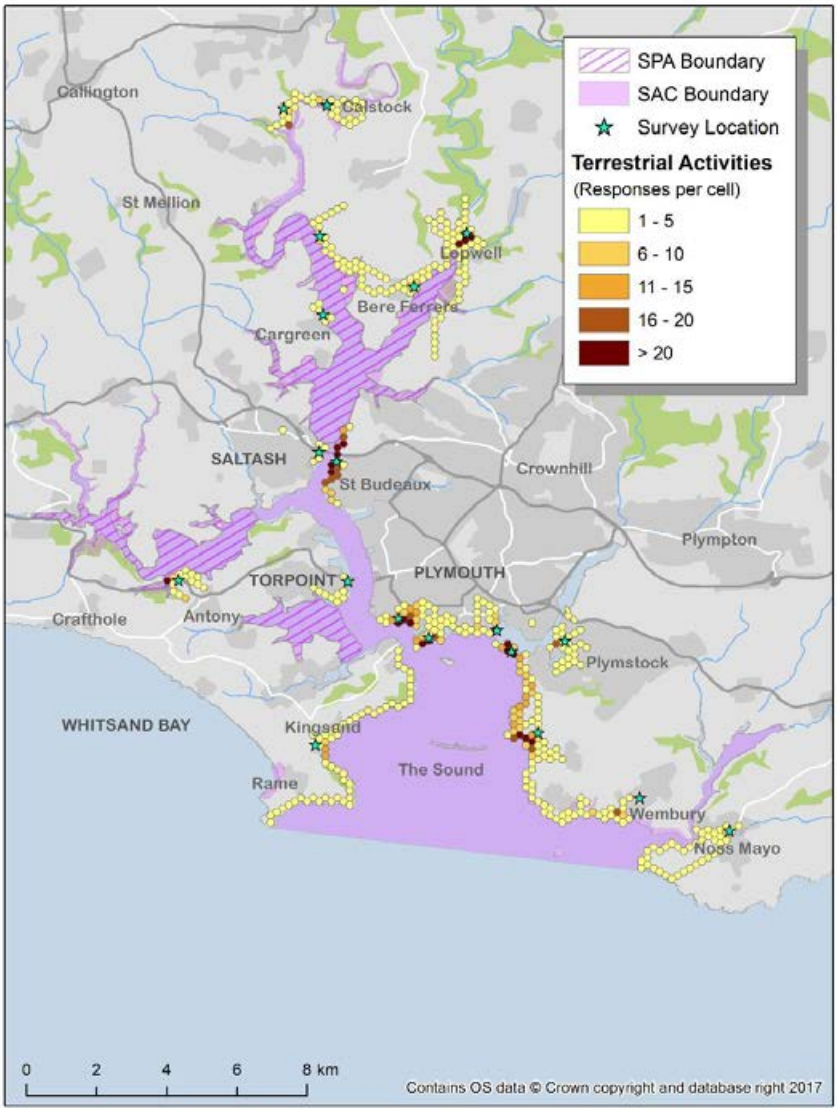
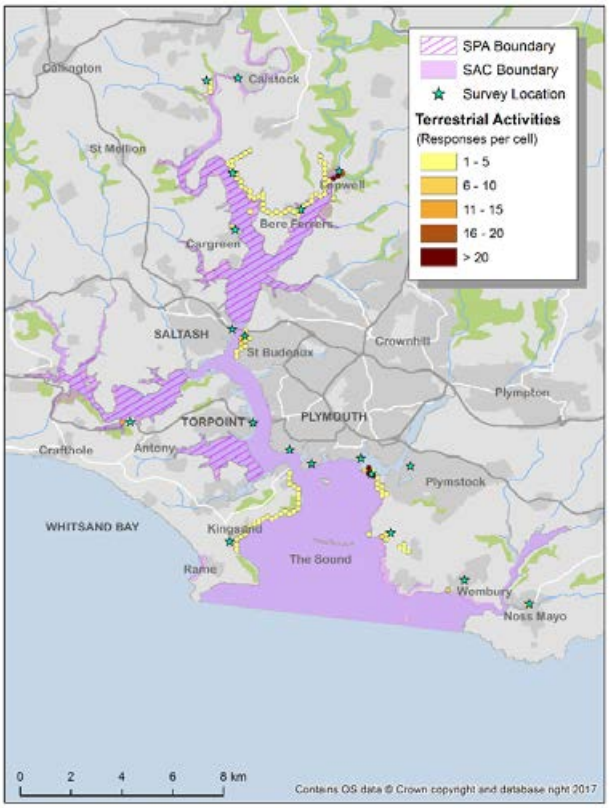
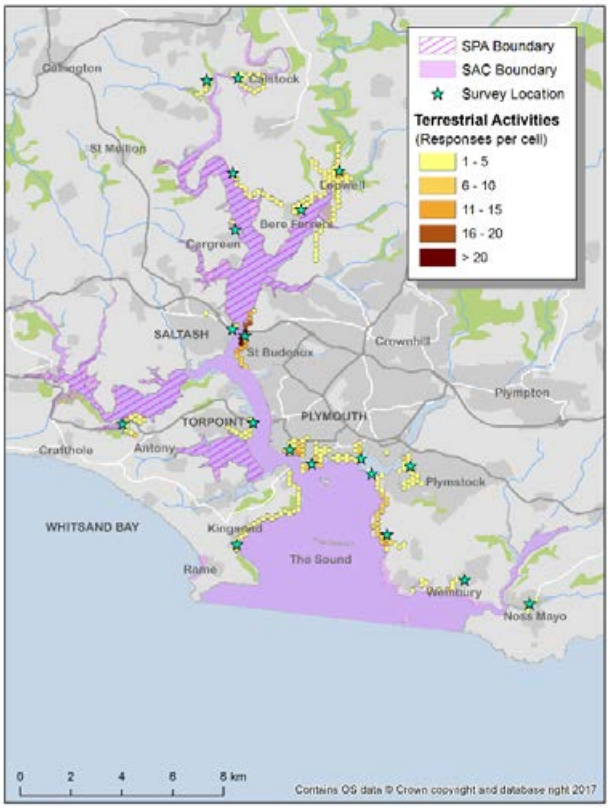


Figure 17. Distribution and intensity of terrestrial activities across the EMS based on responses on routes taken through the sites from on-site visitor surveys.

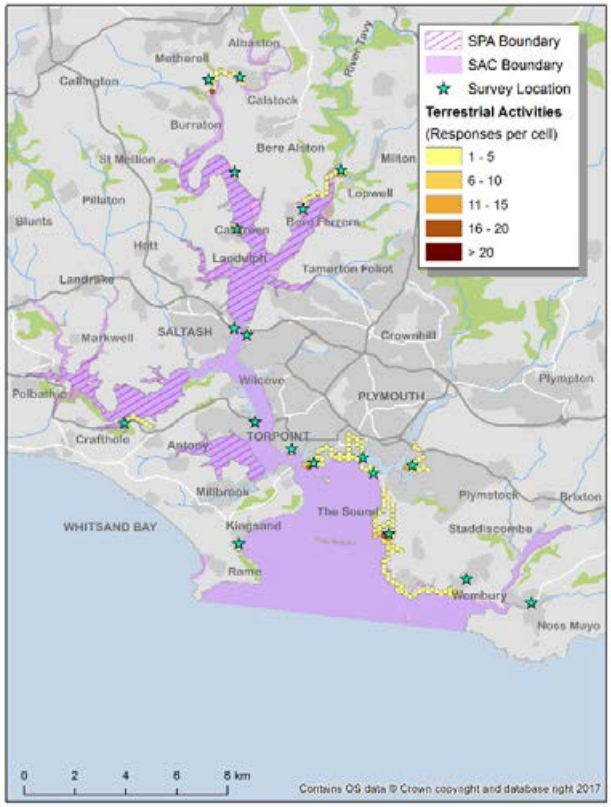
Spring



Summer



Autumn



Winter

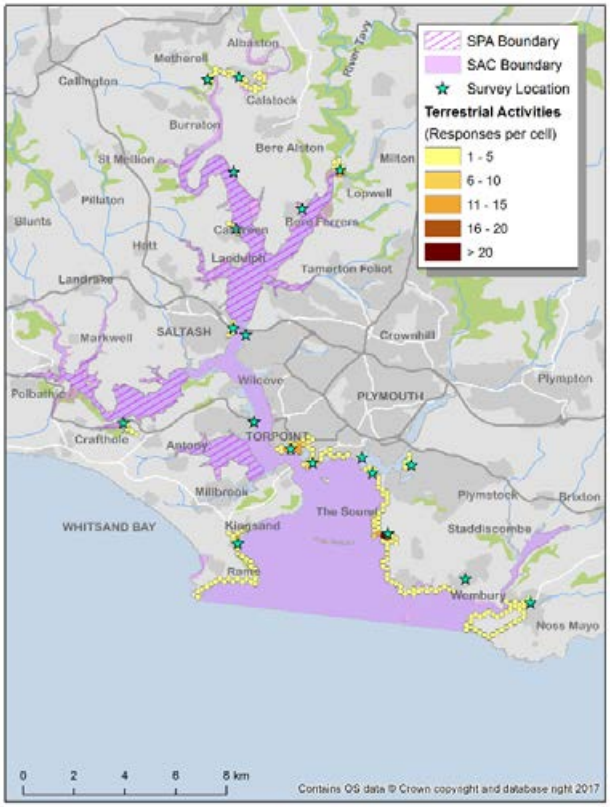


Figure 18. Distribution and intensity of terrestrial activities across the EMS based on responses on routes taken through the sites from the on-site visitor surveys, presented by survey season.

Much fewer visitor groups (approximately one in three) identified their main activity as a marine activity type (204 visitor groups overall compared with 606 that gave terrestrial activities as reasons to visit the site, Table 21). The most common marine activities were Canoeing and kayaking (16% overall of marine responses), Fishing – angling (16%), motor and sail yachting (both 10%), swimming (12%) and rock-pooling (18%). No visitor groups answered that they were visiting to engage in windsurfing or spear fishing.

A large number of visitor groups were doing 'other' activities (12%) that fell outside the list supplied to surveyors. Specific responses included: 'enjoying the view', eating (picnics, ice-cream and at cafes), painting, photography, metal detecting, geocaching, sunbathing, picking blackberries, visiting relatives, Frisbee, playing Pokemon Go, reading, visiting Lopwell Barn (our survey there coincided with an open day), visiting the Christmas Garland at Cotehele, and dropping of Christmas presents.

Table 21 Response of visitor group when asked to identify their main activity (marine plus 'Other') undertaken during their visit to SAC locations (all 19 locations pooled, classified by season. The values represent the count of responses per category and as [% of marine activity values], (% of the season totals).

Marine activity type	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Bait digging/cockling/crab tiling	0 [0] (0)	2 [2] (1)	2 [5] (1)	0 [0] (0)	4 [2] (1)
Canoeing/kayaking	15 [25] (6)	15 [18] (5)	7 [16] (4)	1 [5] (1)	38 [16] (4)
Fishing - Angling	3 [5] (1)	17 [21] (6)	3 [7] (2)	6 [32] (4)	29 [16] (3)
Fishing – Spear Fishing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Jet ski	0 [0] (0)	0 [0] (0)	1 [2] (1)	0 [0] (0)	1 [1] (0)
Kite surfing	0 [0] (0)	2 [2] (1)	0 [0] (0)	0 [0] (0)	2 [1] (0)
Motor Yacht	11 [19] (5)	2 [2] (1)	1 [2] (1)	3 [16] (2)	17 [10] (2)
Sailing Yacht	9 [15] (4)	6 [7] (2)	6 [14] (3)	1 [5] (1)	22 [10] (3)
Small sailing craft (Dingy etc.)	3 [5] (1)	0 [0] (0)	6 [14] (3)	3 [16] (2)	12 [9] (2)
Stand up paddle board	3 [5] (1)	3 [4] (1)	1 [2] (1)	1 [5] (1)	8 [4] (1)
Surfing	0 [0] (0)	0 [0] (0)	2 [5] (1)	0 [0] (0)	2 [1] (0)
Windsurfing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Sub Aqua Diving	1 [2] (0)	2 [2] (1)	1 [2] (1)	0 [0] (0)	4 [2] (1)
Swimming	4 [7] (2)	16 [20] (5)	7 [16] (4)	1 [5] (1)	28 [12] (3)
Rockpooling	10 [17] (4)	17 [21] (6)	7 [16] (4)	3 [16] (2)	37 [18] (4)
MARINE SEASONAL TOTALS	**59**	**82**	**44**	**19**	204
Other activities	39 (16)	22 (7)	11 (6)	18 (12)	90 (10)

For sites within the SPA, dog walking and birdwatching appeared to be more important activities than within the wider SAC (6% for SAC, compared with 11% for SPA for birdwatching and 21% for the SAC and 30% for the SPA for dog walking). By contrast the proportion of visitor groups engaged in walking and outings with children/family were lower for the SPA sites (Table 22).

Table 22. Response of visitor group when asked to identify their main activity (terrestrial only) undertaken during their visit to SPA locations (7 locations pooled), classified by season. The values represent the count of responses per category and as [% of terrestrial activity values], (% of the season totals).

Terrestrial activity type	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Birdwatching/ wildlife watching	13 [28] (18)	14 [18] (13)	3 [13] (7)	2 [7] (5)	32 [17] (11)
Cycling	1 [2] (1)	2 [3] (2)	1 [4] (2)	0 [0] (0)	4 [2] (1)
Dog walking	17 [36] (23)	29 [37] (28)	12 [50] (27)	16 [59] (42)	74 [46] (30)
Horse riding	0 [0] (0)	0 [0] (0)	1 [4] (2)	1 [4] (3)	2 [2] (1)
Jogging/power walking/Nordic walking	0 [0] (0)	2 [3] (2)	0 [0] (0)	0 [0] (0)	2 [1] (1)
Kite Flying	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Outing with children/family	6 [13] (8)	15 [19] (14)	2 [8] (4)	2 [7] (5)	25 [12] (8)
Walking	10 [21] (14)	16 [21] (15)	5 [21] (11)	6 [22] (16)	37 [21] (14)
TERRESTRIAL SEASONAL TOTALS	**47**	**78**	**24**	**27**	**176**

Within the SPA the most common marine activities were dinghy sailing (3% overall), yacht sailing (7%) and recreational angling (5%) and canoeing/kayaking (2%). Swimming and rock-pooling were not common activities reported by the visitor groups to the SPA (which fits what we would expect given the opportunities to engage in these activities). None of the visitor groups surveyed were bait digging, jet skiing, stand up paddle boarding, surfing, windsurfing or sub-aqua diving[1].

Table 23. Response of visitor group when asked to identify their main activity (marine plus 'Other') undertaken during their visit to SPA locations (7 locations pooled), classified by season. The values represent the count of responses per category and as [% of marine activity values], (% of the season totals).

Marine activity type	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Bait digging/cockling/crab tiling	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Canoeing/kayaking	4 [27] (5)	1 [6] (1)	1 [10] (2)	0 [0] (0)	6 [11] (2)
Fishing - Angling	2 [13] (3)	7 [44] (7)	0 [0] (0)	3 [60] (8)	12 [29] (5)
Fishing – Spear Fishing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Jet ski	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Kite surfing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Motor Yacht	3 [20] (4)	0 [0] (0)	0 [0] (0)	0 [0] (0)	3 [5] (1)
Sailing Yacht	6 [40] (8)	6 [38] (6)	5 [50] (11)	1 [20] (3)	18 [37] (7)
Small sailing craft (Dingy etc.)	0 [0] (0)	0 [0] (0)	4 [40] (9)	1 [20] (3)	5 [15] (3)
Stand up paddle board	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Surfing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Windsurfing	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Sub Aqua Diving	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
Swimming	0 [0] (0)	2 [13] (2)	0 [0] (0)	0 [0] (0)	2 [3] (1)
Rockpooling	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)	0 [0] (0)
MARINE SEASONAL TOTALS	**15**	**16**	**10**	**5**	**46**
Other	11 (15)	11 (10)	11 (24)	6 (16)	39 (16)

[1] Langmead has witnessed Stand-up paddle-boarding and jet-skiing in the SPA

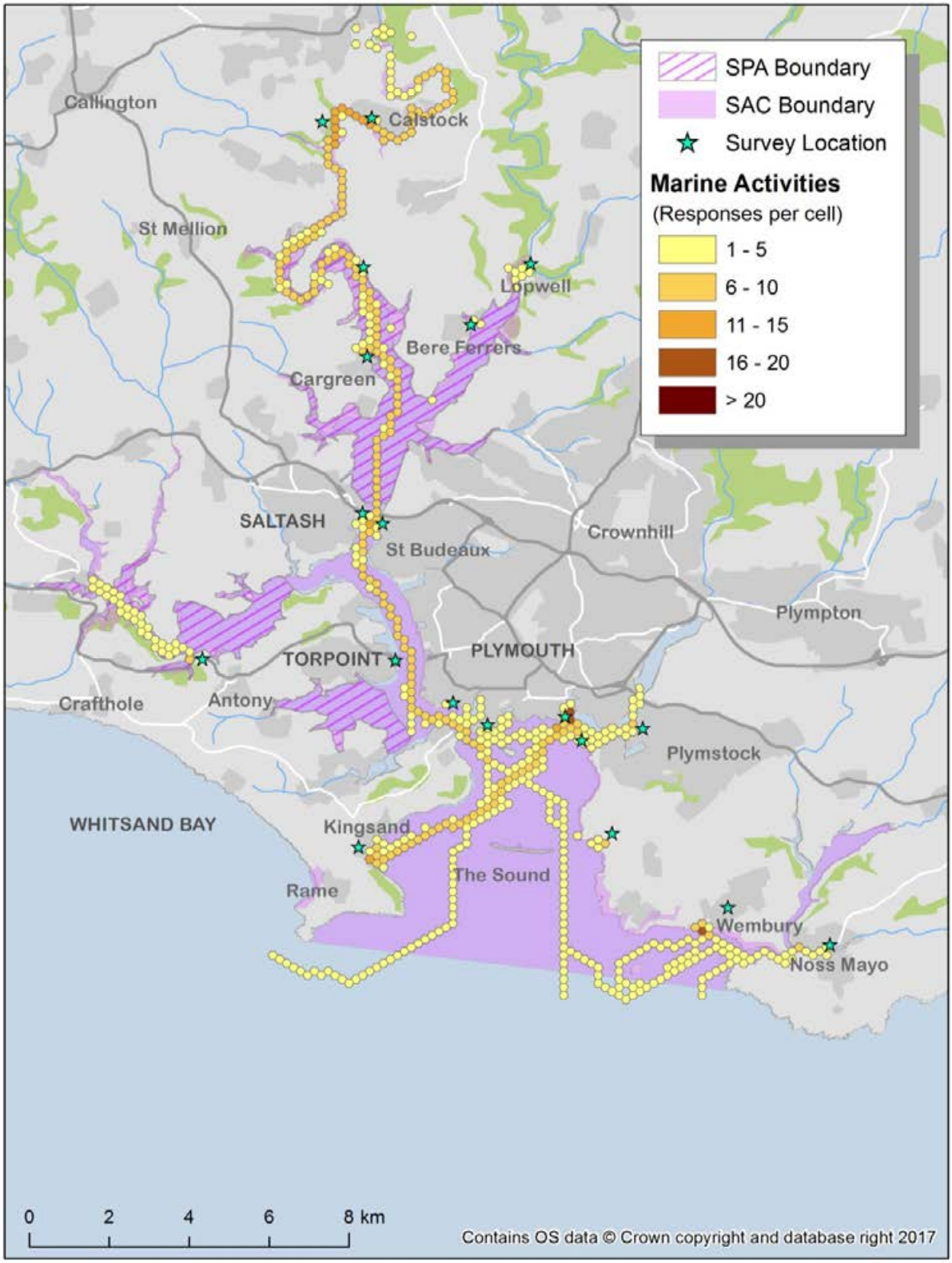


Figure 19. Distribution and intensity of marine activities across the EMS based on responses on routes taken through the sites from on-site visitor surveys (aggregated for all seasons).

The distribution and intensity of all marine activities combined for all seasons is presented in Figure 19. Popular sites include the Barbican and almost all of the Outer Estuary management area is well

used. There are important routes taken by recreational users from the upper Tamar to Kingsand, Wembury and the Yealm. The Cattewater comprising the Mount Batten and Sutton Harbour areas is also important, as is the Upper Lynher and Lopwell Dam.

Route information for sailing activities (combined for yacht sailing, small craft sailing and windsurfing) is given by season in (Figure 20). No visitor groups gave information on this activity during Winter (thus there is no map). The key areas identified from this activity are the upper Tamar (Spring), the transit from Weir Quay to Cawsand and Barbican/Plym areas (Summer and Autumn) (Figure 21).

The distribution and intensity of use by motor vessels (combined for motor yachts and jet skis) show a similar pattern to that of sailing vessels (Figure 22). The Tamar is important, as is the area around Drake's island and into the Plym. The transit across from Mount Batten to Kingsand is also important, and to a lesser extent, the route into the Yealm. The seasonal signal is also strong, with very little activity in Winter and much less in Autumn than in Spring and Summer (Figure 23).

By contrast, the distribution of paddle-sport activity (combined for canoeing, kayaking, rowing and stand-up paddle-boarding) is concentrated into the upper parts of the estuaries: the Tamar above Weir Quay including Cotehele, Calstock and all the way up to Gunnislake; the top of the Tavy at Lopwell Dam, the upper part of the Lynher, the Cattewater from Mount Batten to the Laira Bridge and the Yealm estuary from Wembury to Noss Mayo (Figure 24). There are also hotspots of activity at Cawsand / Kingsand and Bovisand Bays, with the activity strongly seasonal, and highest in Spring and Summer (Figure 25).

The distribution and intensity of recreational angling activity is shown in (Figure 26). Most fishing was reported in Summer and this was concentrated mainly at the Plymouth sites (Barbican, Mount Batten, Devil's Point, Mount Wise) but also occurred further up the Tamar at Saltash, Cargreen and Weir Quay (Figure 27).

Beach activities (constituting swimming and rock-pooling aggregated) were popular at the beach sites of Cawsand/ Kingsand, Bovisand, Wembury, Mount Batten and also at Devil's Point (presumably stated by visitors to Firestone Bay) (Figure 28). A few less likely sites were also reported e.g. Lopwell Dam, Bere Ferrers and Wacker Quay (which are all quite muddy but evidently used for swimming nonetheless). Oreston was another non-beach site used for swimming, and furthermore it was used all year round (Figure 29). However, the main seasonal trend was the concentration of these activities during Summer.

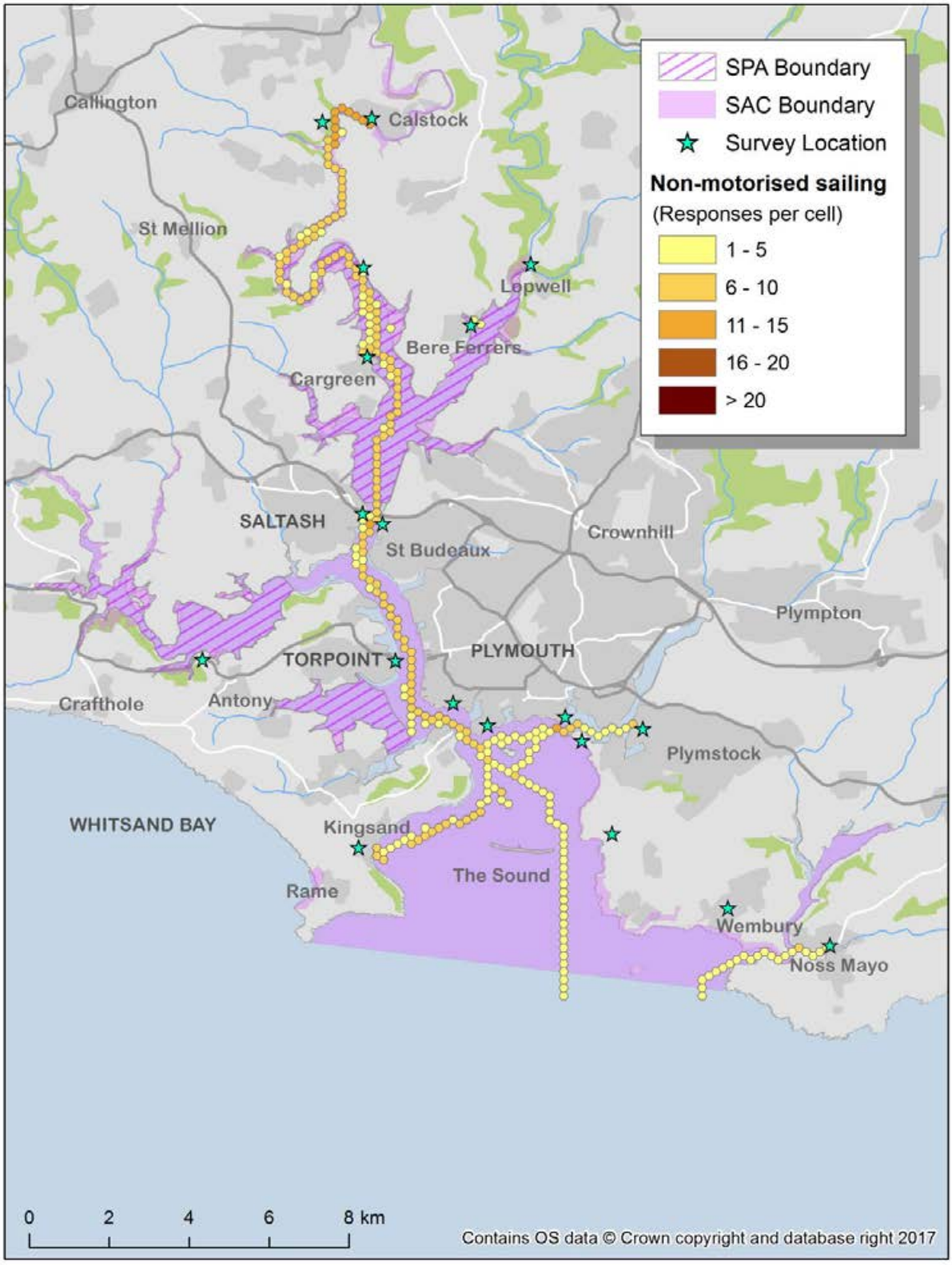
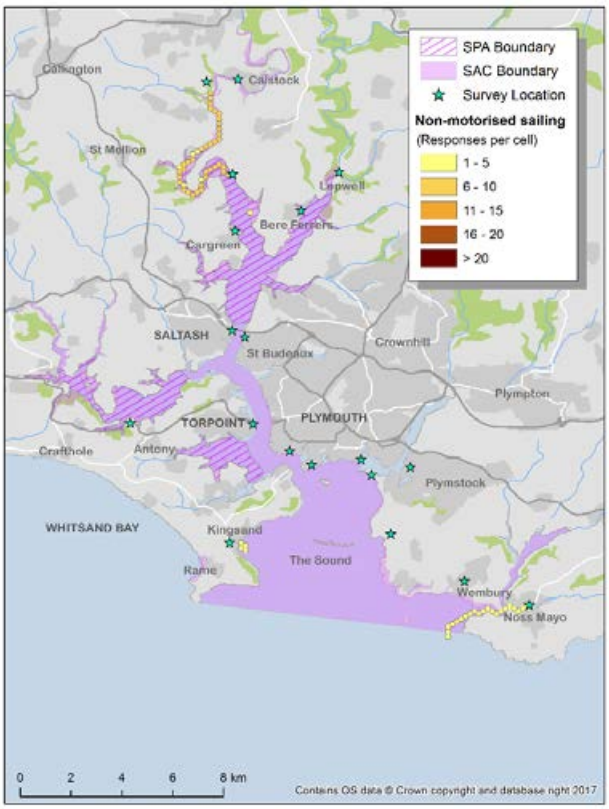
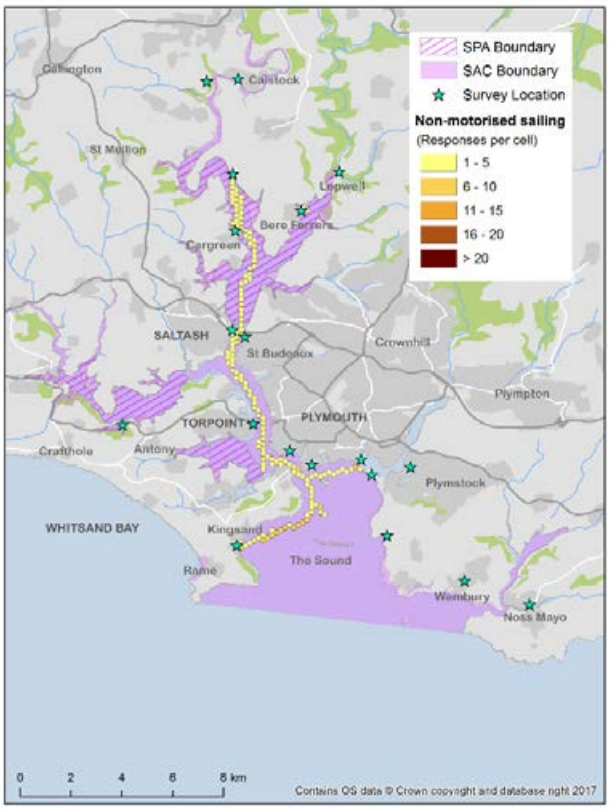


Figure 20. Distribution and intensity of sailing activities (yacht sailing, small craft sailing and windsurfing) mapped from route information for the Plymouth Sound and Estuaries EMS.

Spring



Summer



Autumn

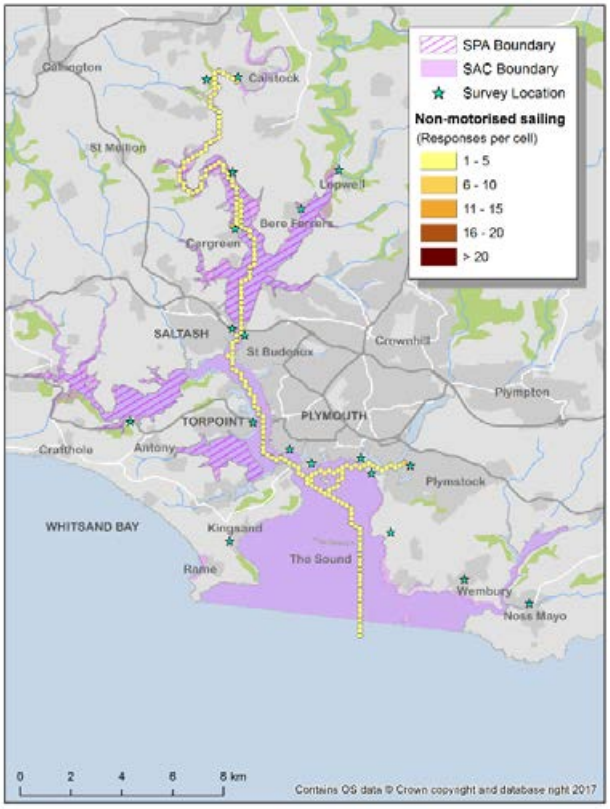


Figure 21. Distribution and intensity of sailing activities (yacht sailing, small craft sailing and windsurfing) mapped from route information by season for the Plymouth Sound and Estuaries EMS. No visitor groups gave route information during the Winter surveys.

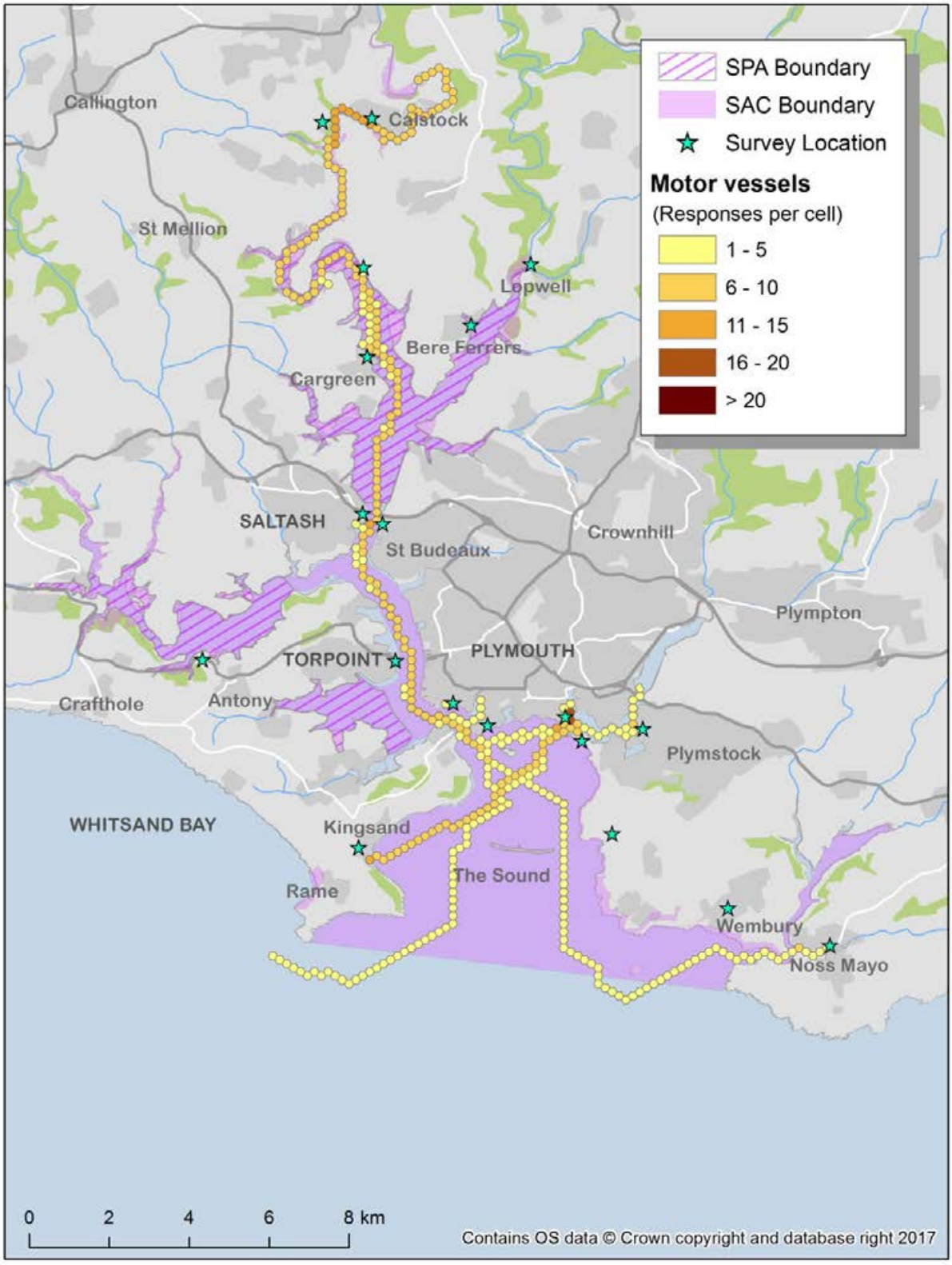
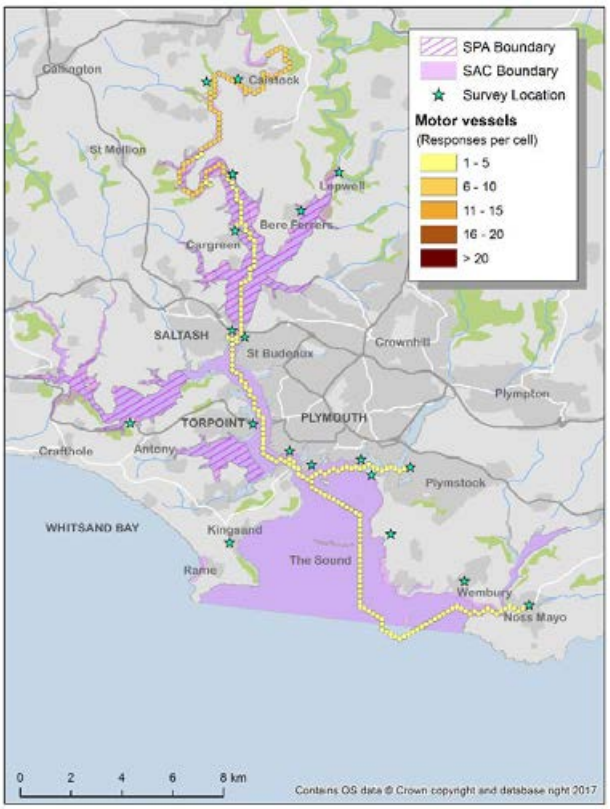
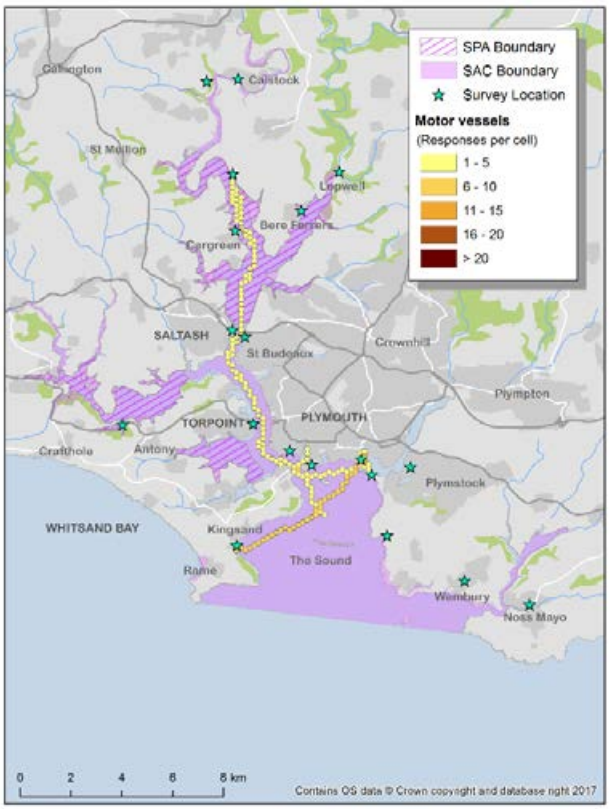


Figure 22. Distribution and intensity of motor vessel activity (combined for motor yachts and jet skis) mapped from route information for the Plymouth Sound and Estuaries EMS.

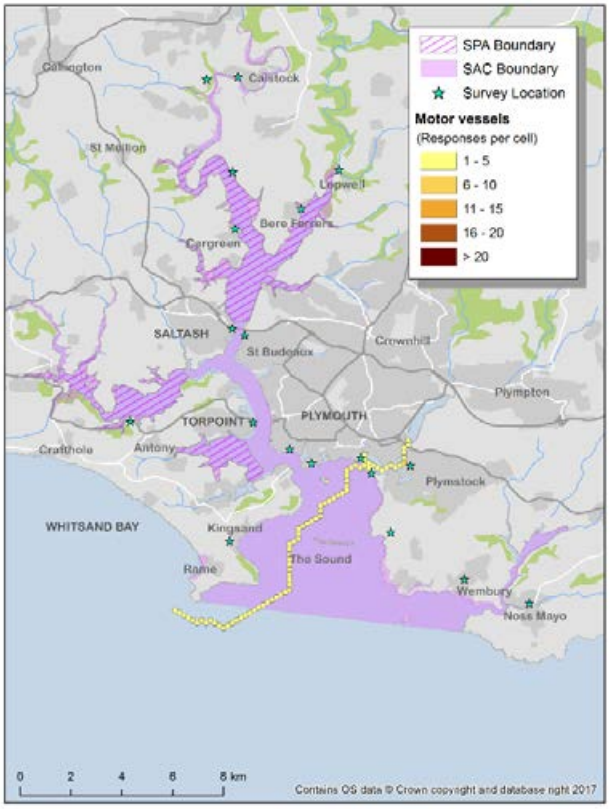
Spring



Summer



Autumn



Winter

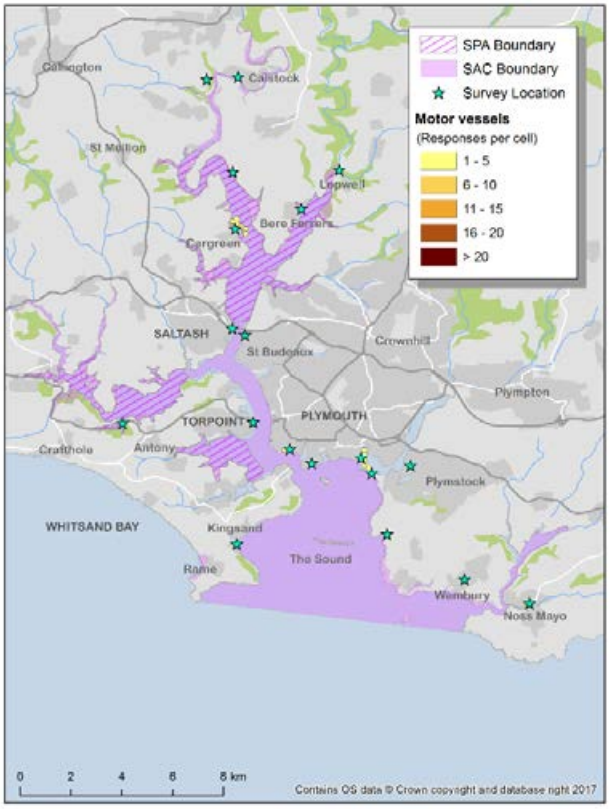


Figure 23 . Distribution and intensity of motor vessel activity (combined for motor yachts and jet skis) mapped from route information by season for the Plymouth Sound and Estuaries EMS.

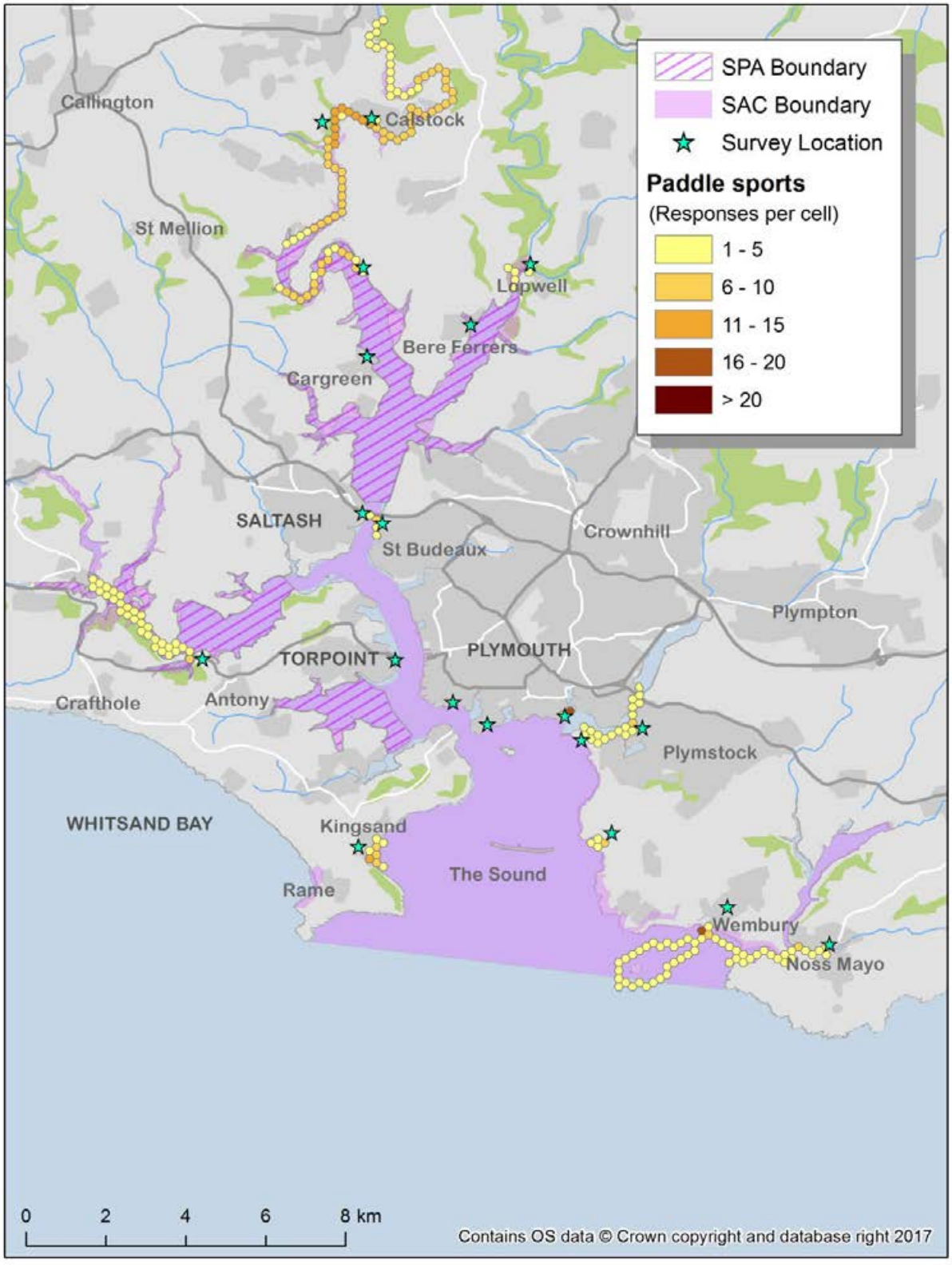
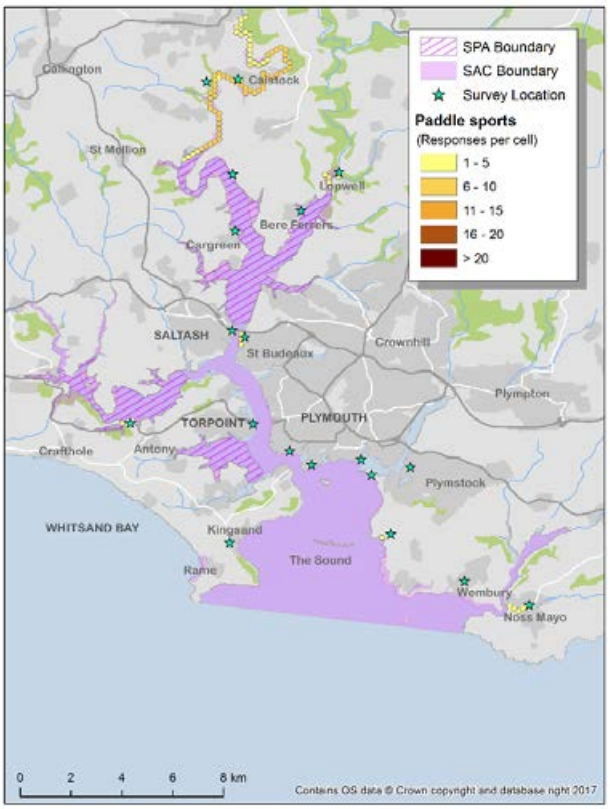
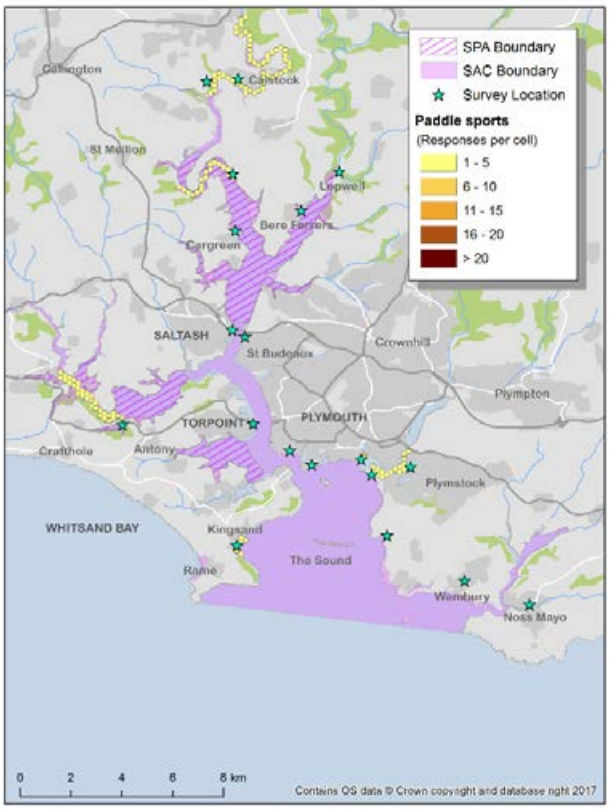


Figure 24. Distribution and intensity of paddle-sport activity (combined for canoeing, kayaking, rowing and stand-up paddle-boarding) mapped from route information for the Plymouth Sound and Estuaries EMS.

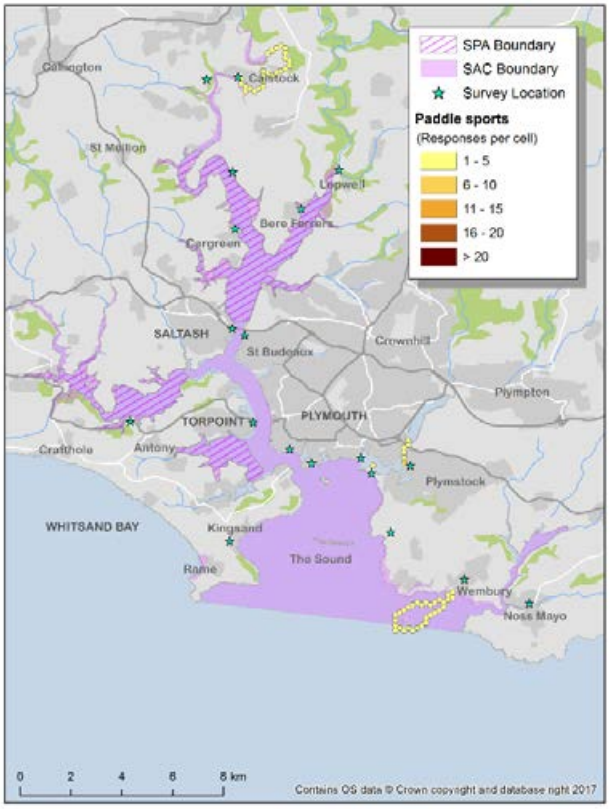
Spring



Summer



Autumn



Winter

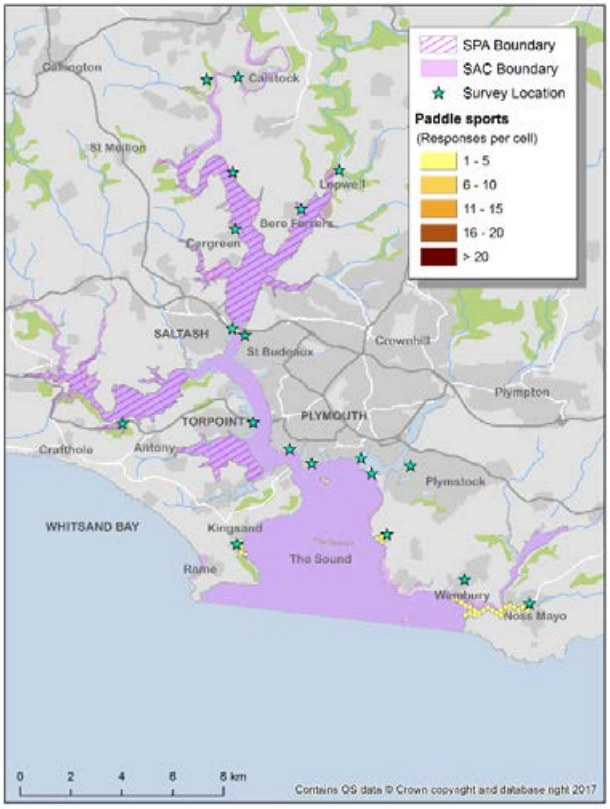


Figure 25 Distribution and intensity of paddle-sport activity (combined for canoeing, kayaking, rowing and stand-up paddle-boarding) mapped from route information by season for the Plymouth Sound and Estuaries EMS.

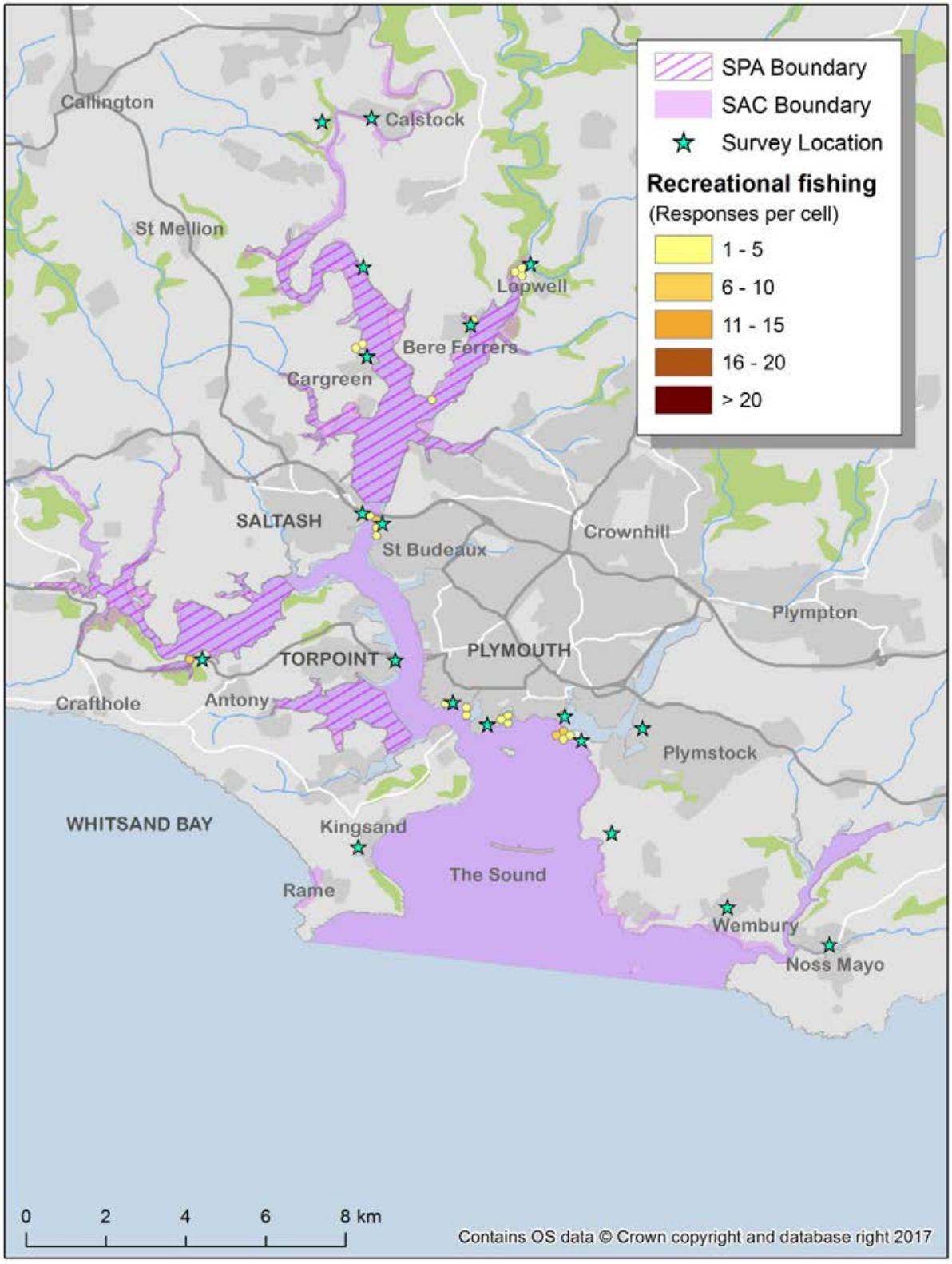
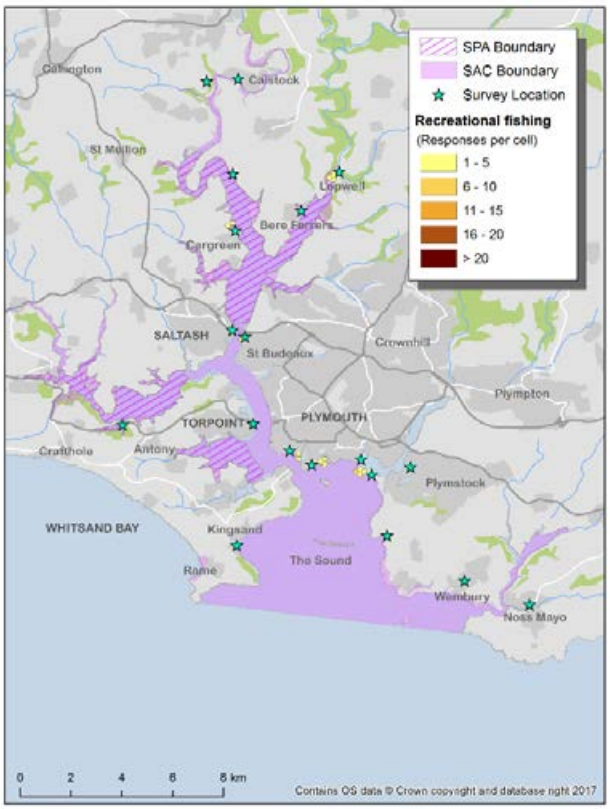


Figure 26. Distribution and intensity of recreational angling activity mapped from on-site survey responses for the Plymouth Sound and Estuaries EMS

Spring

Summer



Autumn

Winter

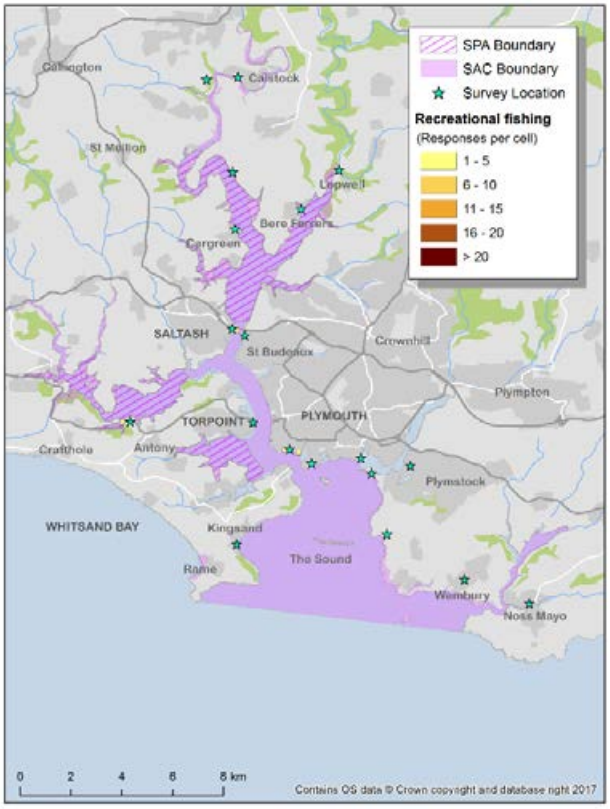


Figure 27 Distribution and intensity of recreational angling activity mapped by season for the Plymouth Sound and Estuaries EMS.

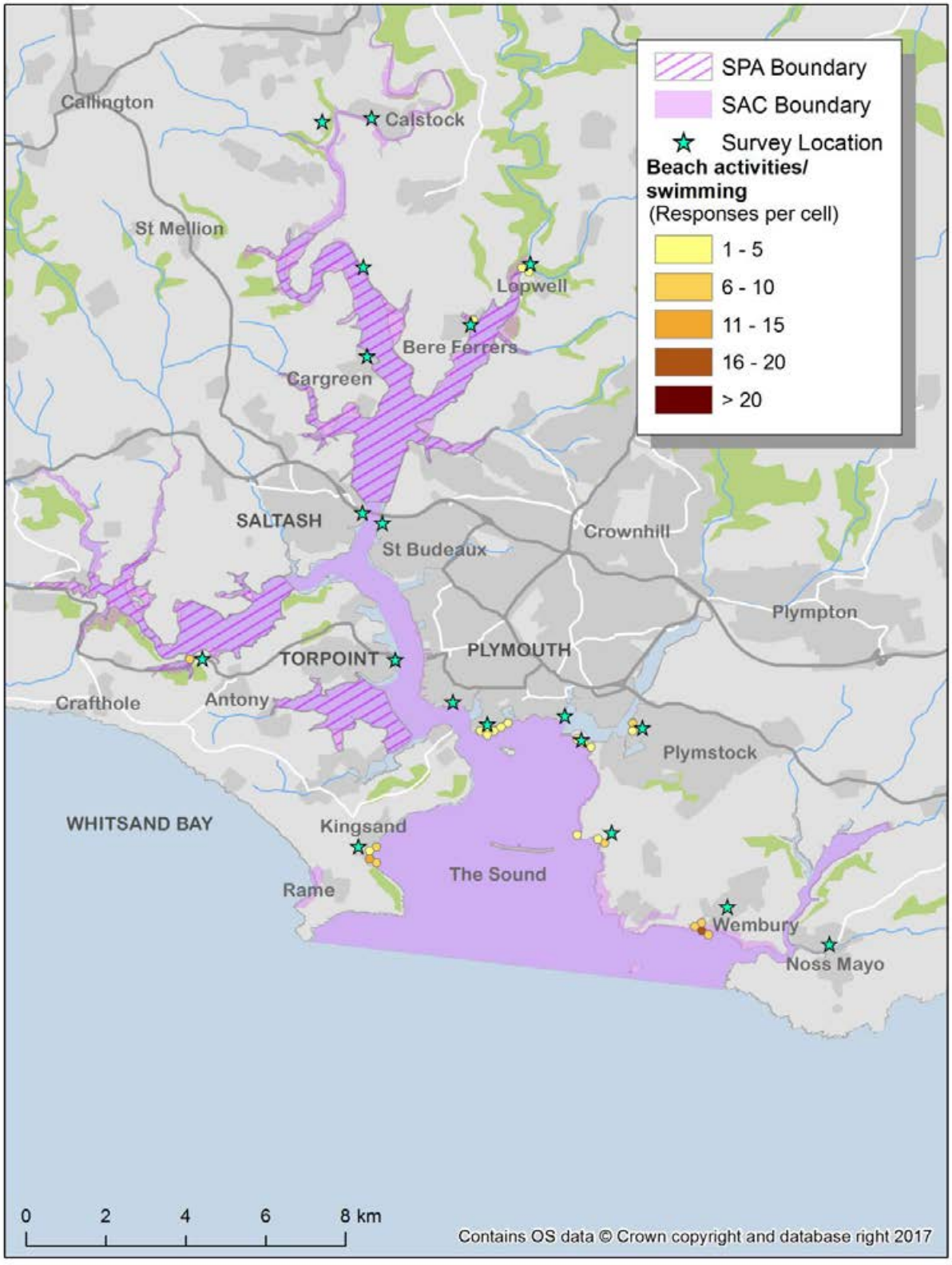
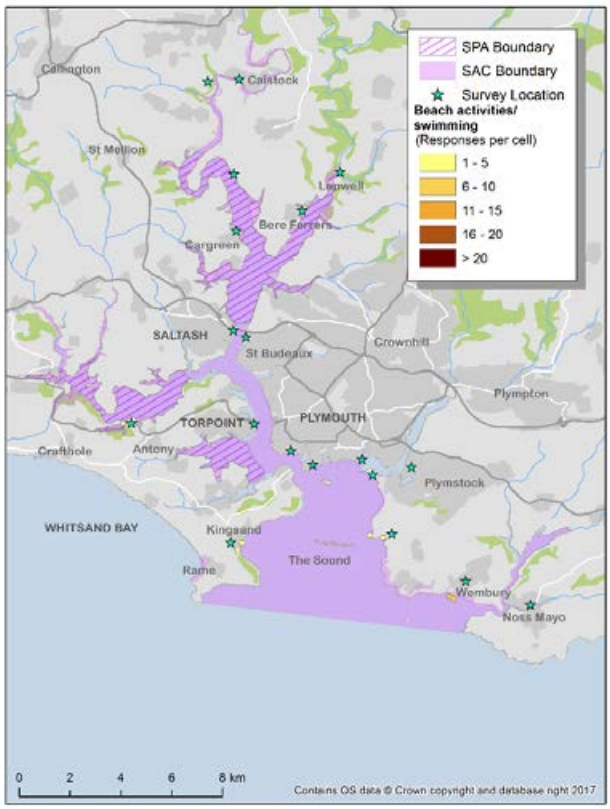
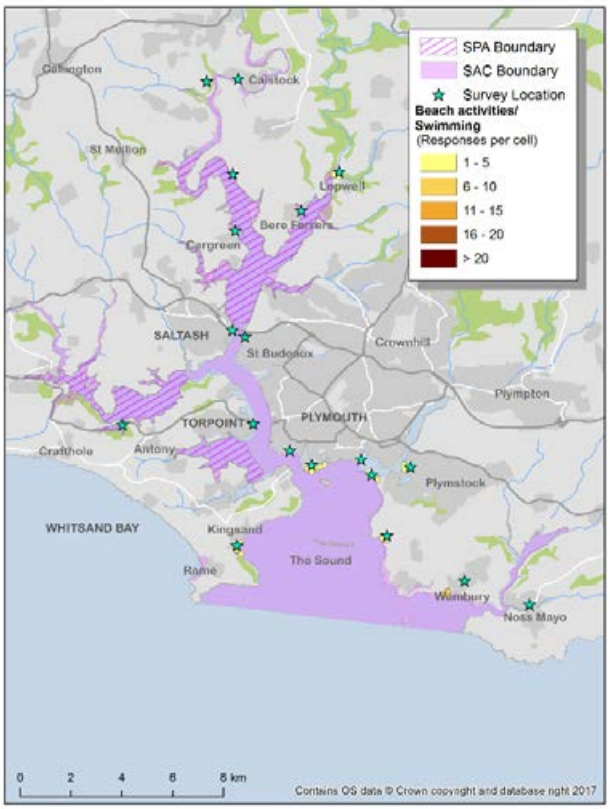


Figure 28 Distribution and intensity of beach activities (rock-pooling and swimming) mapped from on-site visitor survey responses from the Plymouth Sound and Estuaries EMS.

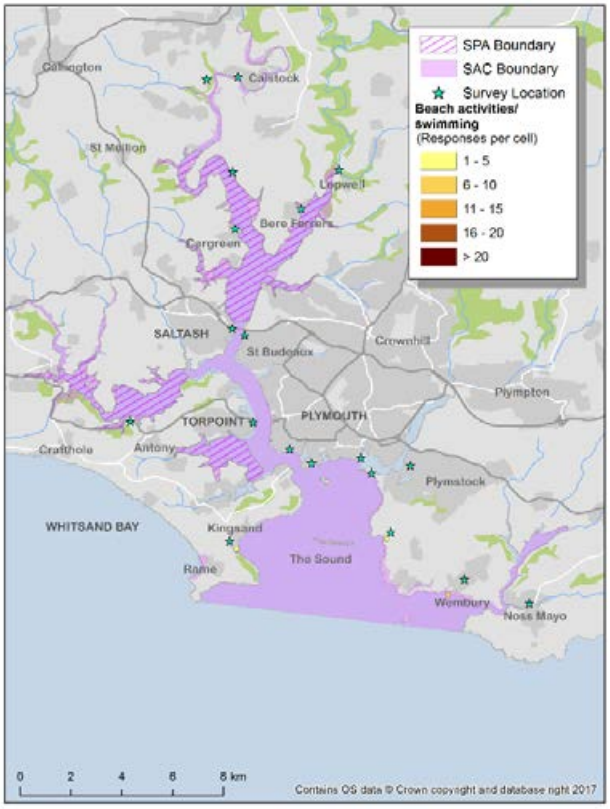
Spring



Summer



Autumn



Winter

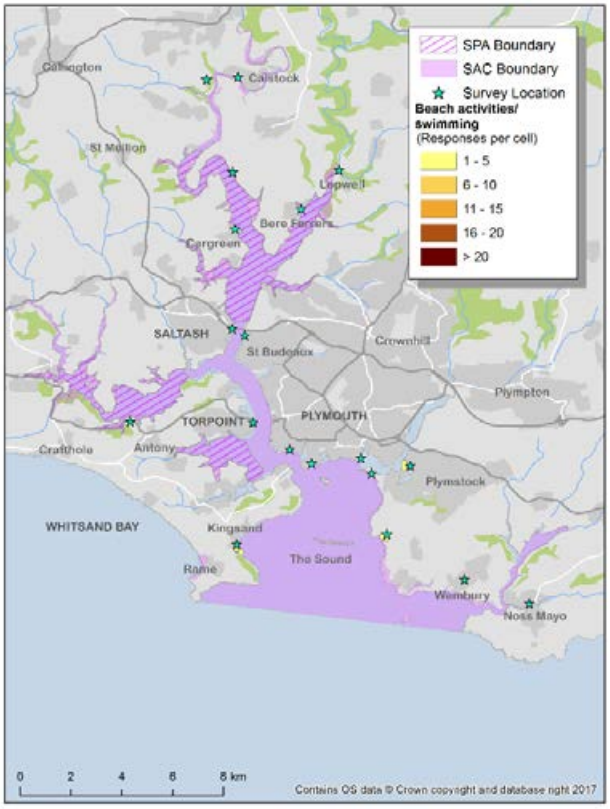


Figure 29 Distribution and intensity of beach activities (rock-pooling and swimming) mapped by season for the Plymouth Sound and Estuaries EMS.

Difference in activities between local residents and visitors from outside Devon and Cornwall are shown in Table 24. There are comparable percentages of walkers (28% and 26% for local residents and visitors from further afield respectively), but there are comparably fewer dog walkers within the visitors from outside Devon and Cornwall (9% compared with 20%), and a greater proportion of swimmers and rockpoolers (3% and 7% for swimmers and 4% and 7% for rockpoolers for local residents compared with visitors from outside Devon and Cornwall respectively).

Table 24. Main visitor activity by residency group (local residents of Devon and Cornwall and visitor from outside the counties), aggregated for all sites and seasons. Values represent counts of responses (multiple responses allowed per visitor group), with % of residency group in () and % overall [].

	Local Residents	Visitors from outside Devon and Corwall	Other	Total
Birdwatching/ wildlife watching	40 (5) [4]	11 (9) [1]	0 (0) [0]	51 [6]
Cycling	11 (1) [1]	2 (2) [0]	0 (0) [0]	13 [1]
Dog walking	151 (20) [17]	11 (9) [1]	8 (47) [1]	170 [19]
Horse riding	3 (0) [0]	0 (0) [0]	0 (0) [0]	3 [0]
Jogging/power walking/Nordic walking	9 (1) [1]	0 (0) [0]	0 (0) [0]	9 [1]
Kite Flying	0 (0) [0]	0 (0) [0]	0 (0) [0]	0 [0]
Outing with children/family	90 (12) [10]	20 (17) [2]	1 (6) [0]	111 [12]
Walking	214 (28) [24]	31 (26) [3]	2 (12) [0]	247 [27]
Bait digging/cockling/crab tiling	4 (1) [0]	0 (0) [0]	0 (0) [0]	4 [0]
Canoeing/kayaking	30 (4) [3]	6 (5) [1]	2 (12) [0]	38 [4]
Fishing - Angling	29 (4) [3]	1 (1) [0]	0 (0) [0]	30 [3]
Fishing – Spear Fishing	0 (0) [0]	0 (0) [0]	0 (0) [0]	0 [0]
Jet ski	1 (0) [0]	0 (0) [0]	0 (0) [0]	1 [0]
Kite surfing	1 (0) [0]	1 (1) [0]	0 (0) [0]	2 [0]
Motor Yacht	16 (2) [2]	1 (1) [0]	0 (0) [0]	17 [2]
Sailing Yacht	18 (2) [2]	4 (3) [0]	0 (0) [0]	22 [2]
Small sailing craft (Dingy etc.)	10 (1) [1]	2 (2) [0]	0 (0) [0]	12 [1]
Stand up paddle board	6 (1) [1]	2 (2) [0]	0 (0) [0]	8 [1]
Surfing	1 (0) [0]	1 (1) [0]	0 (0) [0]	2 [0]
Windsurfing	0 (0) [0]	0 (0) [0]	0 (0) [0]	0 [0]
Sub Aqua Diving	3 (0) [0]	1 (1) [0]	0 (0) [0]	4 [0]
Swimming	20 (3) [2]	8 (7) [1]	1 (6) [0]	29 [3]
Rockpooling	29 (4) [3]	9 (7) [1]	0 (0) [0]	38 [4]
Other	76 (10) [8]	10 (8) [1]	3 (18) [0]	89 [10]
Total	762 (100) [85]	121 (100) [13]	17 (100) [2]	900 [100]

8.4.5 Visit frequency

- **49% of interviewed groups confirmed that they visited the site at least several times per month (20-60 visits per year)**
- **In Winter, there were a greater proportion of visitors who came at least once a month compared with Summer (64% vs 43%)**
- **There were least first time visitors in Winter**
- **The distribution of visitor frequency was consistent between all the sites (SAC) and the seven SPA sites**
- **The majority of local residents (55% overall and 64% of local residents) visit at least once a month. Only 23% of local residents visited less than once a month (or 20% overall).**

Visitor groups were asked how often they visited the survey location within the Plymouth Sound and Estuaries EMS for recreational purposes over the last year. From 644 interviewed groups, 636 responses were gained. Overall patterns of visit frequency for the EMS were compared with SPA sites and also differences between local residents and non-local visitors were identified.

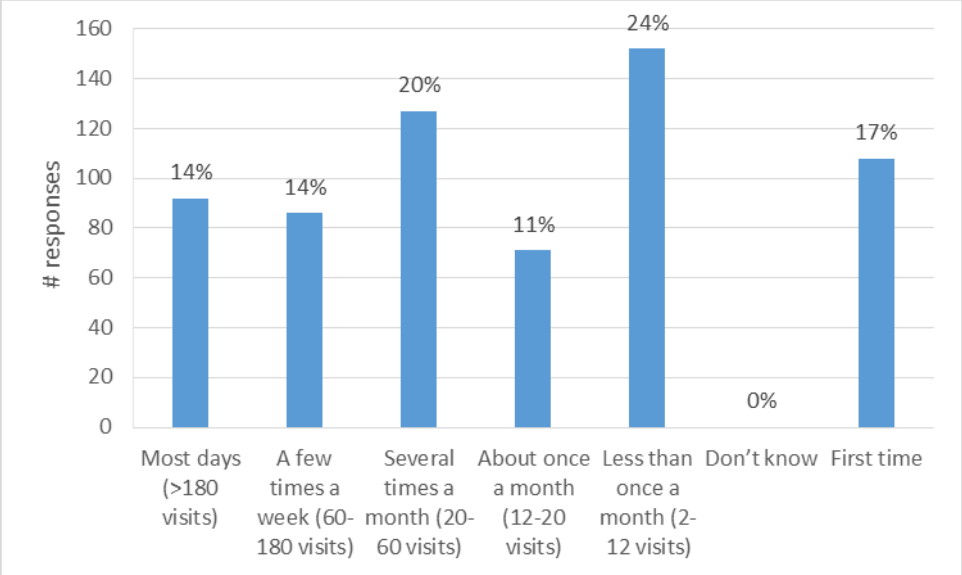


Figure 30. Distribution of responses of visit frequency (# responses with % of respondents above) for all sites and seasons.

Across all seasons, most respondents indicated that they visited the site less than once a month (24%) (Figure 16). 49% of interviewed groups confirmed that they visited the site at least several times per month (20-60 visits per year) (Table 25). This indicates regular recreational use of the site and that visitors are faithful to the location; furthermore, 15% of groups said that they visit most days.

Across the seasons, a higher proportion of visitor groups responded that they visited several times a month in Winter (64% compared with 41, 43 and 47% for Spring, Summer and Autumn respectively)(Table 25). Visitor groups that made less than 20 visits per year to the site were proportionally relatively stable across the different seasons (36, 38, 33 and 31% for Spring, Summer,

Autumn and Winter respectively), but there were markedly less first time visitors during Winter (5%) compared with Spring, Summer and Autumn (20, 19 and 20% respectively).

Table 25. Responses of visitor groups when asked how often they had visited the site over the past year (SAC). The values represent the count of responses with percentages per season ().

Over the past year, roughly how often have you visited this particular location for recreational purposes?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Most days (>180 visits)	19 (13) [3]	28 (13) [4]	22 (15) [3]	23 (19) [4]	**92 [14]**
A few times a week (60-180 visits)	19 (13) [3]	24 (11) [4]	21 (14) [3]	22 (19) [3]	**86 [14]**
Several times a month (20-60 visits)	27 (18) [4]	42 (19) [7]	27 (18) [4]	31 (26) [5]	**127 [20]**
About once a month (12-20 visits)	15 (10) [2]	31 (14) [5]	19 (13) [3]	6 (5) [1]	**71 [11]**
Less than once a month (2-12 visits)	39 (26) [6]	53 (24) [8]	30 (20) [5]	30 (25) [5]	**152 [24]**
Don't know	0 (0) [0]	0 (0) [0]	0 (0) [0]	0 (0) [0]	**0 [0]**
First time	30 (20) [5]	43 (19) [7]	29 (20) [5]	6 (5) [1]	**108 [17]**
Seasonal total	**149 (100) [23]**	**221 (100) [35]**	**148 (100) [23]**	**118 (100) [19]**	**636 [100]**

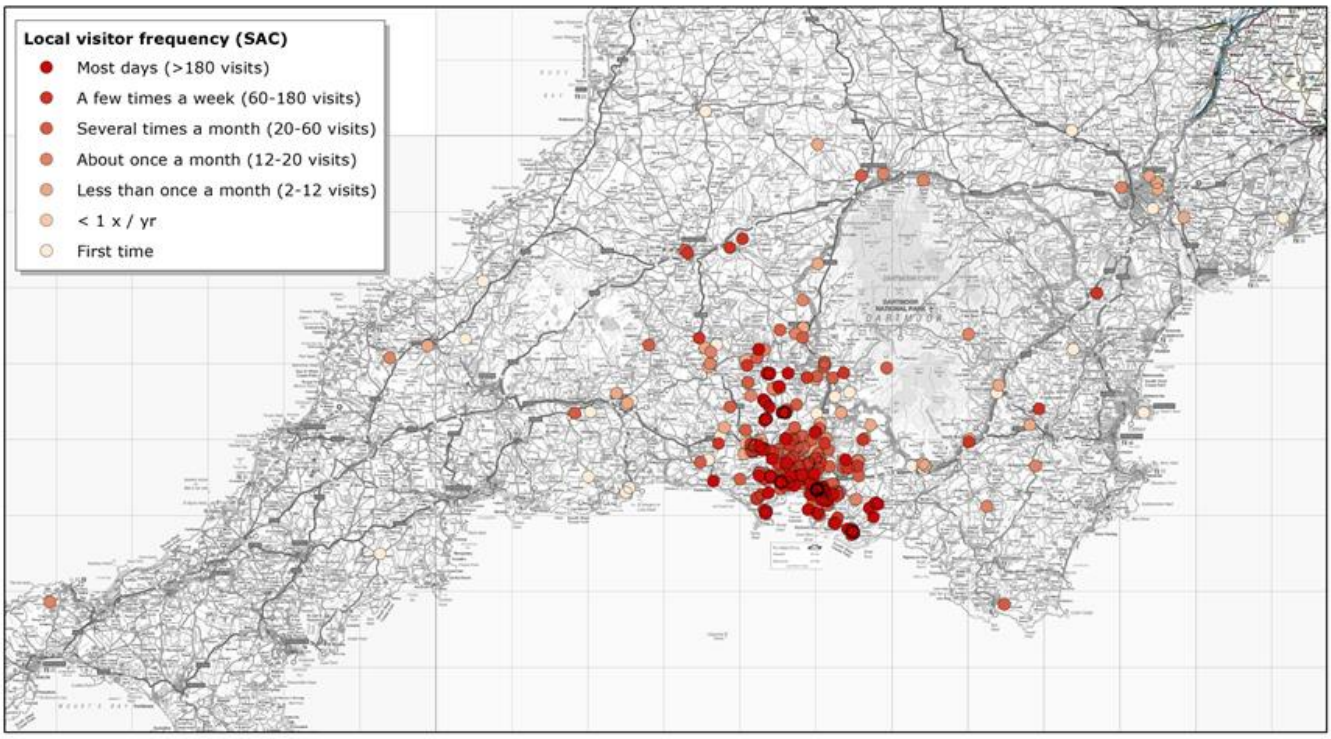


Figure 31 Visit frequency for local visitor groups plotted by visitor origin for all EMS sites

The frequency of visits for local residents (Devon and Cornwall residents) was mapped by the origin (home postcode) (Figure 31). This shows a high concentration of high frequency visitors clustered around the site with lower frequency visitors coming from further afield.

A similar pattern of visitor group frequency was seen when the SPA sites were analysed separated (Table 26). Higher numbers of regular visitors (at least several times a month) were recorded in Winter (61%) compared with the other seasons (40, 42 and 56% for Spring, Summer and Autumn

respectively). In addition, there were also less first time visitors in Winter (9%) compared with the other seasons (22, 21 and 13% for Spring, Summer and Autumn respectively) (Table 26).

Table 26. Responses of visitor groups when asked how often they had visited the sites within the SPA only over the past year. The values represent the count of responses with percentages per season ().

Over the past year, roughly how often have you visited this particular location for recreational purposes?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Most days (>180 visits)	5 (8)	7 (7)	8 (21)	7 (21)	**27 (14)**
A few times a week (60-180 visits)	8 (13)	11 (11)	7 (18)	6 (18)	**32 (15)**
Several times a month (20-60 visits)	12 (19)	23 (24)	7 (18)	8 (24)	**50 (21)**
About once a month (12-20 visits)	7 (11)	10 (10)	4 (10)	0 (0)	**21 (8)**
Less than once a month (2-12 visits)	17 (27)	26 (27)	8 (21)	10 (29)	**61 (26)**
Don't know	0 (0)	0 (0)	0 (0)	0 (0)	**0 (0)**
First time	14 (22)	20 (21)	5 (13)	3 (9)	**42 (16)**
Seasonal total	**63 (100)**	**97 (100)**	**39 (100)**	**34 (100)**	**233 (100)**

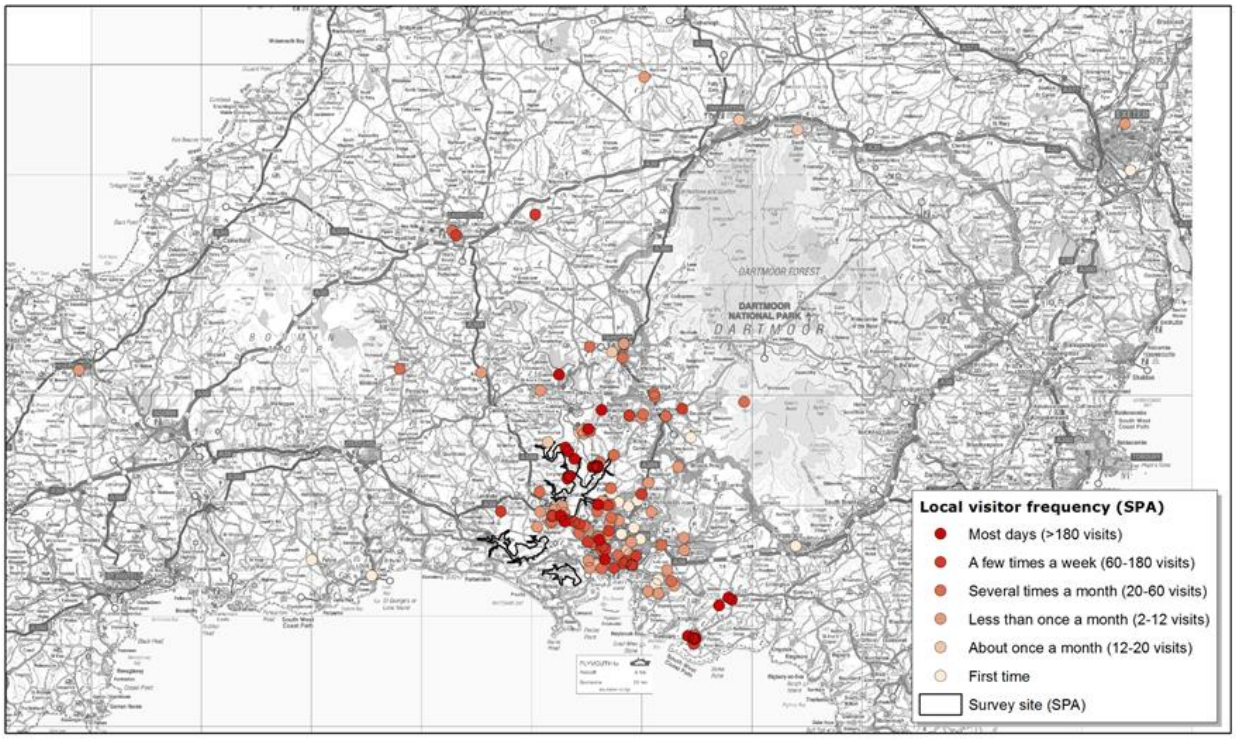


Figure 32. Visit frequency for local visitor groups plotted by visitor origin for SPA sites

The frequency of local residents was mapped by their origin (home postcode) for visitors to the SPA (Figure 32) and a similar pattern to the EMS as a whole was observed with a high concentration of high frequency visitors (e.g. most days or several times per week) originating close to the site with infrequent visitors originating from further away.

When the results are compared between local residents and non-local visitors, the regular pattern of use by local residents is further reinforced, with the majority (55% overall and 64% of local residents)

visiting at least once a month. Only 23% of local residents visited less than once a month (or 20% overall).

Non-local visitors fall in the less frequent categories (less than once a month, 4% and first time, 5%)

.

Table 27 Visit frequency compared by local resident vs non-local visitor (aggregated for all seasons and sites surveyed). Values indicate number of responses with () indicating % of visitor group (local, non-local) and [] % overall.

Over the past year, roughly how often have you visited this particular location for recreational purposes?	Local resident	Non-local visitor	Other	All
Most days (>180 visits)	83 (15) [13]	1 (1) [0]	8 (50) [1]	**92 [14]**
A few times a week (60-180 visits)	85 (15) [13]	0 (0) [0]	1 (6) [0]	**86 [14]**
Several times a month (20-60 visits)	119 (22) [19]	6 (9) [1]	2 (13) [0]	**127 [20]**
About once a month (12-20 visits)	66 (12) [10]	3 (4) [0]	2 (13) [0]	**71 [11]**
Less than once a month (2-12 visits)	125 (23) [20]	25 (36) [4]	2 (13) [0]	**152 [24]**
First time	72 (13) [11]	35 (50) [6]	1 (6) [0]	**108 [17]**
Seasonal total	**550 (100) [86]**	**70 (100) [11]**	**16 (100) [3]**	**636 [100]**

8.4.6 Seasonality of visits

- **37% of visitor groups stated that they made their visits all year round**
- **34% of these year round visitors were local residents with just 2% non-local visitors**
- **Of the non-local visitors 30% tended to visit in Summer and 27% were first time visitors, with just 5% visiting in Winter**

Visitor groups were asked about the seasonality of their visit in relation to the activity that they were undertaking during their interviewed visit. The question allowed visitors to provide multiple responses and from a total of 644 completed interviews, 800 responses were obtained (Table 28). General patterns of seasonal use were identified and compared between local residents and non-local visitors.

The majority of responses (37%) stated that the visitor groups made their visits all year round (Table 28). Of these visitor groups, 34% were local residents and just 2% were non-local visitors (plus 1% 'other').

The seasonal distribution of responses for non-local visitors was mostly Summer (30% of all non-local visitor groups) and 'First visit' (27% on all non-local visitor groups) with just 5% of non-local visitor groups stating 'Winter' (Table 28).

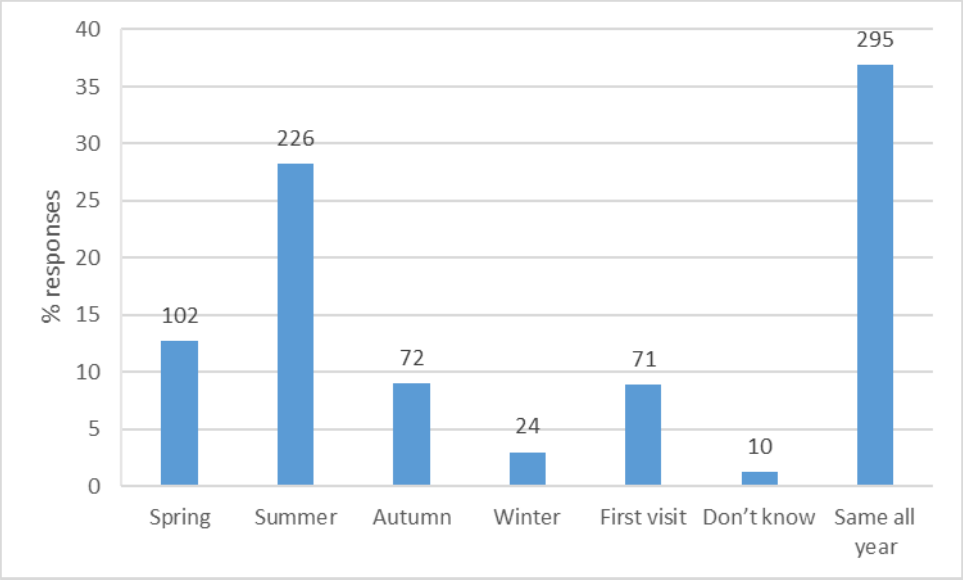


Figure 33. Responses stated by visitor groups when asked whether they tended to visit the site at a particular time of year, for the activity that they were undertaking during their interview. Values represent % of all responses (aggregated for sites, and season with # responses above each column).

Table 28. Responses stated by visitor groups when asked whether they tended to visit the site at a particular time of year, for the activity that they were undertaking during their interview. Values represent numbers of responses with % of local resident or non-local visitor in () and % overall in [].

Do you tend to visit this site more during a particular season?	Local resident	Non-local visitor	Other	All
Spring	87 (13) [11]	14 (15) [2]	1 (5) [0]	102 [13]
Summer	194 (28) [24]	28 (30) [4]	4 (21) [1]	226 [28]
Autumn	62 (9) [8]	8 (9) [1]	2 (11) [0]	72 [9]
Winter	17 (2) [2]	5 (5) [1]	2 (11) [0]	24 [3]
First visit	45 (7) [6]	25 (27) [3]	1 (5) [0]	71 [9]
Don't know	8 (1) [1]	2 (2) [0]	0 (0) [0]	10 [1]
Same all year	274 (40) [34]	12 (13) [2]	9 (47) [1]	295 [37]
Total	687 (100) [86]	94 (100) [12]	19 (100) [2]	800 [100]

8.4.7 Time of day per visit

- **Most visits to the EMS were between 9am and 12pm (18%), and 12 and 3pm (20% of all responses)**
- **Winter visitors tended to visit between 12pm and 3pm (23% of responses) while Summer visits were more evenly spread through the day**
- **Visitor patterns in the SPA were similar to the SAC although Tidal and weather / sea conditions appeared more important to SPA visitors**

Interviewed groups were asked whether they tended to visit the site at a certain time of day. Multiple responses were by respondents, and a total of 958 responses were obtained (336 of these responses were from the seven SPA sites) (Table 29). Seasonal differences in the time of day of visits were identified, and comparisons between the SAC and SPA sites were made.

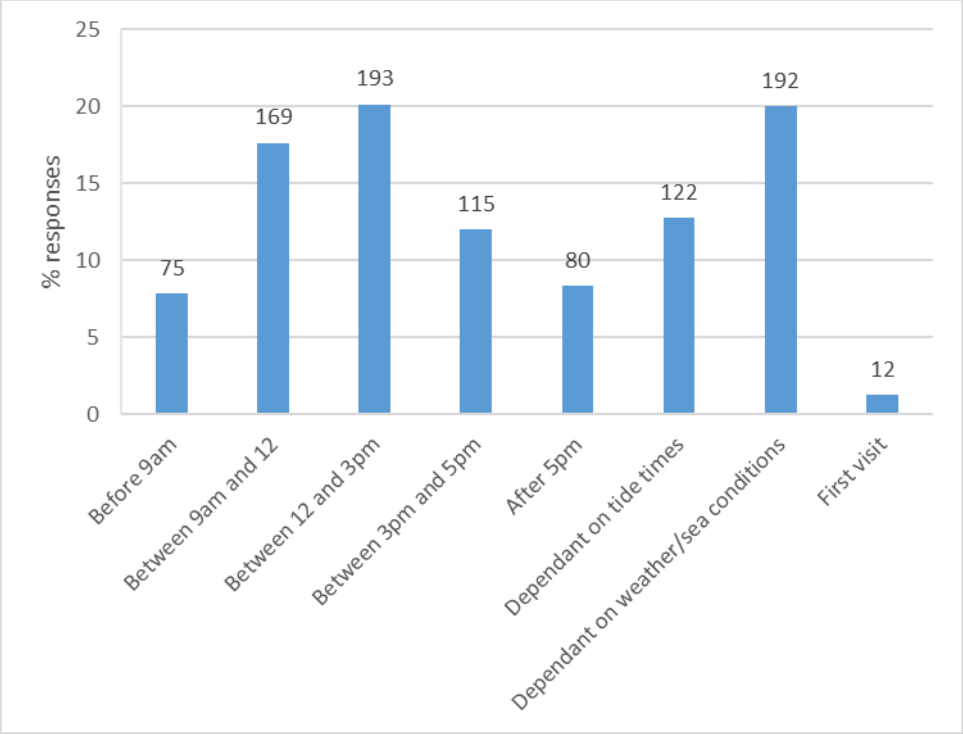


Figure 34 Responses stated by visitor groups when asked what time of day they tended to visit. Values represent % of all responses with # responses above each column.

The most frequently stated time for visits to the EMS was between 9am and 12pm, and 12 and 3pm (18% and 20% of all responses respectively) (Figure 34). Visits were also highly influenced by the tide times (13% of responses overall) and the weather / sea conditions (20% of responses).

In Winter, the most frequently stated visit time was between 12pm and 3pm (23% of responses for that season), and the least (with just 5%) after 5pm. In Summer, the responses are spread more

evenly across all time categories, but the sea conditions appear to be of greater importance to visiting groups (28% of responses for that season).

Table 29. Responses of visitor groups when asked if they tended to visit this particular location at a certain time of day. Data for all sites surveyed within the SAC are presented The values represent the count of responses with % per season () and % overall in [].

Do you tend to visit this particular location at a certain time of day?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Before 9am	11 (5) [1]	20 (6) [2]	21 (10) [2]	23 (12) [2]	75 [8]
Between 9am and 12	34 (17) [4]	52 (15) [5]	43 (20) [4]	40 (21) [4]	169 [18]
Between 12 and 3pm	45 (22) [5]	61 (18) [6]	44 (20) [5]	43 (23) [4]	193 [20]
Between 3pm and 5pm	17 (8) [2]	42 (12) [4]	22 (10) [2]	34 (18) [4]	115 [12]
After 5pm	15 (7) [2]	35 (10) [4]	20 (9) [2]	10 (5) [1]	80 [8]
Dependant on tide times	35 (17) [4]	41 (12) [4]	26 (12) [3]	20 (11) [2]	122 [13]
Dependant on weather/sea conditions	48 (23) [5]	97 (28) [10]	27 (13) [3]	20 (11) [2]	192 [20]
First visit	0 (0) [0]	0 (0) [0]	12 (6) [1]	0 (0) [0]	12 [1]
Seasonal total	**205 (100) [21]**	**348 (100) [36]**	**215 (100) [22]**	**190 (100) [20]**	**958 [100]**

Visitor groups at the SPA sites showed similar response patterns to that of the SAC, with the highest frequencies in the 9am to 12pm and 12pm to 3pm time categories. Visits before 9am were less frequent though than within the SAC as a whole. In addition, the conditions (tide, weather/sea condition) appear to be of greater importance to SPA visitors compared to the SAC as a whole (18% compared with 13% for SPA and SAC tide conditions and 26% and 20% for weather/sea conditions) (Table 30).

Table 30. Responses of visitor groups when asked if they tended to visit this particular location at a certain time of day. Data are presented for the 7 sites within the SPA. The values represent the count of responses with percentages per season () and % overall in [].

Do you tend to visit this particular location at a certain time of day?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Before 9am	4 (5) [1]	4 (3) [1]	7 (13) [2]	6 (12) [2]	21 [6]
Between 9am and 12	11 (13) [3]	19 (13) [6]	8 (15) [2]	10 (20) [3]	48 [14]
Between 12 and 3pm	17 (20) [5]	28 (19) [8]	6 (11) [2]	6 (12) [2]	57 [17]
Between 3pm and 5pm	8 (9) [2]	17 (12) [5]	3 (6) [1]	8 (16) [2]	36 [11]
After 5pm	7 (8) [2]	12 (8) [4]	3 (6) [1]	2 (4) [1]	24 [7]
Dependant on tide times	12 (14) [4]	18 (12) [5]	18 (33) [5]	12 (24) [4]	60 [18]
Dependant on weather/sea conditions	28 (32) [8]	48 (33) [14]	6 (11) [2]	5 (10) [1]	87 [26]
First visit	0 (0) [0]	0 (0) [0]	3 (6) [1]	0 (0) [0]	3 [1]
Seasonal total	**87 (100) [26]**	**146 (100) [43]**	**54 (100) [16]**	**49 (100) [15]**	**336 [100]**

8.4.8 Visit duration

- **36% of all responses indicate that visitors spend 1-2 hours at the site**
- **68% of visits are less than 2 hours**
- **Winter visits are generally shorter than those in the other seasons**
- **Visits to the SPA tended to be shorter than the SAC**
- **Local residents tended to make proportionally more short visits and non-local visitors made proportionally more longer visits**

Visitor groups were asked about the duration or expected duration of their visit. Data were compared for seasonal patterns and for visitors to the SPA sites. The highest frequency of responses was 1-2 hours (36% of visits overall). When considered together with the shortest visit category (less than 1 hour), this accounts for 68% of visits. Just over one third (35%) of visits were stated as over 2 hours in duration.

In Winter, there are less visits over two hours (22% of visits compared with 37%, 36% and 36% for Spring, Summer and Autumn respectively).

Table 31. Responses given by interviewed visitor groups on their duration (or expected duration) of their interviewed visit. The values presented are from all the sites within the SAC. Values represent counts of responses and are summarised as percentages per season () and percentages overall [].

How long have you spent/will you spend at this site today?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Less than 1 hour	36 (23) [6]	70 (32) [11]	48 (32) [7]	46 (39) [7]	200 [31]
1-2 hours	61 (40) [10]	72 (33) [11]	48 (32) [7]	46 (39) [7]	227 [35]
2-3 hours	24 (16) [4]	31 (14) [5]	28 (19) [4]	14 (12) [2]	97 [15]
More than 3 hours	33 (21) [5]	48 (22) [7]	25 (17) [4]	12 (10) [2]	118 [18]
Seasonal total	154 (100) [24]	221 (100) [34]	149 (100) [23]	118 (100) [18]	642 [100]

The SPA sites show a slightly different pattern concerning the duration of visits: the most frequent duration of visit was reported as less than 1 hour (Table 32). Overall, a slightly higher proportion of SPA visits were of less than 2 hours (73% compared with 68% for the SAC).

The seasonal trends of shorter visits in Winter determined in the SAC responses was also apparent in the SPA site responses.

Table 32 Responses given by interviewed visitor groups on their duration (or expected duration) of their interviewed visit. The values presented are from the 7 SPA sites. Values represent counts of responses and are summarised as percentages per season ().

How long have you spent/will you spend at this site today?	Spring	Summer	Autumn	Winter	All
Number of surveys	**39**	**52**	**35**	**31**	**157**
Less than 1 hour	19 (28) [8]	37 (38) [16]	17 (44) [7]	14 (41) [6]	87 [37]
1-2 hours	28 (42) [12]	35 (36) [15]	10 (26) [4]	12 (35) [5]	85 [36]
2-3 hours	5 (7) [2]	9 (9) [4]	4 (10) [2]	5 (15) [2]	23 [10]
More than 3 hours	15 (22) [6]	16 (16) [7]	8 (21) [3]	3 (9) [1]	42 [18]
Seasonal total	67 (100) [28]	97 (100) [41]	39 (100) [16]	34 (100) [14]	237 [100]

Visit duration varied between local residents and non-local visitors, in that non-local visitors tended to spend longer at the sites with proportionally more responses in the longer duration categories (38% compared with 16% for non-local visitors and local residents respectively for visits lasting more than 3 hours) (Table 33).

Table 33 Responses given by interviewed visitor groups on their duration (or expected duration) of their interviewed visit, by visitor type (local resident, non-local visitor). The values presented are counts of responses and are summarised as percentage of visitor type () and percentage overall [].

How long have you spent/will you spend at this site today?	Local resident	Non-local visitor	Other	Total
Less than 1 hour	176 (32) [27]	15 (21) [2]	9 (56) [1]	**200 [31]**
1-2 hours	206 (37) [32]	17 (24) [3]	4 (25) [1]	**227 [35]**
2-3 hours	84 (15) [13]	12 (17) [2]	1 (6) [0]	**97 [15]**
More than 3 hours	89 (16) [14]	27 (38) [4]	2 (13) [0]	**118 [18]**
Total by visitor type	**555 (100) [86]**	**71 (100) [11]**	**16 (100) [2]**	**642 [100]**

8.5 Why visitors chose to come to the site

- **26% (276) of all responses indicate that visitors were drawn to the site by the 'attractive scenery / views'**
- **There were no obvious seasonal patterns in the responses given by visitor groups**
- **SPA sites visitors chose the site for the same reasons as visitors to the SAC sites**
- **More local residents chose 'close to home' as a reason for visiting, while non-local visitors tended to state their reason as 'Refreshments' and 'Toilets'.**

Visitor groups were asked to describe what specifically makes them choose to visit the particular location rather than another local site. Multiple responses were allowed, and from 644 surveys of visitor groups 1,100 responses were obtained. Responses were compared by season and SPA compared with the SAC and between local residents and non-local visitors.

The most frequently stated comments about why visitors chose that site were: 'attractive scenery / views' (26% of responses), 'close to home' (24% of responses), and 'right place for activity' (13% of responses) (Figure 35, Table 34). There were no obvious seasonal patterns in the responses given by visitor groups.

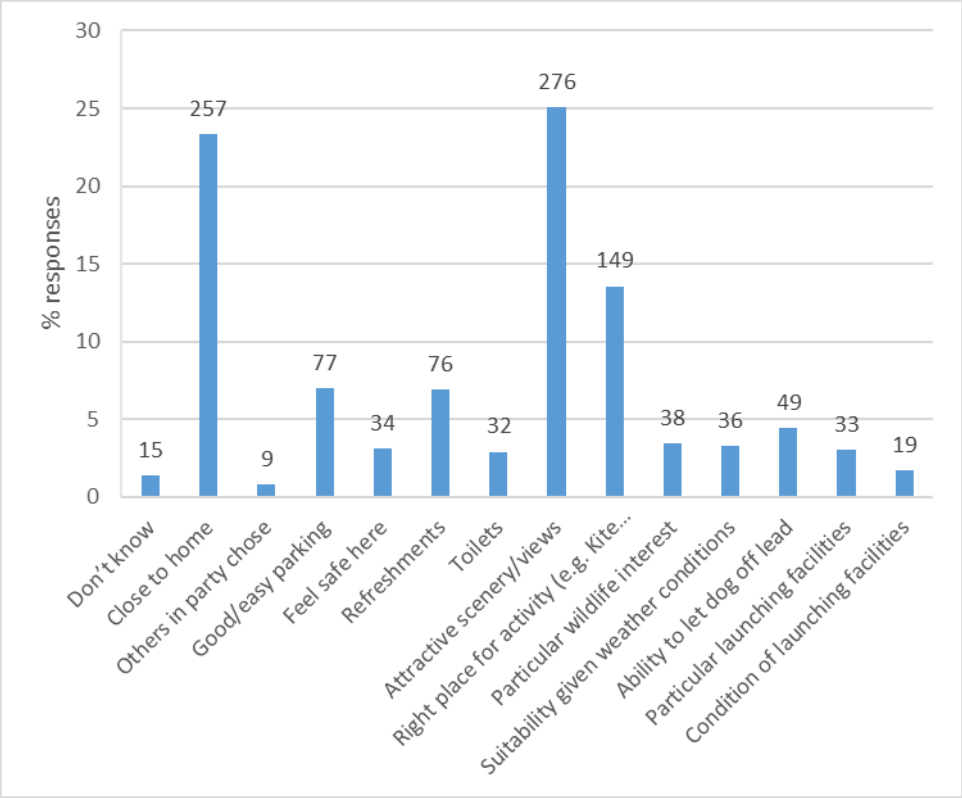


Figure 35. Responses provided by interviewed groups when asked what makes them come here specifically rather than another local site. The values represent % responses with the count of responses above each column.

A large number of specific comments around site choice were also obtained; some of these relate to access (disabled access, bus links to Plymouth), others to preferences and habits of the visitors (e.g. have been coming since childhood, proximity to friends), the qualities of the site (calm and peaceful, wildlife), and the facilities (café, pub for lunch, launching facilities).

Table 34. Responses provided by interviewed groups when asked 'What makes you come here specifically, rather than another local site? The values represent and the count of responses (multiple answers per group interviewed) for all sites within the SAC with percentages per season in () and percentages overall in [].

What makes you come here, specifically, rather than another local site?	Spring	Summer	Autumn	Winter	All
Don't know	3 (1) [0]	9 (2) [1]	1 (0) [0]	2 (1) [0]	**15 [1]**
Close to home	61 (23) [6]	83 (20) [8]	68 (26) [6]	45 (27) [4]	**257 [23]**
Others in party chose	1 (0) [0]	4 (1) [0]	3 (1) [0]	1 (1) [0]	**9 [1]**
Good/easy parking	15 (6) [1]	23 (6) [2]	26 (10) [2]	13 (8) [1]	**77 [7]**
Feel safe here	11 (4) [1]	8 (2) [1]	8 (3) [1]	7 (4) [1]	**34 [3]**
Refreshments	17 (7) [2]	32 (8) [3]	18 (7) [2]	9 (5) [1]	**76 [7]**
Toilets	6 (2) [1]	16 (4) [1]	7 (3) [1]	3 (2) [0]	**32 [3]**
Attractive scenery/views	60 (23) [5]	100 (24) [9]	69 (27) [6]	47 (29) [4]	**276 [25]**
Right place for activity (e.g. fishing/good for kids)	41 (16) [4]	69 (17) [6]	19 (7) [2]	20 (12) [2]	**149 [14]**
Particular wildlife interest	11 (4) [1]	16 (4) [1]	8 (3) [1]	3 (2) [0]	**38 [3]**
Suitability given weather conditions	7 (3) [1]	20 (5) [2]	4 (2) [0]	5 (3) [0]	**36 [3]**
Ability to let dog off lead	10 (4) [1]	19 (5) [2]	13 (5) [1]	7 (4) [1]	**49 [4]**
Particular launching facilities	13 (5) [1]	13 (3) [1]	6 (2) [1]	1 (1) [0]	**33 [3]**
Condition of launching facilities	5 (2) [0]	6 (1) [1]	7 (3) [1]	1 (1) [0]	**19 [2]**
Seasonal total	**261 (100) [24]**	**418 (100) [38]**	**257 (100) [23]**	**164 (100) [15]**	**1100 [100]**

Responses from within the SPA site reflect the pattern within the wider SAC in terms of why visitors chose to visit that site specifically; 'attractive scenery/views' was most important with 25% of responses, followed by 'close to home' with 22%, and 'right place for activity' scored 15% of all responses (Table 35).

Table 35 Responses provided by interviewed groups when asked 'What makes you come here specifically, rather than another local site? The values represent and the count of responses (multiple answers per group interviewed) for the 7 sites within the SPA with percentages per season in () and percentages overall in [].

What makes you come here, specifically, rather than another local site?	Spring	Summer	Autumn	Winter	All
Don't know	1 (1) [0]	5 (3) [0]	0 (0) [0]	1 (2) [0]	7 [2]
Close to home	24 (21) [2]	29 (15) [3]	20 (28) [2]	13 (25) [1]	86 [20]
Others in party chose	0 (0) [0]	1 (1) [0]	0 (0) [0]	0 (0) [0]	1 [0]
Good/easy parking	5 (4) [0]	8 (4) [1]	7 (10) [1]	6 (12) [1]	26 [6]
Feel safe here	5 (4) [0]	3 (2) [0]	2 (3) [0]	1 (2) [0]	11 [3]
Refreshments	7 (6) [1]	13 (7) [1]	3 (4) [0]	2 (4) [0]	25 [6]
Toilets	2 (2) [0]	4 (2) [0]	1 (1) [0]	2 (4) [0]	9 [2]

Attractive scenery/views	26 (22) [2]	52 (27) [5]	19 (27) [2]	10 (20) [1]	107 [25]
Right place for activity (e.g. fishing/good for kids)	21 (18) [2]	30 (16) [3]	8 (11) [1]	7 (14) [1]	66 [15]
Particular wildlife interest	9 (8) [1]	10 (5) [1]	4 (6) [0]	3 (6) [0]	26 [6]
Suitability given weather conditions	3 (3) [0]	9 (5) [1]	0 (0) [0]	2 (4) [0]	14 [3]
Ability to let dog off lead	4 (3) [0]	14 (7) [1]	3 (4) [0]	4 (8) [0]	25 [6]
Particular launching facilities	7 (6) [1]	7 (4) [1]	2 (3) [0]	0 (0) [0]	16 [4]
Condition of launching facilities	2 (2) [0]	5 (3) [0]	2 (3) [0]	0 (0) [0]	9 [2]
Seasonal total	**116 (100)**	**190 (100)**	**71 (100)**	**51 (100)**	**428 (100)**

There were some differences between the local resident visitor groups and non-local visitors in terms of why they chose the site. Proportionally twice as many local resident groups identified 'close to home' as a reason (24% compared with 12% by group type). Proportionally less local resident groups identified 'refreshments', 'toilets' and 'Right place for activity' as a reason for site selection (7% compared with 11% of group type, 2% compared with 8% of group type, and 13% compared with 18% of group type respectively).

Table 36. Responses provided by interviewed groups when asked 'What makes you come here specifically, rather than another local site? The values represent and the count of responses (multiple answers per group interviewed) with percentages per local vs non-local visitor in () and percentages overall in [].

What makes you come here, specifically, rather than another local site?	Local resident	Non-local visitor	Other	All
Don't know	15 (2) [1]	0 (0) [0]	0 (0) [0]	**15 [1]**
Close to home	232 (24) [21]	12 (12) [1]	13 (48) [1]	**257 [23]**
Others in party chose	8 (1) [1]	1 (1) [0]	0 (0) [0]	**9 [1]**
Good/easy parking	67 (7) [6]	7 (7) [1]	3 (11) [0]	**77 [7]**
Feel safe here	31 (3) [3]	2 (2) [0]	1 (4) [0]	**34 [3]**
Refreshments	65 (7) [6]	11 (11) [1]	0 (0) [0]	**76 [7]**
Toilets	24 (2) [2]	8 (8) [1]	0 (0) [0]	**32 [3]**
Attractive scenery/views	244 (25) [22]	26 (26) [2]	6 (22) [1]	**276 [25]**
Right place for activity (e.g. fishing/good for kids)	129 (13) [12]	19 (19) [2]	1 (4) [0]	**149 [14]**
Particular wildlife interest	33 (3) [3]	5 (5) [0]	0 (0) [0]	**38 [3]**
Suitability given weather conditions	31 (3) [3]	5 (5) [0]	0 (0) [0]	**36 [3]**
Ability to let dog off lead	47 (5) [4]	2 (2) [0]	0 (0) [0]	**49 [4]**
Particular launching facilities	29 (3) [3]	3 (3) [0]	1 (4) [0]	**33 [3]**
Condition of launching facilities	17 (2) [2]	0 (0) [0]	2 (7) [0]	**19 [2]**
Total	**972 (100) [88]**	**101 (100) [9]**	**27 (100) [2]**	**1100 [100]**

8.5.1 Transport

- **69% of all visitor groups arrived by car and 23% arrived by foot**
- **All other modes of transport accounted for <8% of the visitor groups**
- **There were no obvious differences in transport mode between local residents and visitors**

Visitor groups were asked which transport mode they used to arrive at their particular site, and a total of 644 responses were obtained (Table 37).

The majority of people (69%) came to the site by car or motorcycle (Table 37, Figure 36). This pattern was consistent between local residents of Devon and Cornwall and visitors from outside the counties (68% and 70% respectively). The second most popular mode of transport was 'On foot' with 23% of respondents overall. The other modes of transport had much lower frequencies of responses; By water (4%), Bus (2%), Bicycle (1%), Train (0.3%) and Horse (0.2%). None of the visitors from outside of Devon and Cornwall arrived by train or horse.

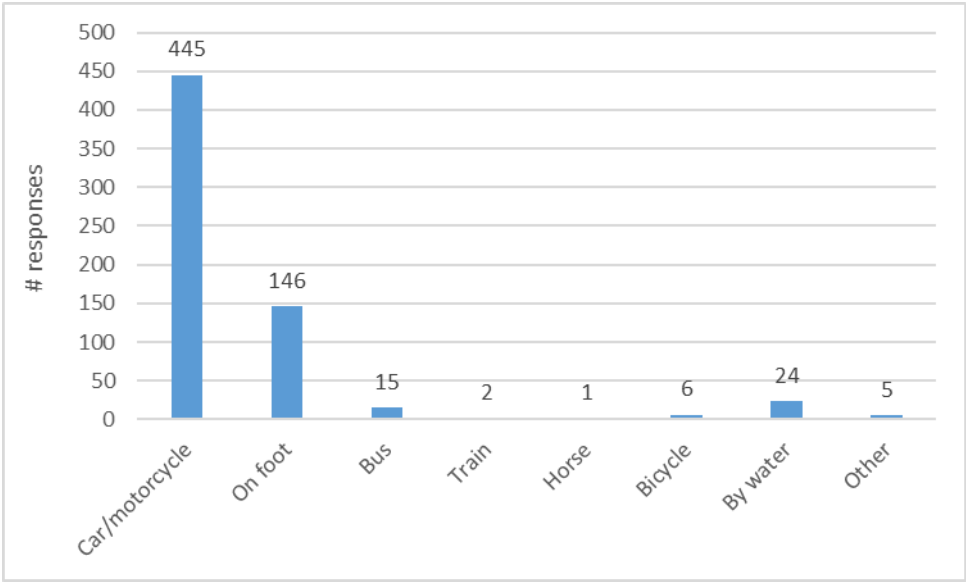


Figure 36 Transport used by visitor groups to get to the site. Values represent numbers of responses (visitor groups) aggregated for all seasons and sites.

Table 37. Transport used by visitor groups to get to the site, aggregated for season and site. Values represent counts of responses (selection was restricted to one per visitor group), () indicate % per residency group (local resident of Devon or Cornwall vs visitors from outside these counties) and [] shows overall %.

What form of transport did you use to get here today?	Local resident	Visitor from outside Devon and Cornwall	Total
Car/motorcycle	391 (70) [61]	48 (68) [7]	445 [69]
On foot	121 (22) [19]	15 (21) [2]	146 [23]
Bus	14 (3) [2]	1 (1) [0]	15 [2]
Train	1 (0) [0]	1 (1) [0]	2 [0]
Horse	1 (0) [0]	0 (0) [0]	1 [0]
Bicycle	6 (1) [1]	0 (0) [0]	6 [1]
By water (e.g. boat, canoe etc.)	18 (3) [3]	6 (8) [1]	24 [4]
Other	5 (1) [1]	0 (0) [0]	5 [1]
All	**557 (100) [86]**	**71 (100) [11]**	**644 [100]**

8.5.2 Speculative site change

- **The majority (54%) of local resident groups said that the amount of time they would spend at the site would not change under any of the suggested conditions**
- **Possible changes that would encourage more time spent at the site include the provision of dog waste bins and better surfaces of paths**
- **Site use would likely decrease with the introduction of parking charges, if the site became busier or if dogs were required to be on leads**

Visitor groups were asked whether in light of speculative on site change, would they spend more or less time at the site. Seven types of change were posed and in total 3644 responses were gathered for local resident groups (Table 38).

The majority (54%) of local resident groups said that the amount of time they would spend at the site would not change under any of the scenarios. Possible changes that would encourage more time spent at the site include the provision of dog waste bins and better surfaces of paths. Conversely site use would likely decrease with the introduction of parking charges, if the site became busier or if dogs were required to be on leads.

Table 38. Response of local resident groups when asked how speculative site changes would influence the amount of time they spend at the Plymouth Sound and Estuaries EMS Values represent counts of responses with percentages per row () and percentages overall [].

Response to speculative on site change	More	Less	Same	Don't know	Total
Site became busier with more people	11 (2) [0]	276 (51) [8]	241 (45) [7]	10 (2) [0]	**538 [15]**
Better path surfacing/routing	118 (22) [3]	13 (2) [0]	375 (71) [10]	20 (4) [1]	**526 [14]**
Parking charges introduced or increased	60 (12) [2]	273 (53) [7]	157 (31) [4]	21 (4) [1]	**511 [14]**
Dogs required to be on leads	93 (18) [3]	133 (25) [4]	261 (50) [7]	38 (7) [1]	**525 [14]**
Provision of dog waste bins	208 (40) [6]	11 (2) [0]	271 (52) [7]	29 (6) [1]	**519 [14]**
Presence of warden/beach manager	68 (13) [2]	25 (5) [1]	346 (68) [9]	72 (14) [2]	**511 [14]**
Part of shore closed in areas sensitive for wildlife	75 (15) [2]	54 (11) [1]	333 (65) [9]	52 (10) [1]	**514 [14]**
Totals	**633 (122) [17]**	**785 (150) [22]**	**1984 (381) [54]**	**242 (47) [7]**	**3644 [100]**

8.5.3 Features that would attract local residents to alternative sites

- **17% of local resident visitor groups stated that no features would make another site more attractive indicating high site fidelity by local residents to the EMS**
- **The highest scoring features that would draw visitors to an alternative site were 'Attractive scenery' (18%), 'More dog friendly' (10%), and 'Cheaper/free parking' (9% of responses)**

Visitor groups were asked what features would be necessary to attract them to alternative sites instead of the Plymouth Sound and Estuaries EMS. The responses from the local resident visitor groups are summarised in Table 39. In total 744 responses were provided from the 557 local resident groups.

17% of local resident visitor groups stated that no features would make another site more attractive indicating high site fidelity by local residents to the EMS. The highest scoring features that would draw visitors to an alternative site were 'Attractive scenery' (18% of responses), 'More dog friendly' (10% of responses), and 'Cheaper/free parking' (9% of responses).

Table 39. Responses of local residents when asked what features would be necessary to make an alternative site to Plymouth Sound and Estuaries EMS attractive. Values represent counts of responses with percentages of the total in ().

What features would be necessary to make another site attractive for you to use instead of here?	Response counts (%)
No features/nothing	125 (17)
More dog friendly	71 (10)
Better launching/access to water	51 (7)
Better path surfacing/routing	33 (4)
Refreshments (e.g. cafe)	62 (8)
Better information/maps/boards	20 (3)
Measures to control other users	17 (2)
Toilets	70 (9)
Better/easier parking facilities	41 (6)
Cheaper/free parking	66 (9)
Closer to home	53 (7)
Attractive scenery	135 (18)
Total	744 (100)

8.5.4 Additional comments about the EMS

- **The majority of the comments about the site were positive (54%)**
- **Site access (5%), litter (5%), maintenance (5%) and parking (4%) emerged as with high frequency in visitor comments**

Visitor groups interviewed were asked whether they had any additional comments about the EMS. All comments provided by the interviewees are given in Appendix A2. The majority of the comments about the site are positive (54%) (Table 40) e.g. Lovely area and hard to beat, great for activities and lovely place. Lots of happy memories. There are several recurring issues that respondents were keen to report concerning site access (5%), litter (5%), maintenance (5%) and parking (4%). Other comments that were given at lower frequencies included the number of holiday homes in the area, fly-tipping and pylons.

Table 40 Comment response frequencies summarised by main types provided by visitor groups. Values represent the number of responses with percentages overall in ().

Comment type	# responses
General positive	215 (54)
Access issues	20 (5)
Litter issues	20 (5)
Maintenance issues	19 (5)
Parking issues	16 (4)
Dogs – negative	13 (3)
Recreational facilities - negative	13 (3)
Dogs – positive	8 (2)
Toilet facilities issues	8 (2)
Wildlife	7 (2)
Cafe facilities	7 (2)
Tourist/holiday home issues	7 (2)
Good for children	6 (2)
Recreational facilities - positive	6 (2)
Miscellaneous	6 (2)
Boating – negative	5 (1)
Planning/development issues	5 (1)
Boating – positive	4 (1)
Swimming – positive	3 (1)
Swimming – negative	3 (1)
Fishing issues	3 (1)
Fly-tipping issues	3 (1)
Pylon issues	2 (1)
Total number of comments	**399 (100)**

2.3.13 Zone of Influence

- **Three Zone of Influence scenarios were developed to identify core groups of visitors based on the distance travelled by 1) all local visitors weighted by number of visits 2) local visitors that arrive by car or motorbike 3) visitors using all forms of transport that visit once a month or more.**

- **A sequence of maps is presented detailing different options for a zone of Influence around the Plymouth Sound and Estuaries EMS, based on a convex hull and straight-line (Euclidean) buffer based on the shortest distance travelled to the site by road.**

Scenario 1) The Zone of Influence (ZoI) analysis for all visitors (weighted by number of visits) indicate that the core visitor group (the nearest 75% of local residents that visit the European site) live within 5.4 km of the SAC and 7 km of the SPA.

2) The Zone of Influence (ZoI) analyses indicate that local visitors (the closest 75% of local residents) that visit the European site by car or motorbike live within 12.3 km of the SAC and 12.1 km of the SPA.

3) The Zone of Influence (ZoI) analyses indicate that the core group of local visitors (the nearest 75% of local residents) that visit the European site at least once a month by car or motorbike live within 9.4 km of the SAC and 8.7 km of the SPA.

The first Zone of Influence scenario was created using all the distances travelled by local respondents and is based on the short distance travelled by the road network (as this is the only pragmatic option available to assess distance travelled) from 549 survey respondents. The distances travelled were weighted by the estimated number of visits in a year (based on the survey questionnaire response). The convex hull and Euclidean (straight-line buffer) are based on a distance of 5.4 km for the SAC and 7 km for the SPA (see Table 41). These represent the maximal distance travelled by the 75% of nearest residents. Figure 38 and Figure 39 display two ZoI buffers based on the core visitor group. The convex hull buffers (dark green for the SAC and dark blue for the SPA) represent the smallest area that can be drawn to include the home postcodes of the core group of local visitors. A straight line (Euclidean) buffer was also drawn around the site (pale green for SAC and pale blue for SPA). This straight-line (Euclidean) buffer is also based on the distance travelled by the core visitor group but represents this distance as a straight line drawn out from the site boundary.

The visit frequency weighting of the distances travelled means that the ZoI is influenced by households that live close by and visit the site frequently and that may arrive by foot. The ZoI calculated using the distance weighted was biased towards local households that lived locally and visited frequently. The frequency weighted ZoI for the SAC, for example was based on 287 surveyed respondents and excluded 247 of the surveyed local residents, nearly half of those surveyed. To further explore patterns in visitors origins we also assessed the Zone of Influence based on the unweighted distances travelled by those arriving by car or motorcycle (the most popular form of transport) and a ZoI calculated based on visit frequency (once a month or more). This allowed us to further investigate patterns in site use to aid definition of the core visitor area.

The second Zone of Influence (ZoI) scenario indicates that the core group of local visitors (the nearest 75% of local residents that visit the European site by car or motorbike) live within 12.3 km of the SAC and 12.1 km of the SPA (see Table 41 and Figures 40 and 41).

The third Zone of influence scenario tested indicate that the core group of local visitors (the nearest 75% of local residents) that visit the European site at least once a month and that arrive by car or motorbike live within 9.4 km of the SAC and 8.7 km of the SPA (see Table 41 and Figures 42 and 43).

It should be noted when interpreting the accompanying maps that the same core visitor distance underpins both the convex hull boundary and the straight line (Euclidean) buffer. As the convex hull is based on home postcodes and the distance travelled along the road network it is smaller and skewed along main roads and towards population centres.

Table 41. The distance of the SAC and SPA buffers (km) based on the shortest road distance travelled to the EMS that enclose the core visitor group for the Zone of Influence scenarios.

Scenario	SAC buffer (km)	SPA buffer (km)
1) Nearest 75% of surveyed local residents, including all forms of transport and weighted by the highest number of visits for each category of visit frequency.	5.4	7km
2) nearest 75% of local residents that visit the European site by car or motorbike	12.3	12.1
3) nearest 75% of local residents that visit the European site by car or motorbike and that visit once a month or more	9.4	8.7

Figure 37. T he 5.4 km buffers (convex hull and straight-line Euclidean buffer) based on scenario 1: the maximum distance travelled by the closest 75% of local residents that visit the SAC using any form of transport including on-

foot. The convex hull (dark green) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale green buffer zone represents the same distance (12.3 km) drawn as a straight line from the site boundary.

Figure 38. The 7km buffers (convex hull and straight-line Euclidean buffer) based on scenario 1: the maximum distance travelled by the closest 75% of local residents that visit the SPA using any form of transport including on-foot. The convex hull (dark green) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale green buffer zone represents the same distance (12.3 km) drawn as a straight line from the site boundary.

Figure 39. The 12.3 km buffers (convex hull and straight-line Euclidean buffer) based on scenario 2: the maximum distance travelled by the closest 75% of local residents that visit the SAC and travel by car or motobike (unweighted by visit frequency). The convex hull (dark green) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale green buffer zone represents the same distance (12.3 km) drawn as a straight line from the site boundary.

Figure 40. The 12.1 km buffers (convex hull and straight-line Euclidean buffer) based on scenario 2: the maximum distance travelled by the closest 75% of local residents that visit the SPA and travel by car or motobike. The convex hull (dark blue) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale blue buffer zone represents the maximum distance travelled by the nearest 75% of residents (12.1 km) drawn as a straight line from the site boundary.

Figure 41. The 9.4 km buffers (convex hull and straight-line Euclidean buffer) based on scenario 3: the maximum distance travelled by the closest 75% of local residents that visit the SAC once a month or more (unweighted by visit frequency). The convex hull (dark green) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale green buffer zone represents the same distance (12.3 km) drawn as a straight line from the site boundary.

Figure 42. The 8.7 km buffers (convex hull and straight-line Euclidean buffer) based on scenario 2: the maximum distance travelled by the closest 75% of local residents that visit the SPA once amonth or more (unweighted by visit frequency). The convex hull (dark blue) polygon represents the smallest distance that contains the nearest 75% of local visitors (based on postcodes of respondents). The pale blue buffer zone represents the maximum distance travelled by the nearest 75% of residents (12.1 km) drawn as a straight line from the site boundary.

8.6 Zone of Influence options

The Zone of Influence based on all visitors with the distances weighted by visit frequency clearly skews the core visitor catchment area much closer to the SAC and SPA when compared with the other ZoI options presented in the report. However, this smaller buffer may be considered to accurately reflect that the majority of vistis to the EMS are by people that live locally and visit frequently. However, as 50% of visitors in the site survey originate outside of this boundary and these visitors account for 25% of visits it could be considered that this boundary is relatively small.

For all the options, the convex hull was considered to offer a better representation of the core visitor group as it is based on where visitors live and can be seen to be biased towards larger roads and population centres which influence visitor numbers. The straight-line Euclidean buffer is drawn as a line from the site boundary and typically encompasses much of the sparsely populated areas to the west of the EMS where few visitors to the site originate (based on the on-site surveys) .

9 Targeted workshops

9.1 Rationale

Some recreational activities are widely undertaken within the Plymouth Sound and Estuaries EMS but may not have been representatively captured by the on-site surveys (due to specific access points, tidal conditions, timings etc.). Thus a series of three targeted workshops focussing on the resident recreational angling, yachting and diving, and paddle-sports communities were held (11th, 12th and 13th October 2016 respectively). The overarching aim was to identify where in the EMS the activities took place, and at what intensity, to support information collected in the on-site surveys. In addition, information was also collected on specific sub-activities such as anchoring/mooring, access points that cause direct pressures on intertidal and subtidal habitat features within the EMS, and ask questions about best practices

9.2 Method

9.2.1 Identification of key workshop invitees

A list of organisations such as clubs, societies and recreation industry commercial operators (such as charter skippers, marinas, tackle and bait shops, watersports centres, dive shops and skippers) was drawn up in relation to the four targeted activities (angling, yachting, diving and paddle-sports) (Appendix B1). Invitations to the workshops were sent directly to these key organisations, and these were followed up with emails and phone calls.

9.2.2 Promotion of workshops

In addition to inviting the organisations above, wider promotion of the workshops was undertaken via local radio, social media (twitter, facebook, email distribution lists) plus the distribution of flyers in strategic locations e.g. bait shops, water sports centres and at popular locations for the activities (full list given in Appendix B2) such as slipways, relevant National Trust visitor centres and pubs and cafes close to sites.

9.2.3 Recreational activity workbooks

Workbooks for each recreational activity were developed to capture information from workshop attendees (Appendix C1-5). One was produced for each activity, and for yachting, separate workbooks were created for clubs and individuals to ensure that data were in an appropriate format for analysis, and an additional workbook was developed for motor yachting.

9.2.4 Delivery and facilitation

The overall structure was similar for each of the three targeting workshops. Refreshments were available on arrival and throughout the evening. Then introductions were made and information about the project was presented, together with the tasks for the evening. Participants were then placed into small groups and worked through each workbook with large (A1 and A3) maps of the EMS

with a facilitator (approximately 1 hour). We also asked participants to identify any locations where they had seen shad on an A1 map of the EMS.

At the end of the information gathering session there an opportunity to hear about marine safety from a local RNLI representative and at the recreational angling workshop, a representative from the Devon and Severn IFCA spoke about recreational angling within the wider context of fisheries management and answered some specific enforcement queries. Finally, the workshops were concluded and participants thanked, and an opportunity to see the MBA unusual fish collection was offered. The RNLI, IFCA representation, refreshments and weird fish collection were all provided specifically as incentives to encourage invited recreational users, organisations and industry operators to attend and participate. The project team present comprised no less than 5 members for each workshop, to enable close engagement with attendees, detail on workshop participation (anonymised) and facilitation is summarised in Table 42).

Table 42 Workshop participants by type and project team for each of the three targeted workshops

Workshop	Attendee type	Number	Activity
Recreational fishing	Individual	7	Recreational fishing
	Charterboat skipper (industry)	3	Recreational fishing
	Individual	1	Sub-aqua diving
	Facilitator (costed)	1	Project team
	Facilitators (volunteer)	5	
Recreational sailing & diving	Individual	4	Sailing (dinghy/yacht/motor)
	Club representative	7	Sailing (dinghy/yacht/motor)
	Marina (industry)	1	Sailing (dinghy/yacht/motor)
	Individual	4	Sub-aqua diving
	Facilitator (costed)	1	Project team
	Facilitator (volunteer)	4	
Paddle-sports	Individual	7	Paddle sports & rowing
	Club representative	1	Paddle sports & rowing
	Facilitator (costed)	0	Project team
	Facilitator (volunteer)	5	

9.2.5 Analysis and mapping

The emergent activity maps and corresponding workbooks were digitised by recreational activity. For some activities (recreational angling, sub-aqua diving) the activities were concentrated into discrete areas, around a seafloor feature such as a reef, shoal or wreck and these data were gridded. However for some activities, data on the areas of use were given e.g. sailing areas, canoe/kayak areas rather than specific route information because representatives of clubs were reporting their members activity patterns, and since these types of spatial data could not be gridded at a fine scale, they were mapped using the management zones to define larger areas.

Sub-activities that could be closely linked with pressures on intertidal and subtidal features were grouped across recreational activities (e.g. anchoring, and dive shots, hand haulouts/shore access/pontoons/slipways). Maps were generated by activity and season and also aggregated for the year.

9.3 Results

9.3.1 Recreational fishing

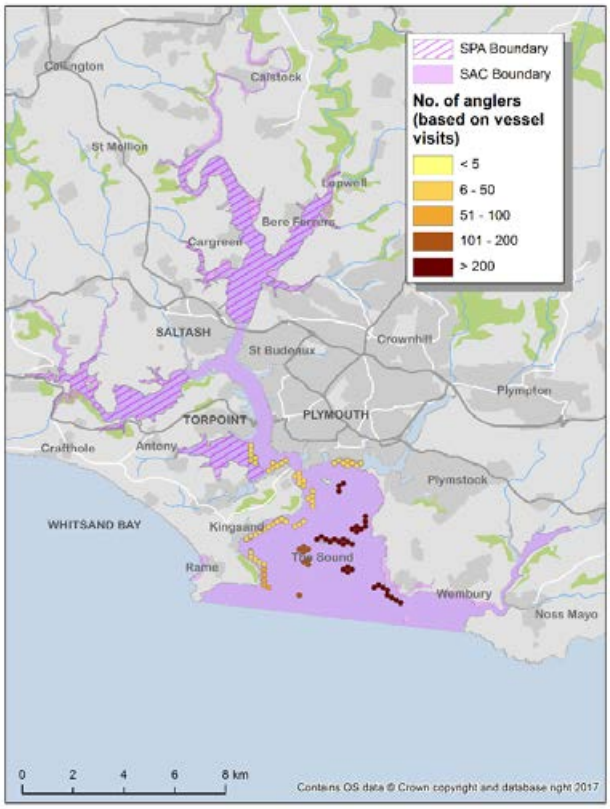
- **The key sites for vessel based angling are within the Plymouth Sound, in particular the Plymouth Breakwater and the reefs in front (Tinkers, Panther and Knap), the wreck "The Elk", around Cawsand Bay and out to Penlee Point on the Western side of the open coast, and off Bovisand and Heybrook on the Eastern side**
- **Vessel angling sites inside the Tamar Estuary are used mostly in Autumn and Winter, when the weather prohibits access to the more exposed sites**
- **Sites in the Outer Estuary are also important for vessel based(Barbican, Firestone Bay, Barnpool, Drake's Island), especially in Winter**
- **Shore based angling sites are mostly concentrated around the Outer Estuary (Mount Batten Breakwater, Barbican, Devil's Point, Mount Edgecumbe, into the Tamar (Mount Wise), St Budeaux and at Saltash. Sites further up the estuaries were reported at the confluence of the Tavy and at Pentillie Castle on the upper Tamar**

The seasonal pattern of sea angling gained from charter boat skippers (Figure 43), show the high fidelity to sites around the EMS throughout the seasons. The Tamar sites (West Mud, Barnpool, Obelisk), and the Plymouth Hoe Foreshore areas are mostly used in Autumn and Winter when other sites may not be accessible (weather refuge). The Plymouth Breakwater is very important across the seasons, as are the three reefs in front of it (Tinkers Shoal, Knap and Panther Reefs) and the Elk wreck. Cawsand to Penlee Point is also well used but less so in Winter than the other seasons, and the same pattern is seen at Heybrook, again relating to the more exposed nature of these sites in the EMS.

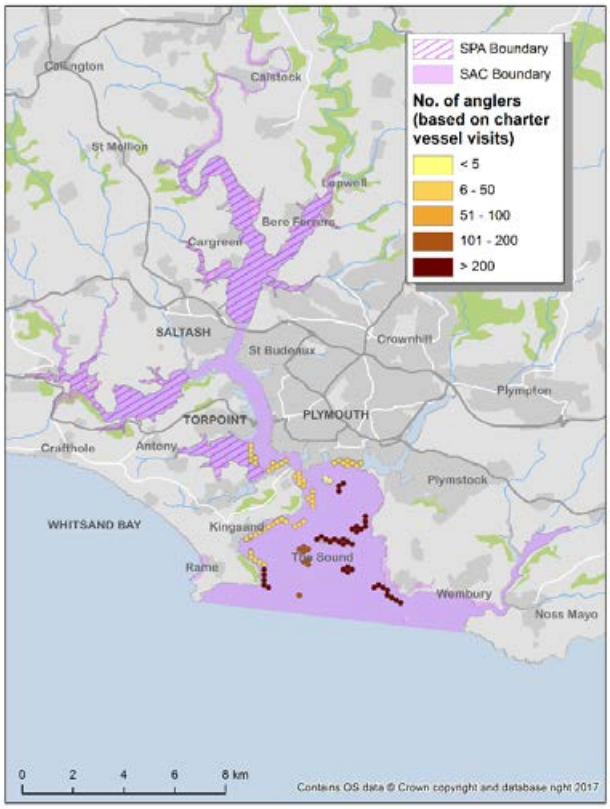
A similar pattern of use by recreational anglers (reported vessel densities of other angling vessels) is given in Figure 44. The Cawsand Bay area is clearly very important for recreational angling all year round, and the area from Pier Cellars to Penlee Point is used by anglers using kayaks as well. Kayak anglers also use Jennycliff Bay and the area from Bovisand out to the Mewstone for their activity, plus the Knap and Panther Reefs.

The distribution and intensity of shore-based recreational angling (Figure 45) shows very heavy use of key sites around the EMS. These are mainly concentrated around the Barbican, Hoe, Devil's Point areas plus Mount Edgecumbe Beach, the Mount Batten Breakwater and also in the central part of the Tamar (St Budeaux and Saltash). Further up the Tamar, shore based sites were identified at Pentillie Castle and where the railway line crosses from the Plymouth side north of Tamerton Lake and also on the Bere Peninsula side. There is also shore based angling at Cawsand and near Bovisand (Leekbed Bay) and in the Plym at Oreston and on the Laira Bridge.

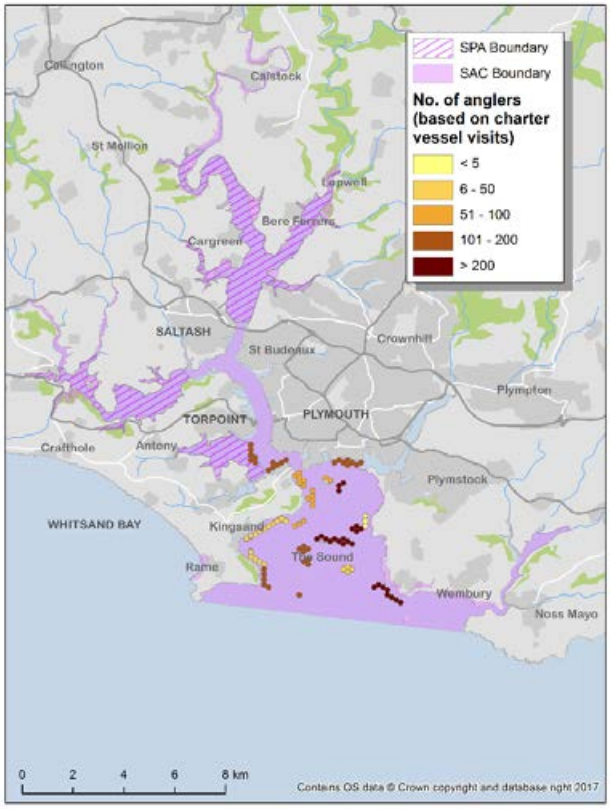
Spring



Summer



Autumn



Winter

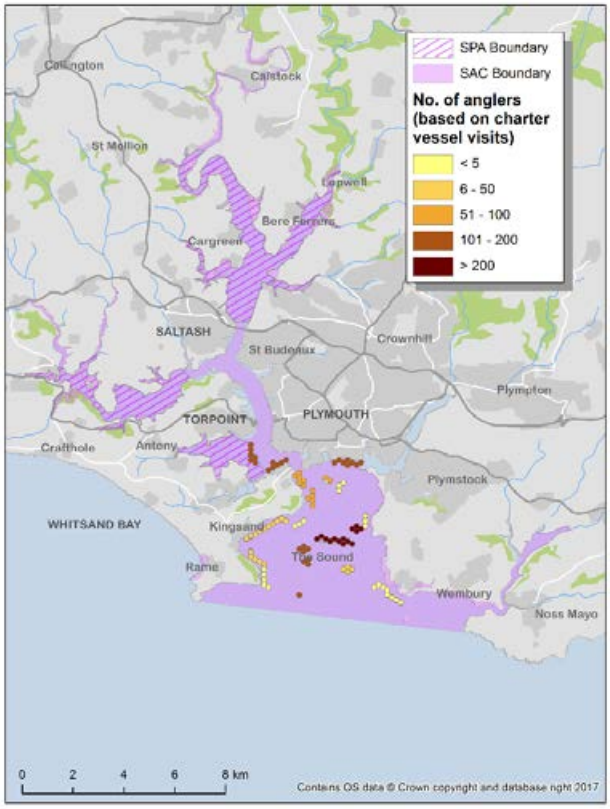
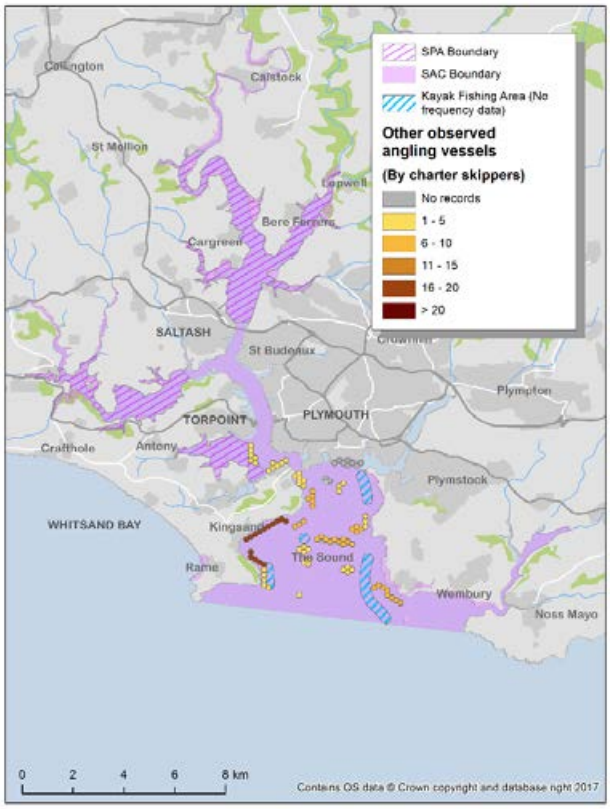
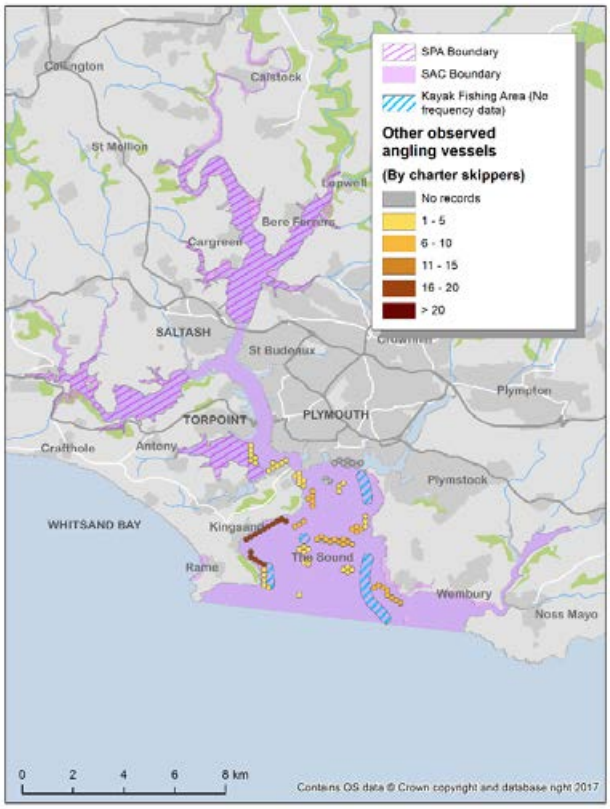


Figure 43. Seasonal patterns of recreational fishing (angling) activity based on workshop responses from charter skippers

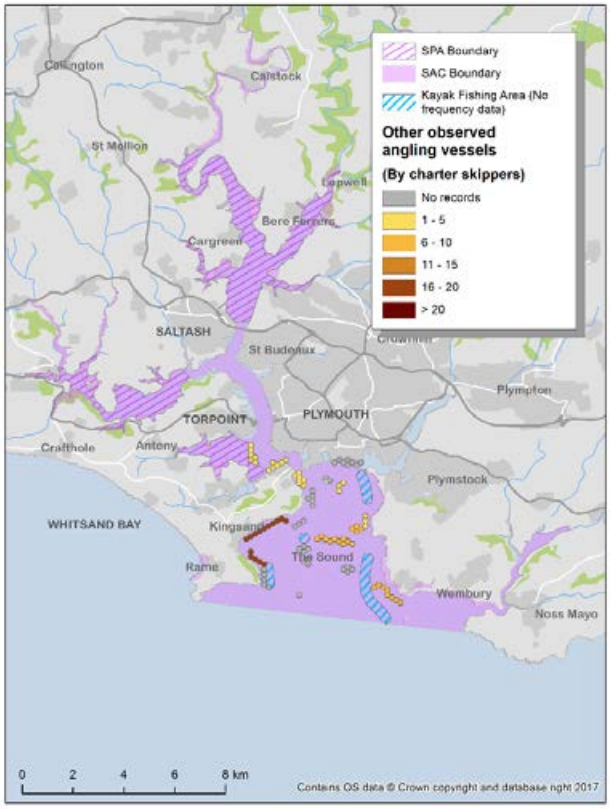
Spring



Summer



Autumn



Winter

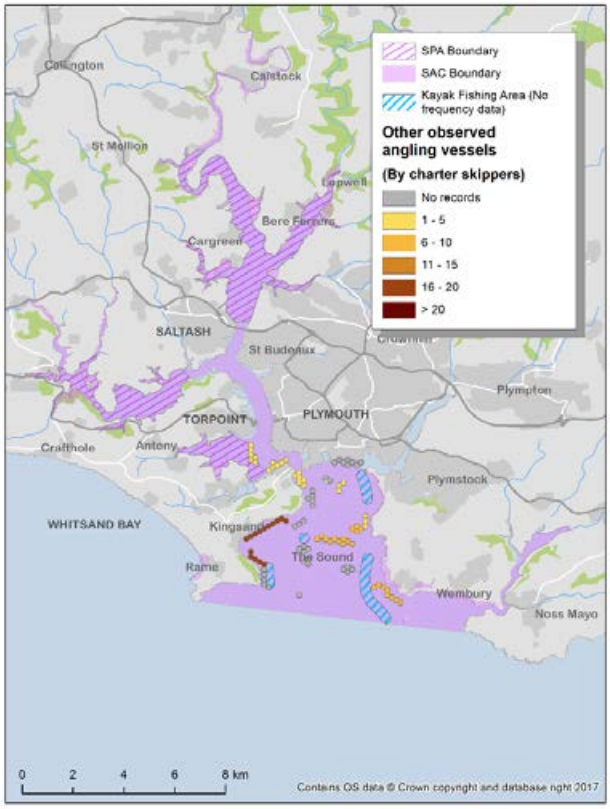


Figure 44 Seasonal distribution and intensity of other angling vessels reported by charter boat skippers, plus locations of kayak fishing areas.

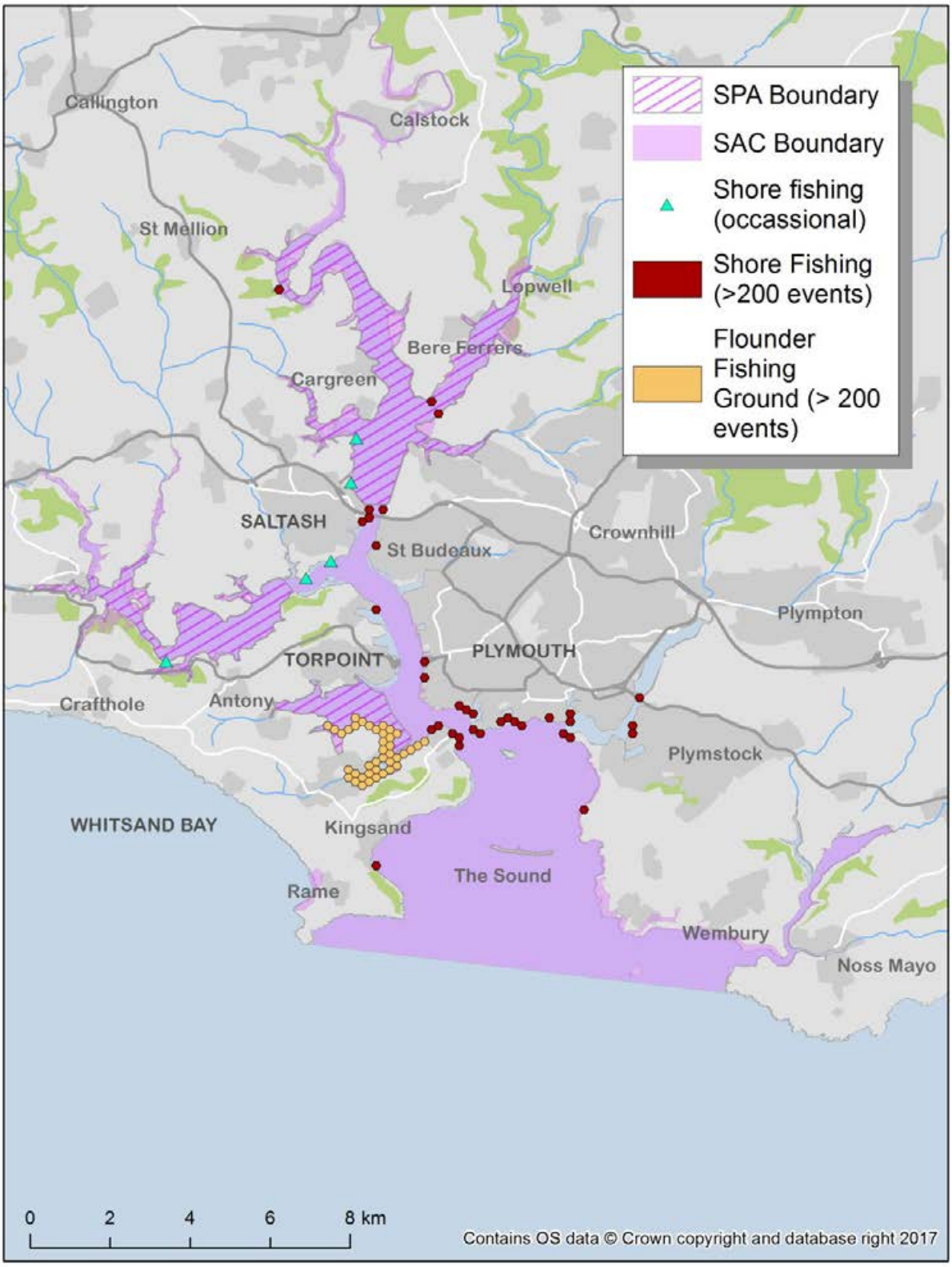


Figure 45 Intensity of shore based recreational angling in the Plymouth Sound and Estuaries EMS.

9.3.2 Bait collection

- **Four types of bait were reported collected in the EMS: mackerel, prawns, worms and peeler crabs**
- **Collection locations were The locations for these bait collecting activities are very different for each target**
- **Mackerel are targeted in the Outer Sound**
- **Worms in the Tamar, St John's Lake and the Lynher, and also in the Plym**
- **Prawns are collected around the Hoe and central Tamar**
- **Most crab tiling activity takes place in the Tamar around Saltash, St Budeaux up to Tamerton (and also in the Plym)**

Workshop attendees were asked to identify where they collected bait for fishing or they knew others collected bait.

Workshop attendees reported four different types of bait for recreational fishing being collected within the Plymouth Sound and Estuaries EMS. These were: mackerel, worms (lugworm and ragworm), prawn and recently moulted shore crab 'peelers' (via crab tiling). The locations for these bait collecting activities are very different for each target (Figure 46): mackerel are targeted in the Outer Sound; worms in the Tamar, St John's Lake and the Lynher, and also in the Plym; prawns are collected around the Hoe and central Tamar; while most crab tiling activity takes place in the Tamar around Saltash, St Budeaux up to Tamerton (and also in the Plym).

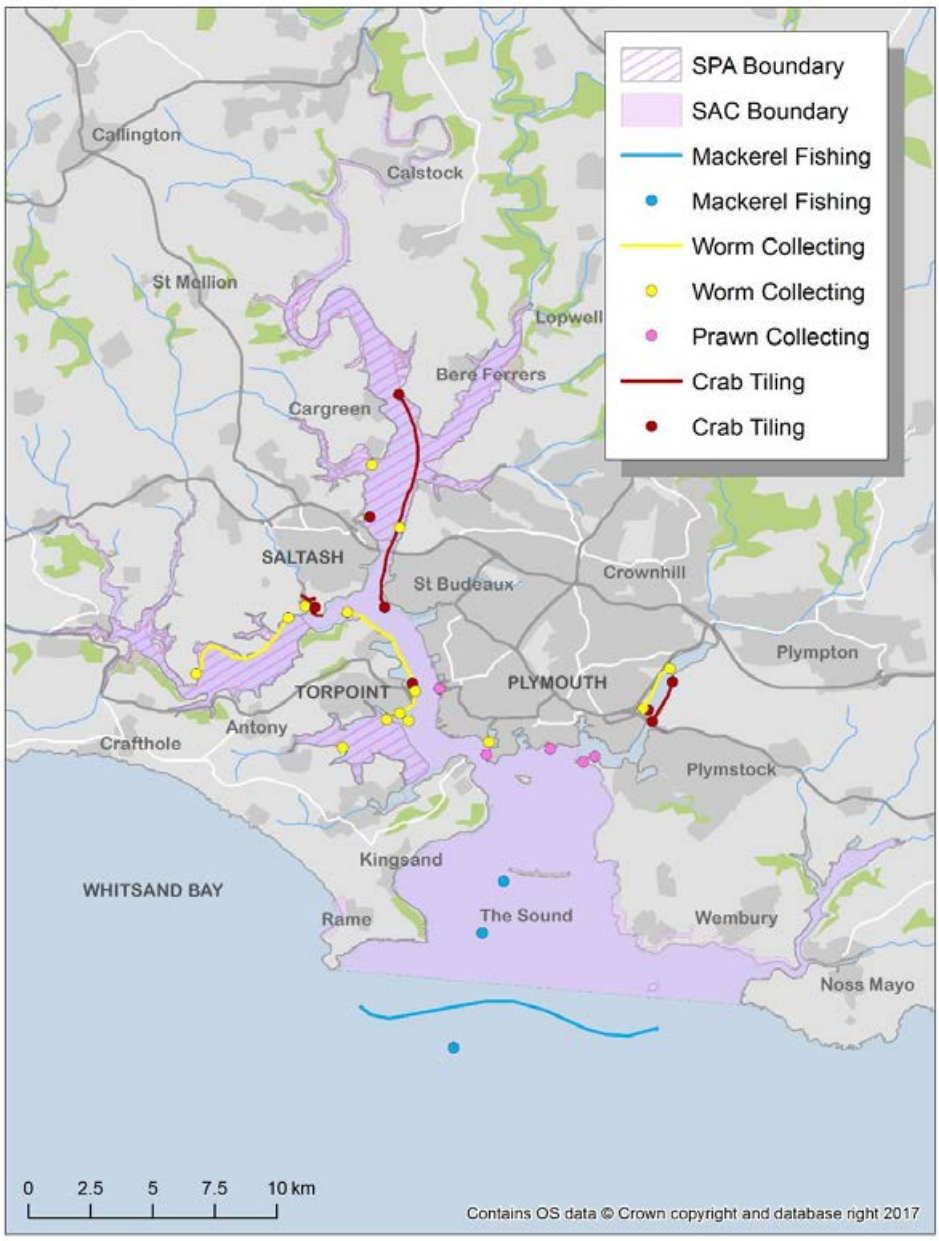


Figure 46 Bait collection sites within the EMS

9.3.3 Shad sightings

- **Shad were reported from only two sites: Devil's Point and Rame Head**

Workshop attendees were asked to identify where they had sighted Allis shad (*Alosa alosa*), a conservation feature of the SAC. Combined sightings (for all attendees) are shown in Figure 47. Shad were reported from only two sites: Devil's Point and Rame Head (Figure 47).

Figure 47 Sightings of Allis shad (*Alosa alosa*) in the Plymouth Sound and Estuaries EMS

9.3.4 Sailing

- **Sailing is concentrated in the outer three management zones of the EMS with low levels of activity in the Tamar between St Budeaux and Weir Quay and none reported from the Tavy**
- **There was a strong seasonal signal in the data collated with most activity taking place in Summer and least in Winter**

Workshop attendees were asked to identify where they (or the club members that they represented) sailed within the Plymouth Sound and Estuaries EMS, with detail on intensity and seasonality.

The most important areas of the EMS are clearly within the Plymouth Sound, in Management Areas M (Outer Estury) and N (Sheltered Bay). The open coast (P) is also a key area, as is the central Tamar area (K). No sailing was reported from the Tavy and low levels of activity from the Tamar between St Budeaux and Weir Quay (Figure 48).

No sailing intensity data were collected from management zones G (Tamar – Saltash), J (Lynher - Anthony) and H (Lynher – St Germans). These areas were reported used by sailing vessels by workshop participants but frequency of transits was not provided, and they were not identified as key sailing areas (although there are a large number of moorings and several key slipways and boatyards located in these management zones).

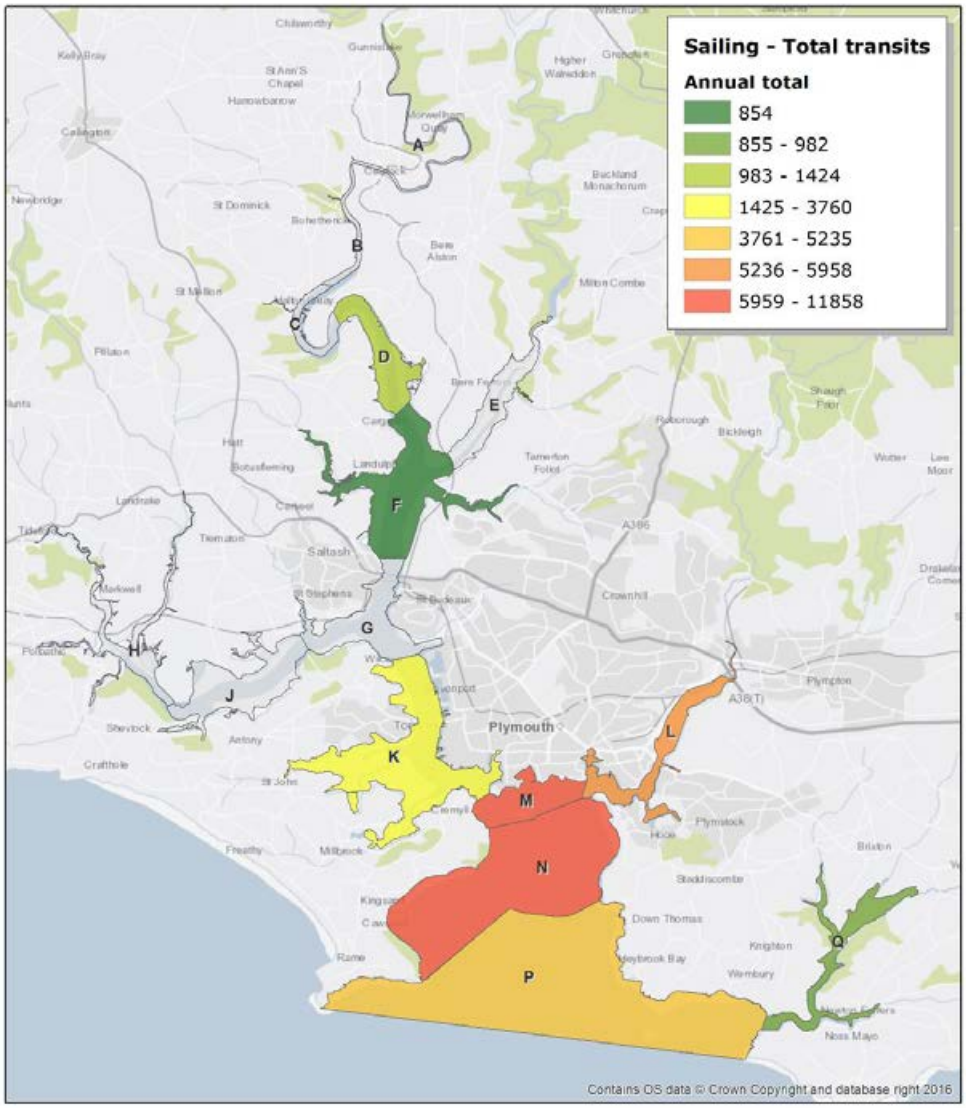
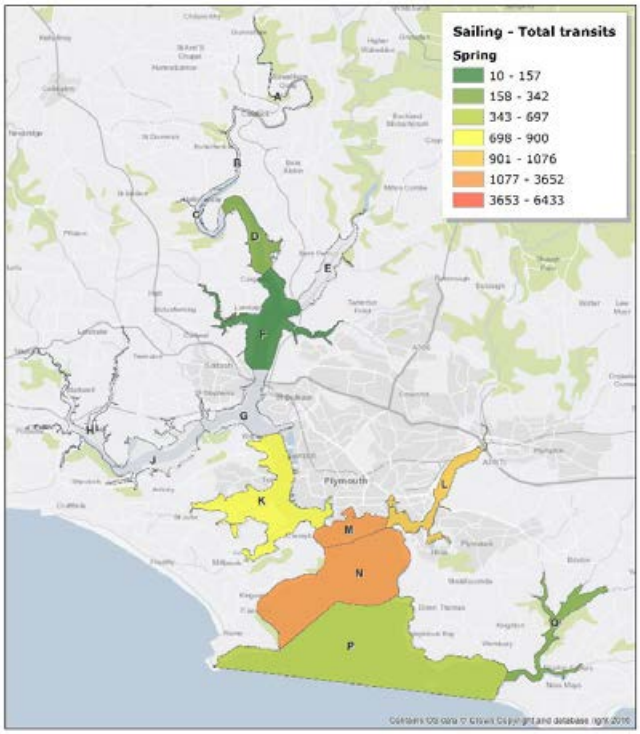


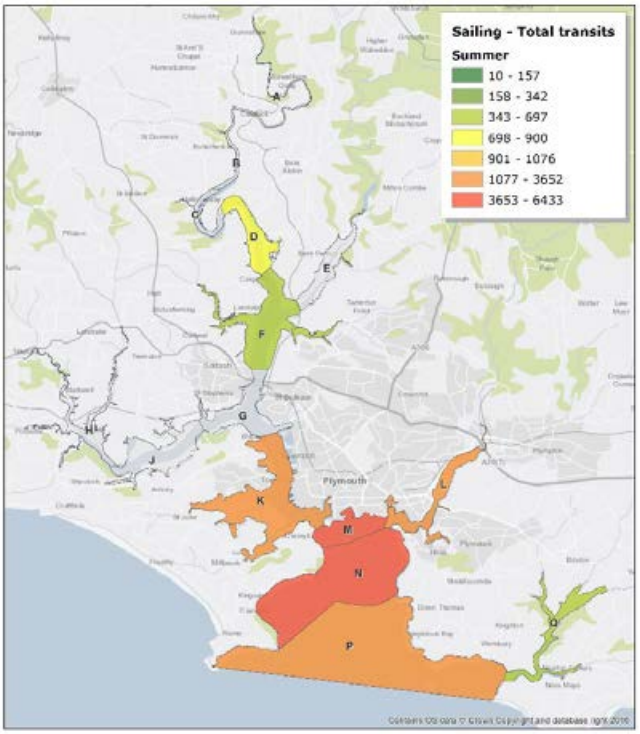
Figure 48 Sailing – number of transits per year (aggregated across all seasons) within the Plymouth Sound and Estuaries EMS

This pattern of sailing intensity was consistent when the data were disaggregated by season (Figure 49). However, a much greater number of transits were made in Summer compared with Winter, with Spring and Autumn falling between them.

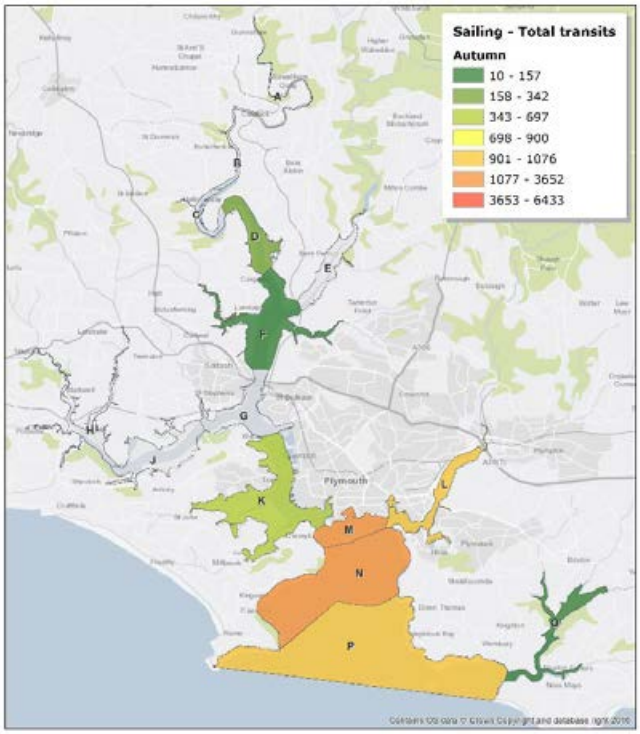
Spring



Summer



Autumn



Winter

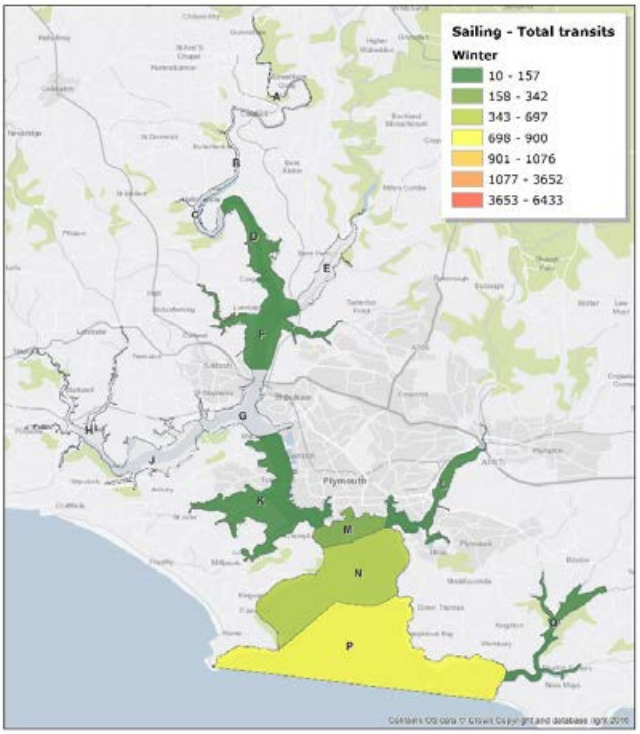


Figure 49 Seasonal patterns of sailing activity within the Plymouth Sound and Estuaries EMS

9.3.5 Sub-aqua diving

- **The most popular dive sites are off Penlee Point / Pier Cellars (near Rame Head), the Plymouth Breakwater and a wreck near Heybrook Bay, the '*Glen Strathallen*'.**
- **Important shore diving sites include Bovisand Bay, Firestone Bay and Devil's Point**
- **Most sub-aqua diving activity took pace in Spring and Summer**

Dive sites within the Plymouth Sound and Estuaries EMS used by recreational sub-aqua divers are given in Figure 50. The most popular sites are off Penlee Point / Pier Cellars (near Rame Head), behind the Plymouth Breakwater and a wreck near Heybrook Bay, the '*Glen Strathallen'*. The first two of these sites are weather refuges that are regularly used when wind conditions prohibit dive vessels from transiting to sites further afield. Less frequented, but nonetheless important, shore diving sites include Bovisand Bay, Firestone Bay and Devil's Point.

The seasonal pattern of diving activity shows most activity in Spring and Summer with less in Autumn and Winter. The sites dived do not change across the seasons and the most important three dive sites (Penlee Point, the Plymouth Breakwater and the '*Glen Strathallen*') are consistently the most dived areas in each season (Figure 51).

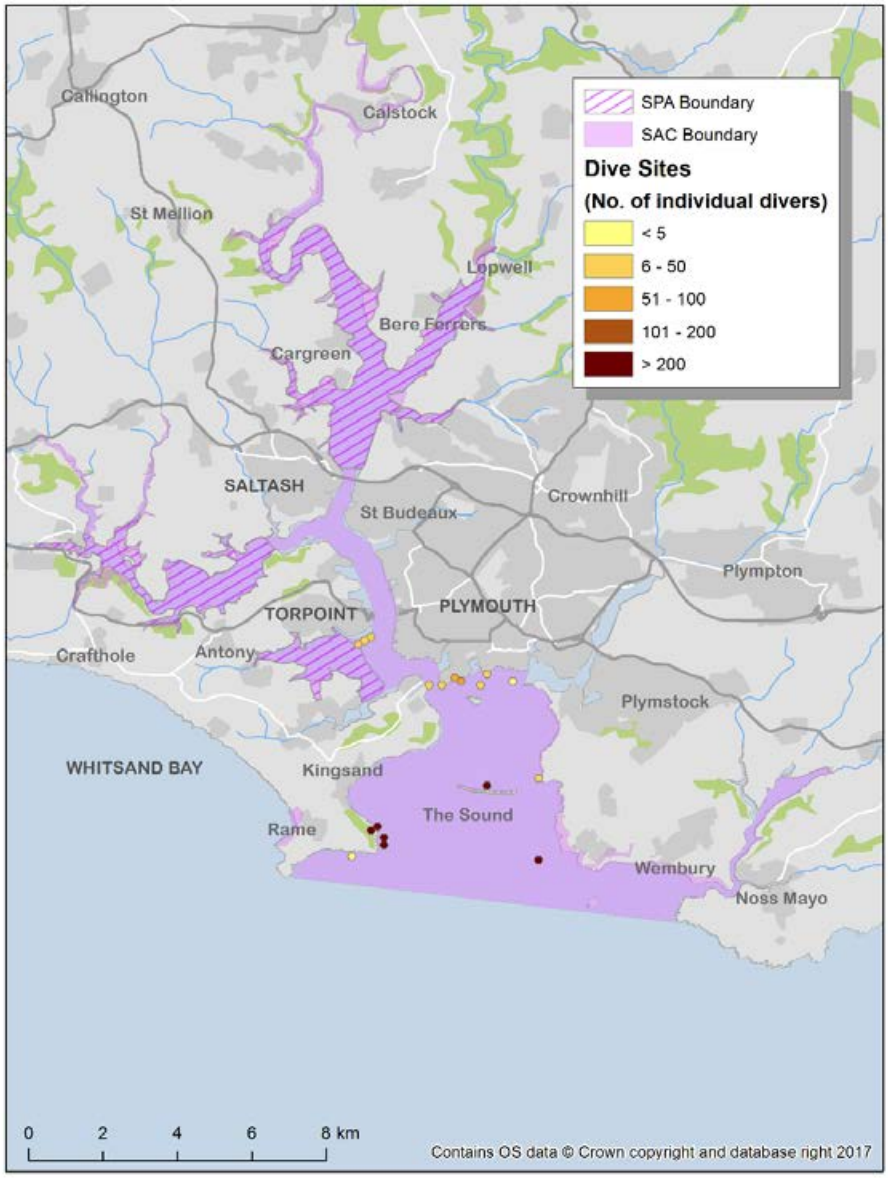
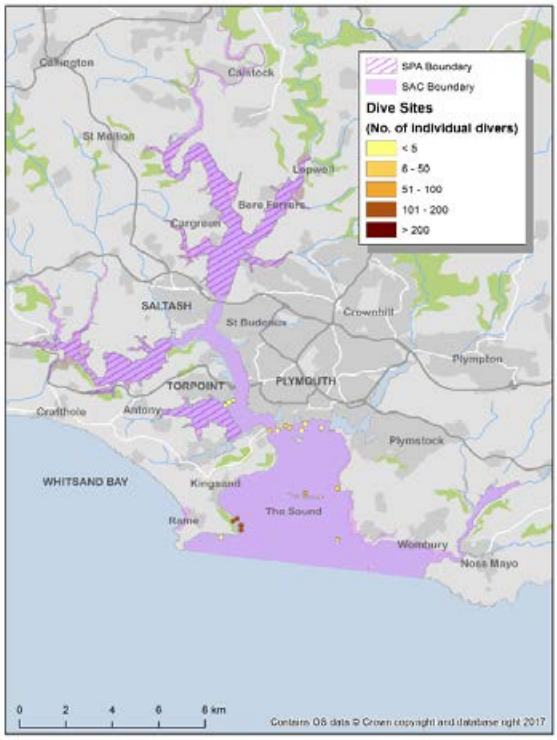
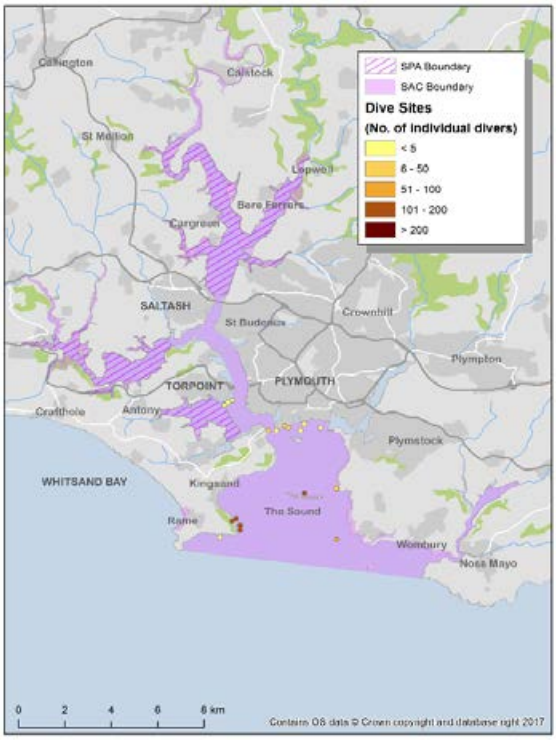


Figure 50 Dive sites identified by workshop attendees within the Plymouth Sound and Estuaries EMS (all seasons combined).

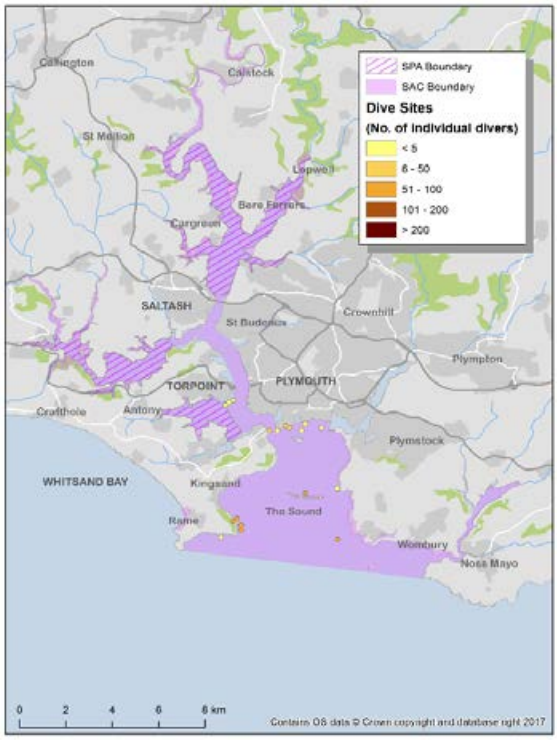
Spring



Summer



Autumn



Winter

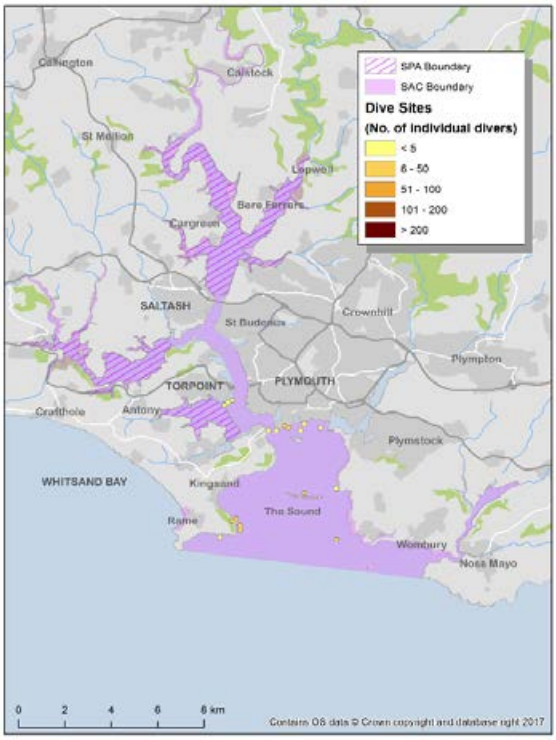


Figure 51 Dive sites (frequency of dives) within the Plymouth Sound and Estuaries EMS by season.

9.3.6 Paddle-sports

- **The most popular areas for paddle-sports were the three management areas in the Plymouth Sound**
- **Lower activity levels were reported in the Lynher, Upper Tamar and Tavy**
- **More paddle-sports activity takes place in Spring and Summer in the Plymouth Sound but the upper estuaries show similar intensity levels year round**

Attendees to the paddle-sports workshop included kayakers, canoeists, rowers and gig rowers plus stand-up paddle boarders.

Areas identified as high intensity for this class of recreational activity are management areas M (Outer Estuary), N (Sheltered Bay) and P (Open Coast) (Figure 52). Area K (Tamar (Torpoint)) and the Plym are less well used but still important. Much lower numbers of transits take place in the Lynher, Upper Tamar and Tavy.

This pattern of use by paddle-sports enthusiasts is consistent across the seasons, with the highest frequency of transits in the three Plymouth Sound management zones (M, N, P). However the actual numbers of transits made is much lower in Autumn and Winter (Figure 35).

Workshop attendees were also asked to identify areas that they used for shore access or as haul outs where boats were pulled on to the shore either when the activity was finished or for a break. These areas are shown in Figure 54. Unsurprisingly, the shore access and haul out areas correspond with the high intensity areas of use for this activity, with no reported haul outs in the Upper Tamar or Lynher, but sites in the Yealm used by paddlesports for land access.

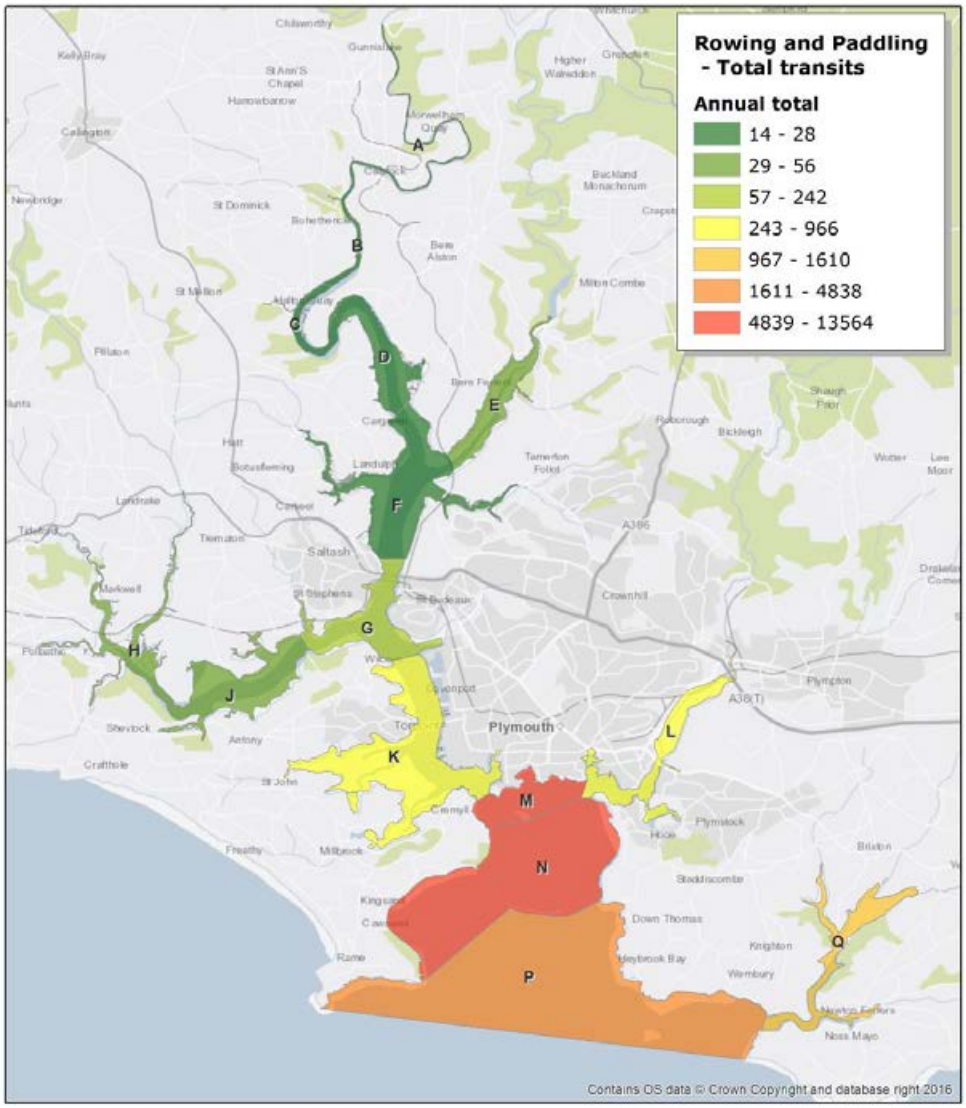
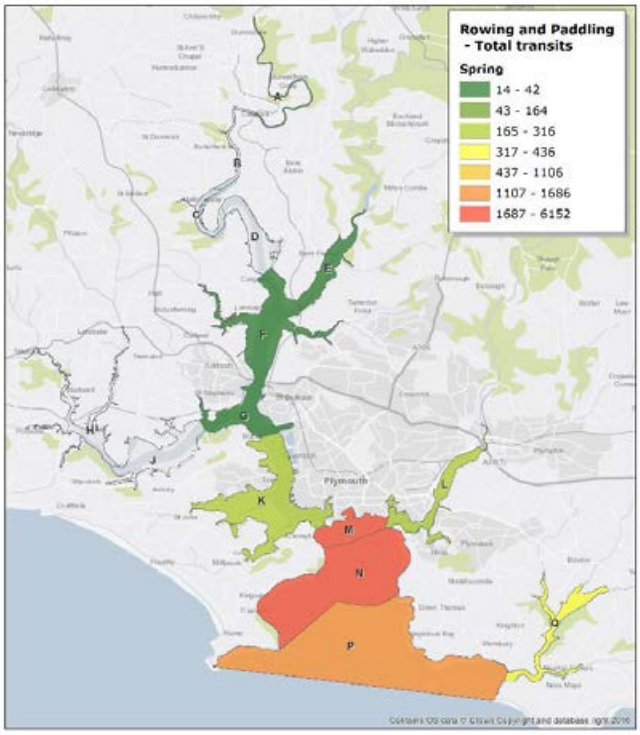
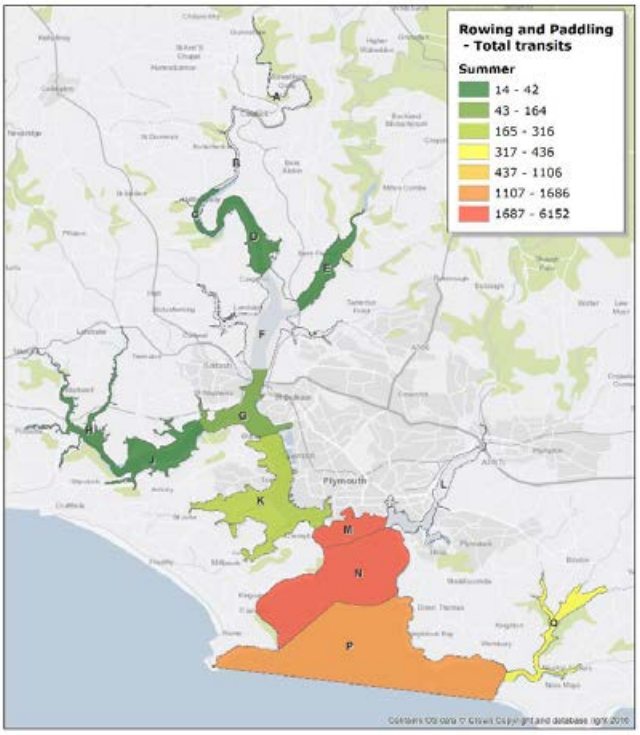


Figure 52 Paddle-sports activity in the Plymouth Sound and Estuaries EMS (aggregated for all seasons)

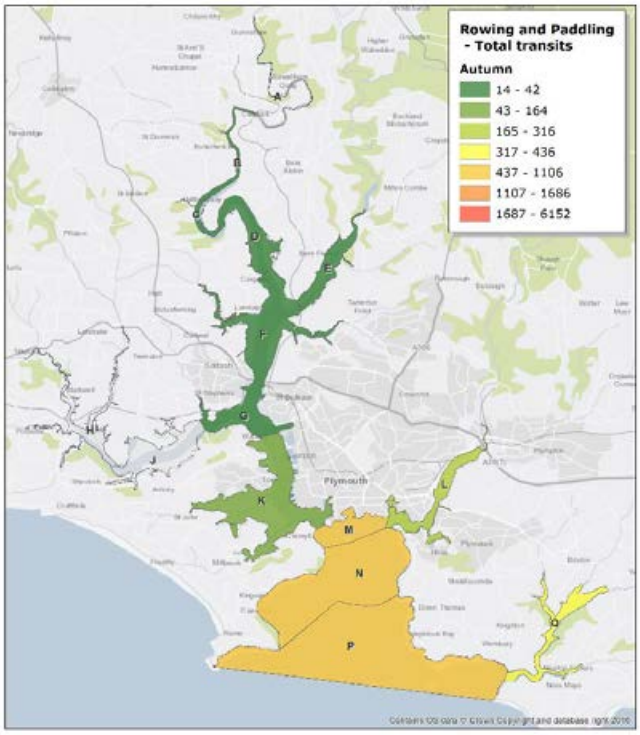
Spring



Summer



Autumn



Winter

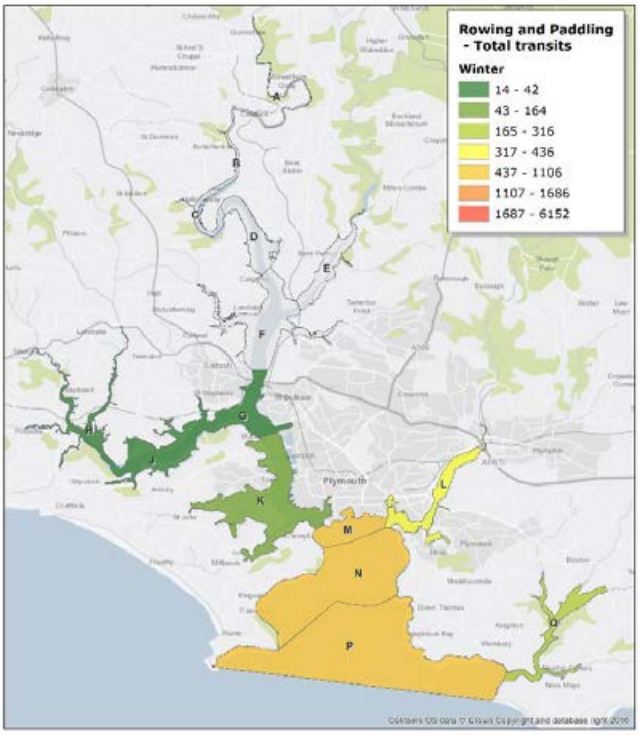


Figure 53 Paddle-sports activity in the Plymouth Sound and Estuaries EMS disaggregated by season.

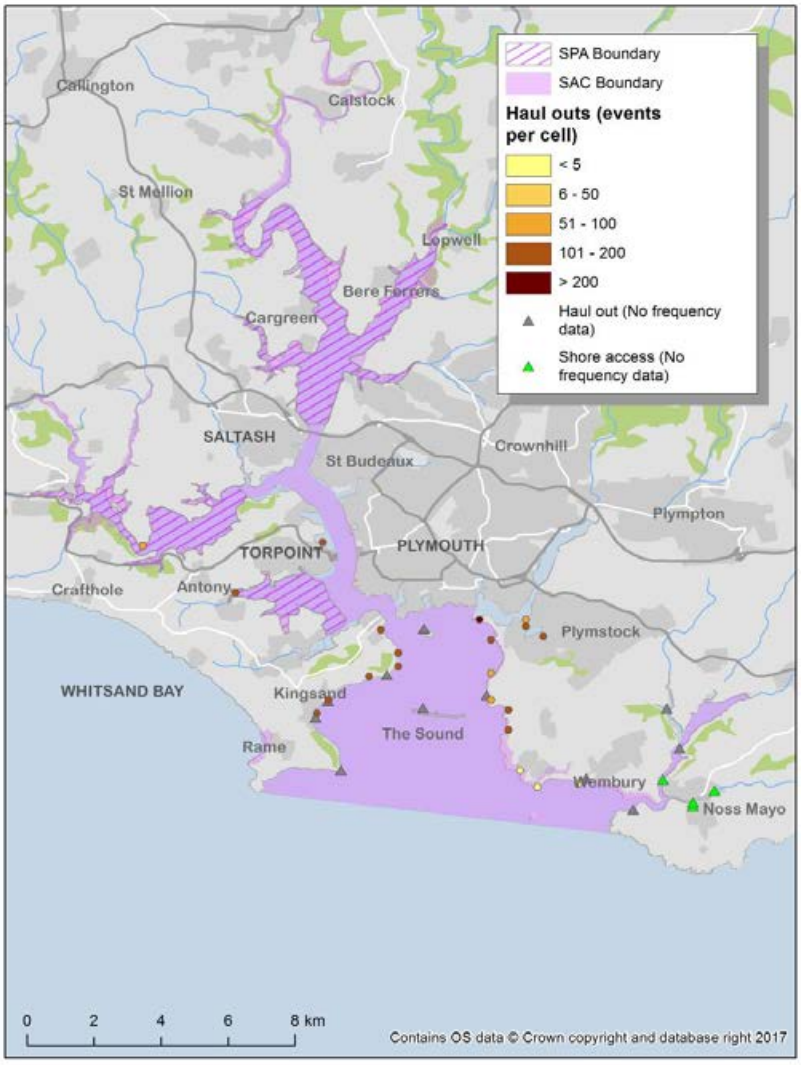


Figure 54 Location of shore access and haul out points in the Plymouth Sound and Estuaries EMS. Estimated intensity data for haul outs is shown where available.

9.3.7 Anchoring and other temporary seabed activities

- **There are clear hotspots at the Plymouth Breakwater and off Fort Bovisand**
- **Other key areas are along the coastline to the north and south of Kingsand, Barnpool, off Cremyl and at West Mud, to the north and east of Drake's Island and off the seafront along the Hoe**
- **The Plymouth Breakwater and off Bovisand is used for anchoring year round, but other sites had a strong seasonal signal**
- **Cawsand Bay is used mostly in Summer for anchoring, while the sites in the mouth of the Tamar (Barnpool, West Mud, Cremyll) were used most in Winter, as was the area along Plymouth Seafront**
- **Overnight anchoring was reported at Kingsand/Cawsand Bay, Barnpool, in Millbrook Lake, in the Lynher near Sheviock and at St Germans Quay and at Calstock in the upper Tamar**
- **Dive shot deployment was reported to the north of Cawsand Bay, at Jennycliff and just to the south of Jennycliff off Fort Bovisand**
- **Temporary race markers were reported deployed in the upper Tamar near Weir Quay**

Anchoring events related to a number of different activities including sub-aqua diving, sailing yachts, motor yachts and angling from a vessel were collated and mapped to give an indication of the distribution and intensity of incidents in a year (Figure 55). There are clear hotspots at the Plymouth Breakwater and off Fort Bovisand. Other key areas are along the coastline to the north and south of Kingsand, Barnpool, off Cremyl and at West Mud, to the north and east of Drake's Island and off the seafront along the Hoe (Figure 55). Interestingly key yacht anchorages at Jennycliff and at Cellar's cove in the mouth of the Yealm were not reported.

The seasonal pattern of anchoring shows the activity concentrated at same sites within the EMS as the annual map (Figure 55), but the intensity varies by season for some sites (Figure 56). The Plymouth Breakwater is used throughout the year, as is the site off Bovisand. High intensity of anchoring at Kingsand/Cawsand Bay were reported in Summer (> 20 vessels per quarter) but the intensity was much less during Autumn, Spring and Winter. Conversely the sites in the lower Tamar (West Mud and off Cremyll) and at Barnpool and off the Plymouth Waterfront and north of Drake's island are used more in the Winter months. This is because of the use of these sites as a weather refuge for boat-based anglers (including charter vessels). Asia Shoal, to the southeast of Drake's Island, is a popular anchoring site in all seasons apart from Winter, again presumably driven by anglers.

Additional detail on the location of anchoring (where it occurred overnight, or the frequency of events was not supplied by participants, or where the number of events exceeded 20) is given in Figure 57. Overnight anchoring was reported to take place at Kingsand/Cawsand Bay, Barnpool, in Millbrook Lake, in the Lynher near Sheviock and at St Germans Quay and at Calstock in the upper Tamar.

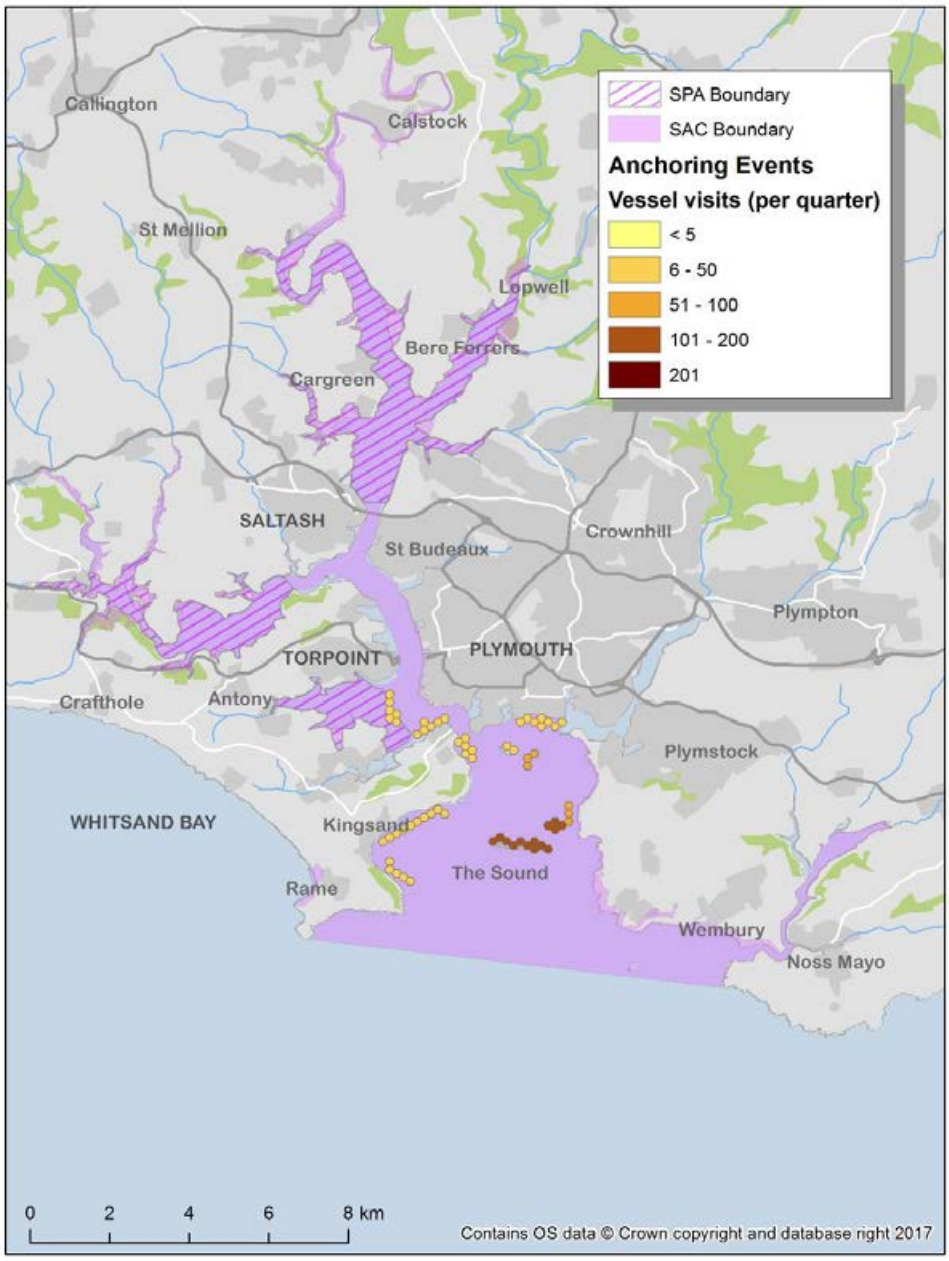
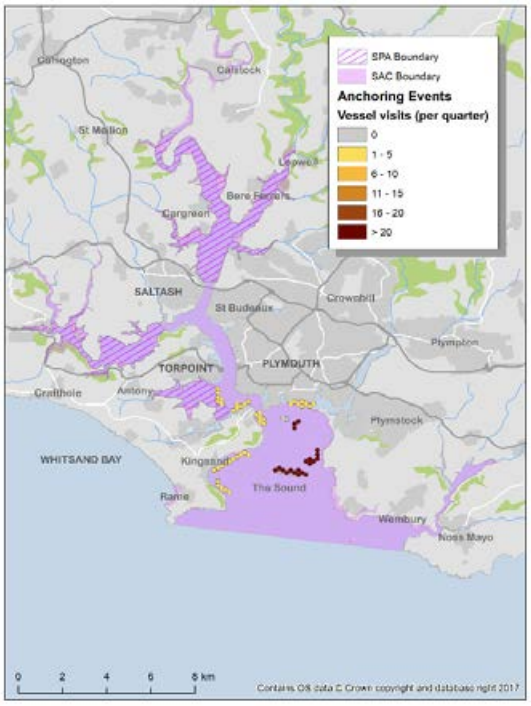


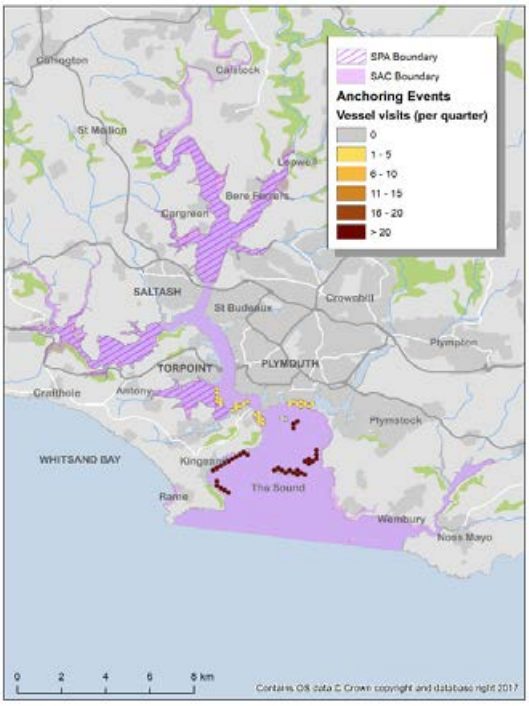
Figure 55 Distribution and intensity of anchoring events collated from different activities (sub-aqua diving, sailing yachts, motor yachts and angling from a vessel) at targeted workshops.

Figure 57 also shows the locations of the deployment of dive shots; the key places along the coastline to the north of Cawsand Bay, at Jennycliff and just to the south of Jennycliff off Fort Bovisand. Interestingly no use of dive shots was reported from the Plymouth Breakwater, although this site is heavily dived (Figure 50), and similarly no dive shots were reported to be deployed along the coast between Penlee Point and Pier Cellars or at the wreck of the '*Glen Strathallen'*. It is possible to dive the former two sites without at shot since they are shallow (<12m) and being scenic dives there is no specific point of interest, but it is highly likely that recreational divers at the 'Glen Strathallen' deploy dive shots to mark the wreck as it would be difficult to find it otherwise. Finally the distribution of temporary race markers (for dinghy racing) was given by workshop participants. The area identified was in the upper Tamar near Weir Quay (Figure 57).

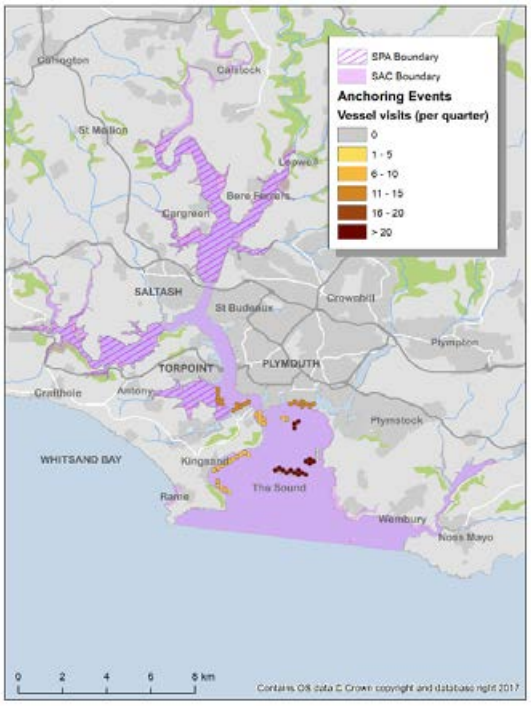
Spring



Summer



Autumn



Winter

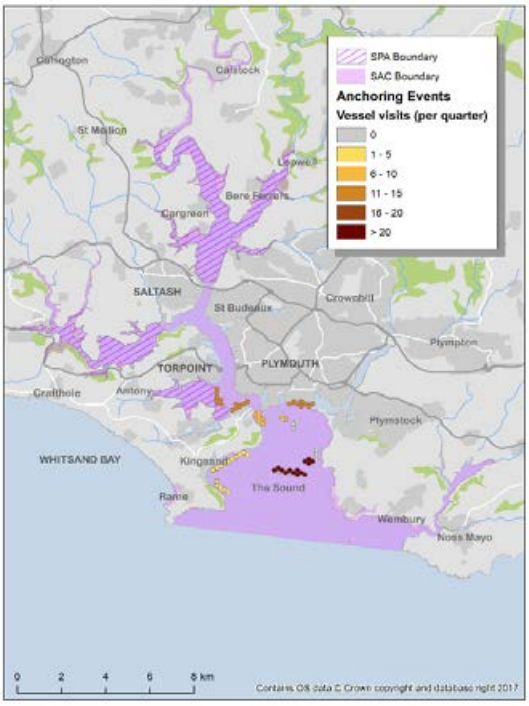


Figure 56. Distribution and intensity of anchoring events by season, collated from different activities (sub-aqua diving, sailing yachts, motor yachts and angling from a vessel) at targeted workshops.

Figure 57. Distribution of temporary race markers, dive shots and anchoring in the Plymouth South and Estuaries EMS based on data collected at targeted recreational activity workshops.

10 Online questionnaire

10.1Rationale

The on-site survey and targeted recreational activity workshop data gathering effort was complemented by a purpose built online survey. The aim of the survey was to capture information from visitors to the EMS locally and nationally. The reach of the survey was far greater than the local information gathering and this information was collected to supplement the survey and workshop data.

10.2Methods

10.2.1Survey Design

The survey was designed and hosted using 'survey monkey' an online survey development company. A copy of the questionnaire is presented in Appendix D. The survey provided a short introduction to the project and then guided respondents through five main sections regarding participation in the following activities:

- Fishing activities and bait collecting such as shore based angling, angling from boats or spear fishing;
- Land/shore-based activities such as walking, cycling, rock pooling etc (not fishing);
- Water based activities using small craft, (e.g. kayaking, canoeing, jet skis,RIBs, stand up paddleboards, surfboards, windsurfing or dinghy sailing);
- Water-based activities with large craft (larger powerboats and yachts);
- Swimming and diving.

If the respondent answered 'No' to taking part in an activity they would be forwarded to the next activity group. For each activity they took part in they were asked the following questions:

- Where in the EMS they participated in their activity (based on management area)
- How often they had visited in the past 12 month, and
- What time of year they tend to visit
- What is the main form of transport they used to arrive at the sites they visit
- What makes the locations they use attractive to them
- What features would be necessary to make other sites more attractive to them

Respondents were asked about their activities according to the management areas within the EMS, (see Figure 58). Maps showing the management areas were provided in each activity section to help respondents identify the areas they used.

The survey concluded by asking for information on the following:

- When they visited the site were they local (resident in Devon and Cornwall) on a short trip, or, visiting as part of an organised activity, or were they were on holiday, or visiting from outside the area on an organised activity;
- If they were on holiday they were asked to provide a postcode of the location where they were staying; and
- To provide their home postcode or to provide the name of their town, village etc.

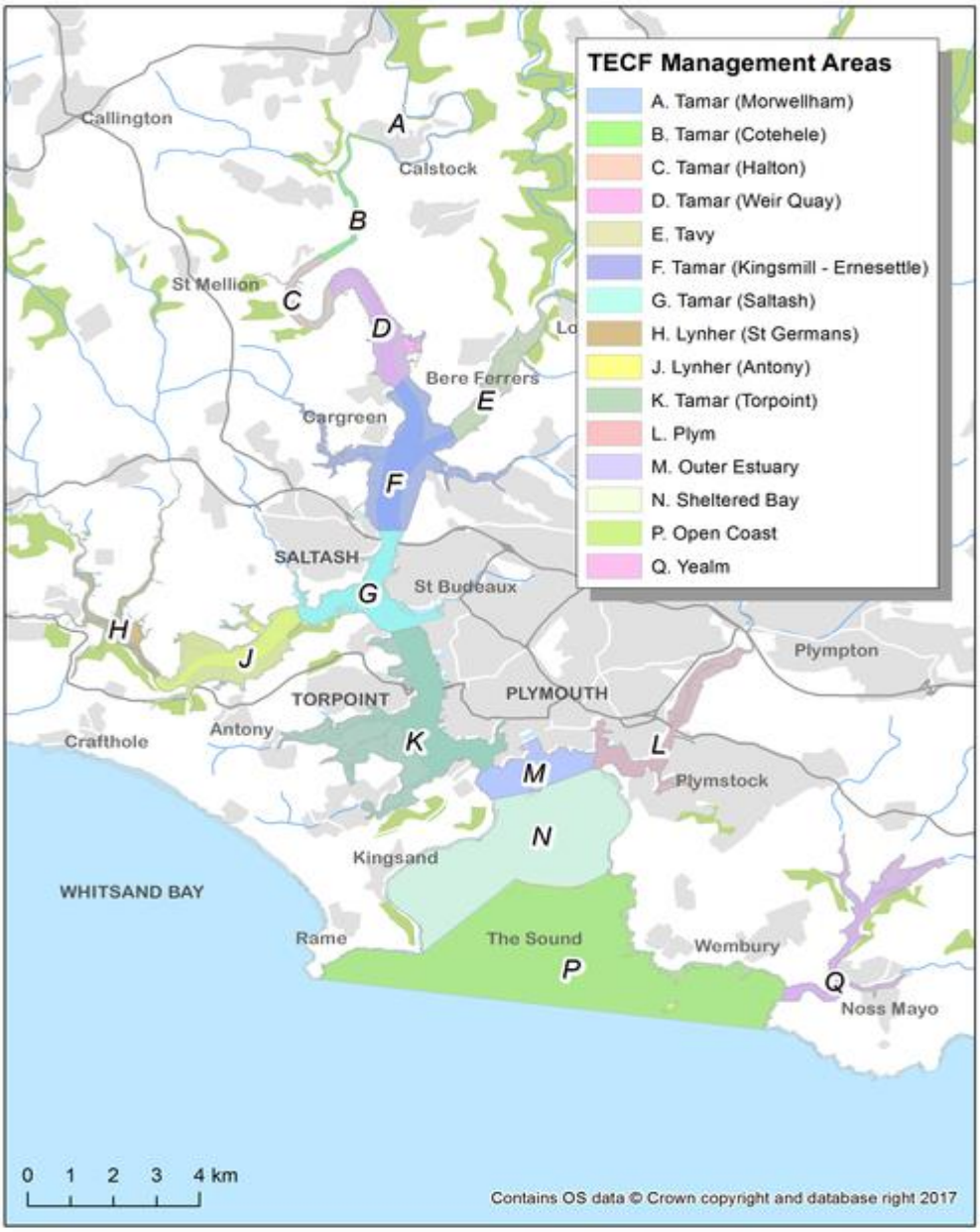


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Figure 58 Management Areas within the Plymouth Sound and Estuaries EMS

10.2.2Promoting the Online Survey

The survey was promoted on social media, including the MBA website, MBA Facebook pages and MBA twitter feed. The online survey invite and link was circulated around MBA staff and MBA members who were asked to promote this on their own networks. To our knowledge this resulted in the survey being sent to many of the local marinas and a number of environmental/citizen science volunteer networks among others. Information about the survey and a link was also sent out with the workshop invites to promote the survey to individuals and groups who couldn't attend the workshops.

An organisation list was also created of key groups to send an invite and survey link. Potentially relevant groups were identified based on internet searches and team member knowledge. Using the internet we searched for local and national groups relating to:

- Birdwatching/wildlife watching;
- Cycling, horse riding;
- Dog walking;
- Jogging/walking/power walking/Nordic walking;
- Canoeing/kayaking/;
- Kite flying;
- Fishing (angling/spear fishing);
- Jet skiing;
- Kite surfing/ stand up paddle boarding,/surfing,/windsurfing;
- Sub aqua diving; and
- Swimming and rockpooling.

A total of 116 local and national groups were contacted with an invitation and survey link and were requested to circulate these to members.

10.2.3Duration of survey and responses

The survey went online on the 18th November and was closed on the 3rd January 2017. The survey collected responses from 655 visitors to the EMS.

10.2.4 Survey result calculations

It should be noted that respondents had the option to skip questions and therefore the answers in the results section do not always sum to 655 as people chose not to answer some questions. All percentages are rounded up to 2 significant figures. In the results section percentages are based on the number of respondents that answered the question, not the total number of respondents.

For each activity respondents were asked how often they had visited each management area in the past year to participate in each activity, and were asked to choose from the list of options, shown below in Table 43. To estimate the number of visits for each management area we multiplied each response as shown below, based on the middle of the range. So, for example, if someone stated that they visited most days (>180 visits) their number of visits in a year was estimated to be 270 as this is the mid-point between 180 and 360.

Table 43. Visit frequency in the online survey and the estimated number of visits based on this response

Visit Frequency	Estimated number of visits in the past year
Most days (>180 visits)	270
A few times a week (60-180 visits)	120
Several times a month (20-60 visits)	40
About once a month (12-20 visits)	16
Less than once a month (2-12 visits)	7
Visited once	1

10.2.5Activity intensity maps

Activity intensity maps were created showing estimated activity intensity by management area, a number of scales were identified to show the results (depending on the underlying data) and the reader is asked to note these scale changes. These differ from the categories used in the on-site survey and workshop surveys as the spatial scale of the area considered has changed (to management area) and therefore the intensities have increased.

10.3Results

10.3.1Recreational activity participation by visitors

- 412 (63%) survey respondents identified whether they were local or visitors
- 400 (82%) respondents were local (living in Devon or Cornwall)
- 12 (3%) respondents resided outside of Devon or Cornwall and had visited the area
- 243 (37%) respondents did not answer this question

The majority of respondents (412) answered the question about whether they were resident in Devon or Cornwall or visiting from further afield. Of these, most respondents (400) were local and most were visiting on a day trip or short visit (336, 82%), rather than as part of an organised group (64, 16%). Twelve respondents (3%) visited the EMS either on holiday (6, 1.5%) or as part of an organised group (6, 1.5%). This question was not answered by 243 (37%) respondents. As the proportion of visitors was so small, we have not attempted to differentiate activity patterns between local residents and visitors.

10.3.2Recreational visitor activities in the Plymouth Sound and Estuaries EMS

- 534 (85%) of survey respondents take part in land or shore based recreational activities
- 317 (60%) of survey respondents take part in water based activities using small craft e.g. kayaks and canoes
- 190 (39%) of survey respondents take part in water based activities using large craft
- 183 (39%) of respondents swim or scuba dive
- 136 (21%) of survey respondents take part in recreational fishing

Most survey respondents were taking part in land or shore based activities (534, 85%) while water based activities using small craft e.g. kayaks and canoes were also popular with 317 (60%) respondents taking part. Fewer respondents took part in water based activities using large yachts or power boats (190, 39%), swimming or diving (183, 39%) or recreational fishing (136, 21%).Table 44, shows the number and proportion of respondents that took part in each of the main activity groups. Please note, respondents were allowed to select more than one activity type and so the summed number of responses is greater than the online surveys completed.

Estimated visitor numbers for each activity type within each management area in the EMS are discussed in more detail in the results sections below.

Table 44. Number and proportion of online survey respondents that take part in in each activity type. Note percentages sum to 100% across rows (not columns). Respondents were able to select each activity type they participated in.

Activity Type	Yes		No	
	Count	%	Count	%
Fishing	136	21	519	79
Land/based shore activities	534	85	95	15
Water based activities using small craft	317	60	207	40
Water based activities using large craft	190	39	304	61
Swimming or diving	183	39	284	61

10.3.3Online survey -Recreational fishing

- Most respondents taking part in recreational fishing visit the EMS to participate in angling (shore and boat based)
- 1,226 estimated visits to the EMS to participate in shore based angling
- 1,865 estimated visits to the EMS to participate in angling from boats
- Respondents made fewer visits to the EMS to collect bait or crabs (103 estimated visits)
- Only 44 estimated visits to the EMS to participate in spear fishing or collect cockles or other shellfish

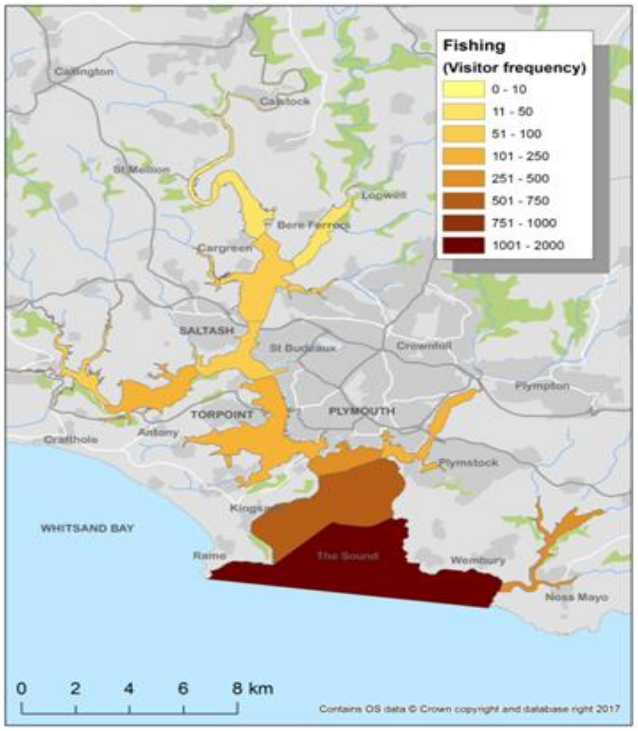
Generally, only a small proportion (136, 21%) of respondents to the online survey fished within the EMS. Based on answers to the questions on management area visited and visit frequency the number of visits made to each management area for each activity was estimated. Table 45 (below) shows the estimated number of visits to each management area for each recreational fishing activity. Angling, either from the shore or from boats, was the most popular fishing activity carried out by survey respondents in the EMS and takes place throughout the EMS. In comparison few survey respondents visited the EMS for bait collecting/crab tiling or cockling or collecting other shellfish. Respondents carried out these activities in a limited number of the management areas. The areas selected are likely to reflect shore access and the presence of muddier habitats that support targeted species.

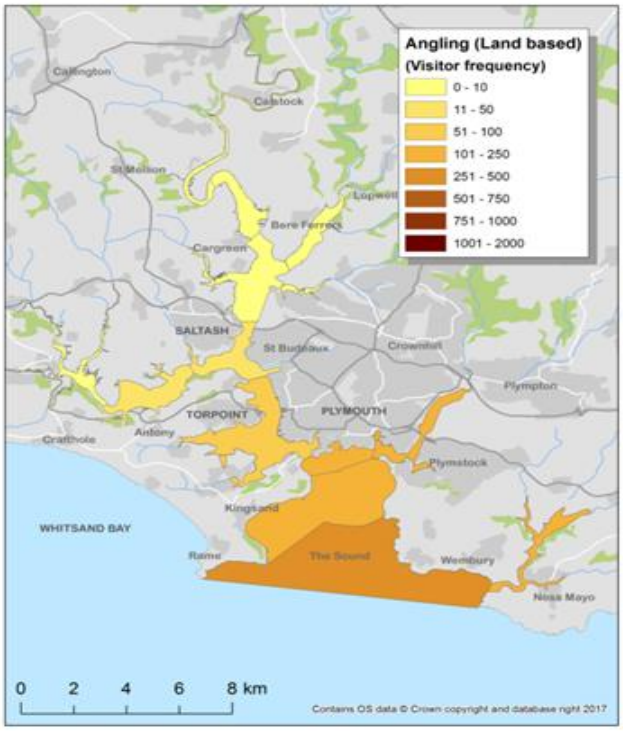
Similarly, spear fishing was only reported from the lower part of the estuary. Sites suitable for spear fishing will be those with shore access, availability of targeted species, good visibility and safety and the upper parts of the estuary are likely to be unsuitable due to turbidity and absence of target species.

Figure 59 (below) shows the total numbers of estimated visits associated all angling activities, shore based angling and boat based angling. Due to the low number of respondents indicating that they took part in spear fishing, bait collecting/crab tiling and cockling these activities were not shown separately. Figure 59 and Table 45 suggest that the more marine parts of the EMS are more popular for angling (shore and boat based). This is likely to reflect suitability of sites based on fish distribution and probably the influence of tidal cycles as well, as sites higher in the estuary will only be suitable for fishing during and either side of high tide. For anglers, weather and tidal conditions and the presence of good fishing spots are key factors that influence locations visited (see section 4.5.5)

Table 45. Estimated number of visits by the online survey respondents to participate in each recreational fishing activity by management area throughout the year.

Management Area	Angling (shore)	Angling (boat based)	Spear fishing	Bait collecting /crab tiling	Cockling/ other shellfish
A	17	0	0	0	0
B	0	16	0	0	0
C	1	23	0	0	0
D	9	30	0	0	0
E	7	16	0	0	0
F	7	16	0	40	0
G	44	48	0	0	0
H	0	23	0	40	0
J	47	49	0	0	7
K	96	25	0	0	7
L	152	2		7	7
M	227	225	0	0	1
N	115	418	7	16	0
P	325	779	7	0	1
Q	179	195	7	0	0
Total	**1226**	**1865**	**21**	**103**	**23**





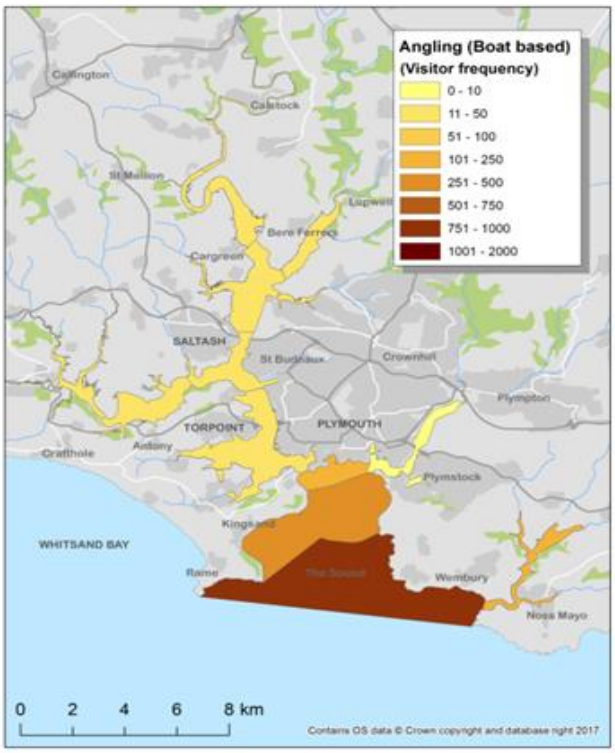


Figure 59. Distribution and estimated intensity of recreational fishing visits by online survey respondents to the Plymouth Sound and Estuaries EMS management areas.

10.3.4 Land/Shore based activities

- Most survey respondents take part in shore/land based recreational activities
- An estimated 42,261 visits were made by survey respondents to the EMS to take part in this activity type
- Visiting the EMS to walk or jog was the most popular activity (15,188 visits), followed by dogwalking (9,711 visits) and birdlife/wildlife watching (3,341).
- Cycling trips and outings with family/children and cycling were also popular (4,721 and 2,036 visits respectively).
- Fewer respondents took part in rockpooling (1,310 visits), kite flying (7 visits) and horseriding (7 visits).
- Land/based recreational activities occur throughout the EMS but respondents visit the lower, seaward parts of the EMS more

The majority of the online survey respondents (534, 85%), took part in land/shore based recreational activities. We asked respondents about their participation in each of nine main activity types in each of the management areas in the EMS, See Table 46 (below) for the estimated number of visits associated with each of the activity types.

Visiting the EMS to walk or jog was the most popular activity undertaken by survey respondents (15,188 visits), followed by dog walking (9,711 visits) and birdlife/wildlife watching (3,341). Cycling trips and outings with family/children and cycling were also popular (4,721 and 2,036 visits respectively). Fewer people took part in rock-pooling (1,310 visits), kite flying (7 visits) and horseriding (7 visits) as the main reason for their visit. Ninety-two respondents took part in 'other' activities (detail not provided).

Figure 60 shows the total estimated number of visits made by survey respondents for all land-based recreational activities throughout the EMS. Separate estimated visitor intensity maps are shown for bird/wildlife watching cycling, Dogwalking and walking/jogging (Figure 61). Due to the low number of respondents indicating that they took part in horse riding, kite/flying/drone flying and rockpooling these activities were not shown separately.

The figures and table totals indicate that survey respondents made more visits to the lower (seaward) parts of the EMS. These regions are larger with a greater proportion of coastline easily accessible from Plymouth and Saltash (Management areas G: Tamar (Saltash), M: Outer estuary, P: Sheltered bay and P: Open coast). Such areas also have more developed infrastructure such as carparks, cycle routes and pathways.

Some key points noted were that:

- Dog walking occurs throughout the EMS.
- Bird and wildlife watching occur at similar levels throughout the EMS with the management areas K: Tamar (Torpoint) and L: The Plym the most frequently visited.
- Cycling-occurs throughout the EMS but the Plym (Management Area L) was the most visited area based on respondents.

Table 46. Number of estimated visits made by survey respondents to participate in each land-based activity by management area throughout year.

Management Area	Bird/wildlife watching	Cycling	Dog walking	Horse riding	Kite flying/drone flying	Other	Outing with family/children	Rockpooling	Walking/Jogging	Totals
A	92	29	749	7	0	57	132	0	843	1909
B	182	300	664	0	0	331	237	0	818	2532
C	278	38	285	0	0	291	8	0	281	1181
D	122	7	663	0	0	362	54	0	1518	2726
E	168	93	762	0	0	62	38	0	648	1771
F	361	77	439	0	0	555	0	0	421	1853
G	153	303	1137	0	0	602	109	0	1302	3606
H	76	65	298	0	0	52	148	7	177	823
J	210	95	88	0	0	301	29	1	386	1110
K	355	642	212	0	7	668	91	0	534	2509
L	623	1579	1440	0	0	289	127	0	0	4058
M	205	814	816	0	0	676	296	344	3115	6266
N	224	443	372	0	0	661	401	193	1522	3816
P	247	197	991	0	0	797	366	694	1800	5092
Q	45	39	795	0	0	236	0	71	1823	3009
Total	**3341**	**4721**	**9711**	**7**	**7**	**5940**	**2036**	**1310**	**15188**	**42,261**

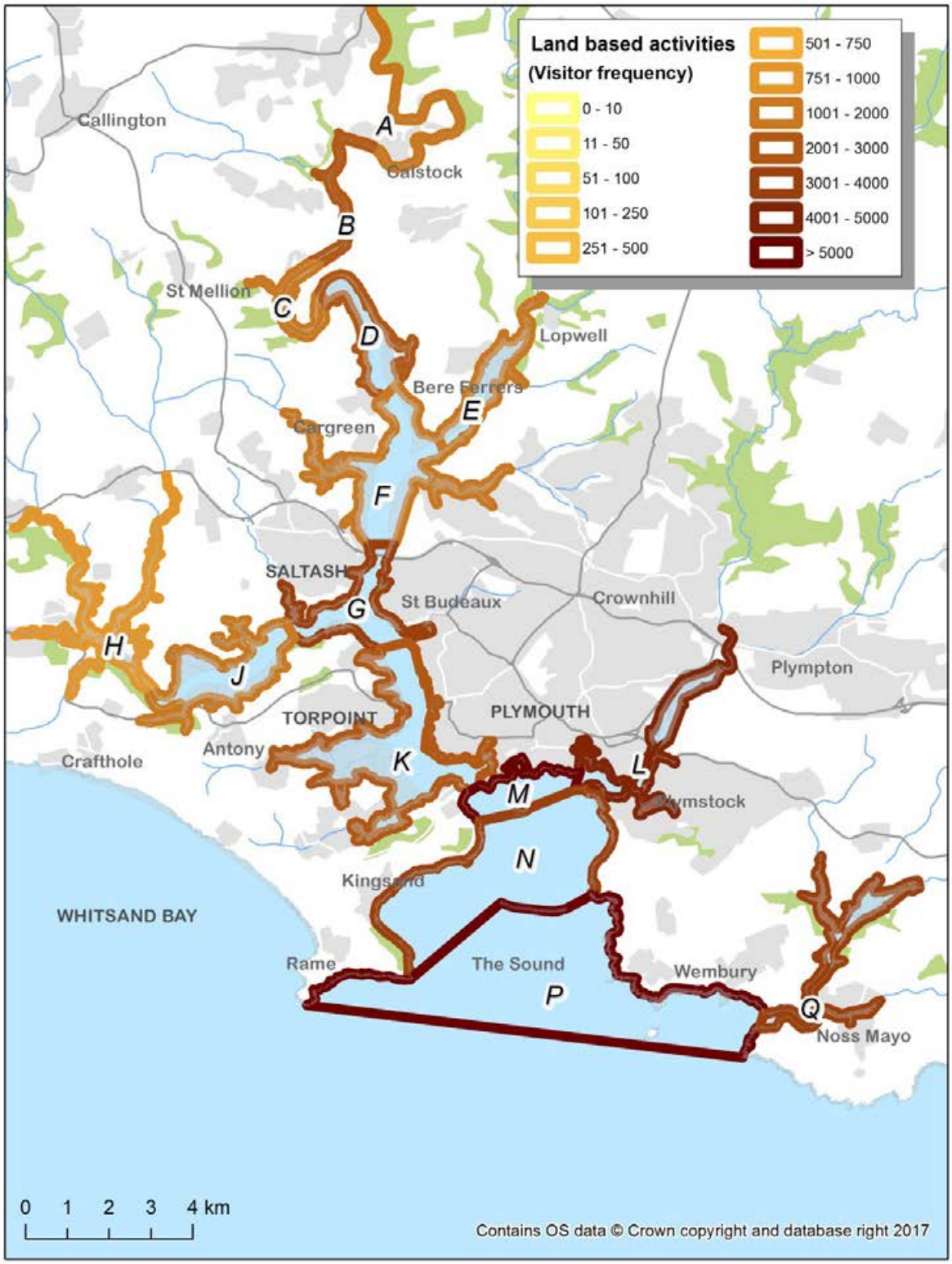
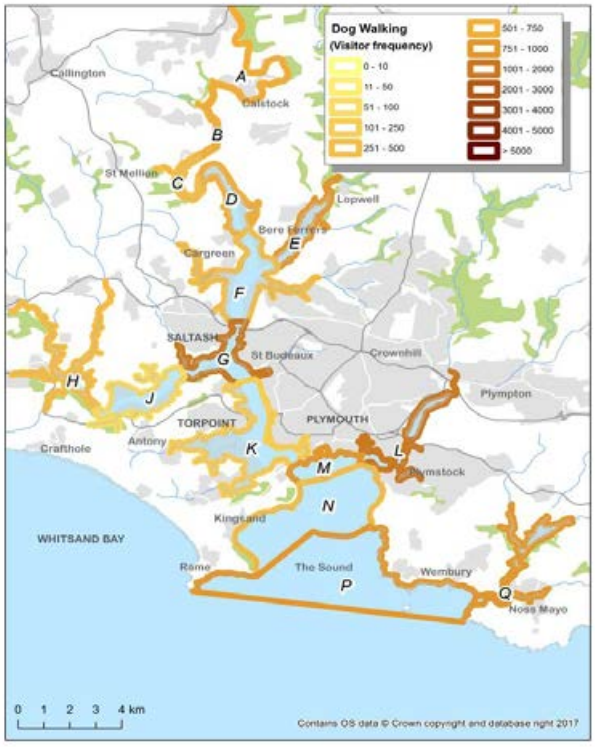
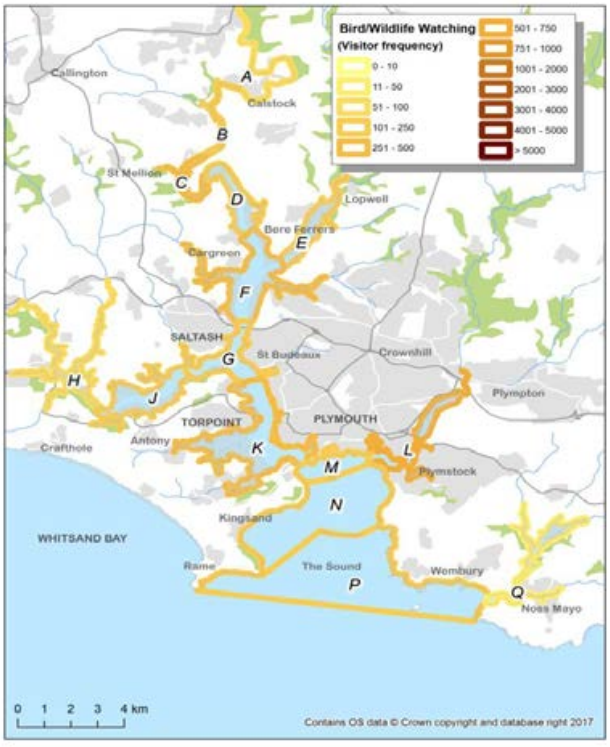


Figure 60. Distribution and estimated intensity of recreational visits associated with land/shore activities by survey respondents to each management area onlinefor the Plymouth Sound and Estuaries EMS. Note, the figure does not show mapped routes but rather the outlines of the management area colour coded for visitor frequency.

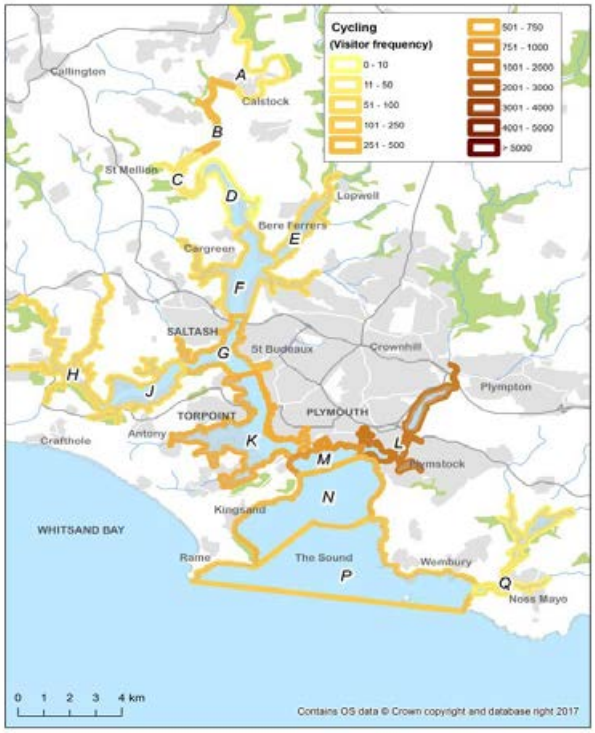
Dog walking



Bird/Wildlife watching



Cycling



Walking/jogging

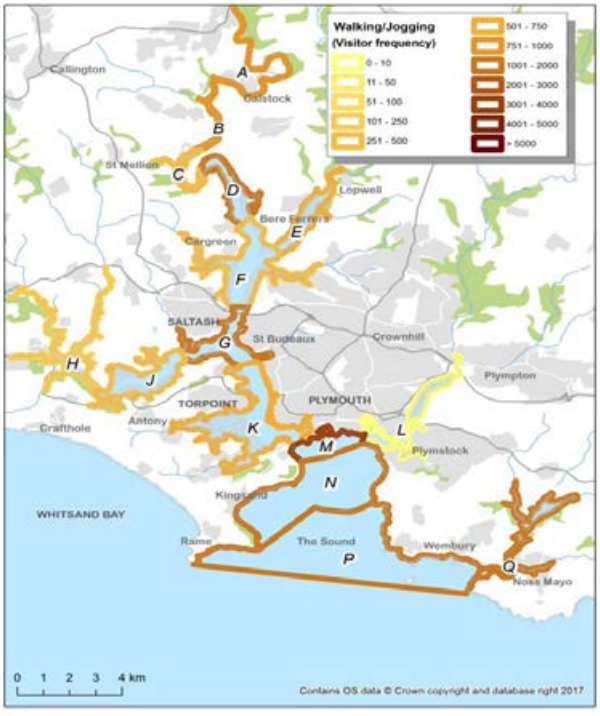


Figure 61. Distribution and estimated intensity of all land based visits by online survey respondents to the Plymouth Sound and Estuaries EMS management areas. Note, the figures do not show mapped routes but rather the outlines of the management area colour coded for visitor frequency.

10.3.5Water based activities using small craft

- **Water based activities using small craft are popular with317 (60%) of online survey respondents answering the question indicating that they took part in this activity type**
- **The most popular activities undertaken by survey respondents were sailing using small craft (7,839 estimated visits), kayaking/canoeing (6,443 estimated visits), powerboating (5,099 estimated visits) and rowing (3,499 estimated visits)**
- **Small water craft are used throughout the EMS, although the lower more seaward parts of the estuary are the most frequently visited by survey respondents**
- **Management area L (the Plym) was most frequently visited by survey respondents and was used particularly by small sailing craft and rowers**

The online survey respondents were asked if they took part in recreational activities using small water craft. This was a popular activity type with 317 (60%) of respondents that answered this question indicating that they took part in this activity type. The most popular activities (based on estimated number of visits, Table 47) were sailing using small craft (7,839), kayaking/canoeing (6,443 visits), powerboating (5,099) and rowing (3,499 visits). People visiting the EMS for diving used RIBs and hard boats, these were associated with an estimated 1168 visits and the areas visited correspond with the diver responses in Section 3.3.5 (lower, seaward parts of the EMS). Few people answering the survey were jet skiers (81 visits), or took part in windsurfing (16 visits).

Figure 62 shows the estimated visitor frequency associated with all small water craft activities. Small water craft were used by survey respondents throughout the EMS, with the lower more seaward parts of the estuary most frequently visited by respondents. Management area L (the Plym) was the most frequently visited site and was used particularly by small sailing craft (Figure 63). Kayaking and canoeing visits by survey respondents are relatively evenly dispersed throughout the EMS, with a slight preference for the lower, seaward EMS regions.

Divers (Figure 63), surfers and wind surfers tend to visit the lower, seaward parts of the estuary, where condition (dive sites, wave and wind exposure are more suitable for their activities. As few visits were undertaken by survey respondents for jet skiing surfing or wind surfing these activities have not been mapped.

Table 47.Estimated number of visits by survey respondents to participate in each water-based activity using small craft by management area throughout the year.

Management Area	Diving (RIB/h ardboat)	Jet skiing	Kayaking/canoeing	Rowing	Small power boat	Small sailing craft	Stand up paddle board	Surfing	Wind surfing	Totals
A	1	0	295	21	154	44	1	0	0	516
B	0	0	293	1	141	79	0	0	0	514
C	0	0	211	16	284	65	40	0	0	616
D	0	0	314	120	305	595	0	0	0	1334
E	0	0	420	1	25	28	0	0	0	474
F	0	41	632	24	171	423	0	0	0	1291
G	7	40	490	316	412	856	0	0	0	2121
H	7	0	266	136	340	57	7	0	0	813
J	7	0	287	129	411	272	21	0	0	1127
K	24	0	281	159	438	508	0	0	0	1498
L	30	0	640	1832	309	1080	208	0	0	4099
M	252	0	760	73	570	1256	71	0	0	2982
N	291	0	783	356	585	1154	78	1	0	3248
P	372	0	591	21	774	904	40	278	16	2996
Q	177	0	170	294	180	518	140	120	0	1599
Total	**1168**	**81**	**6433**	**3499**	**5099**	**7839**	**606**	**487**	**16**	

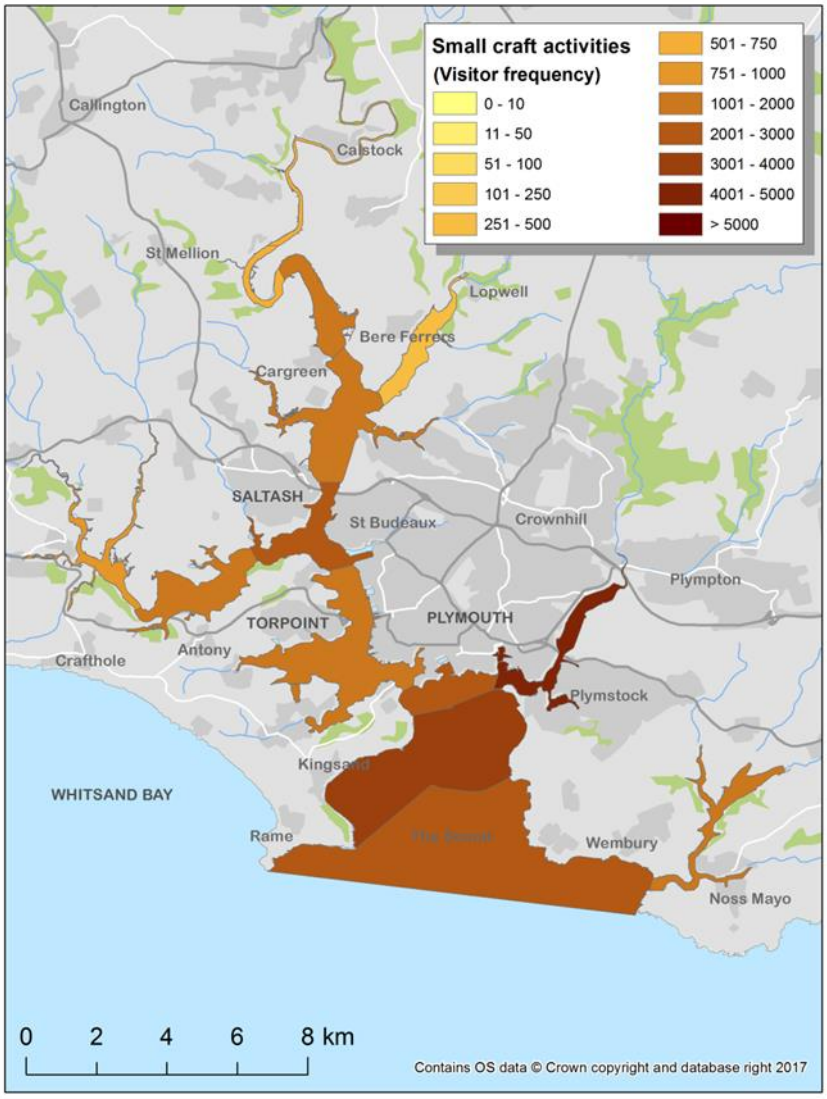
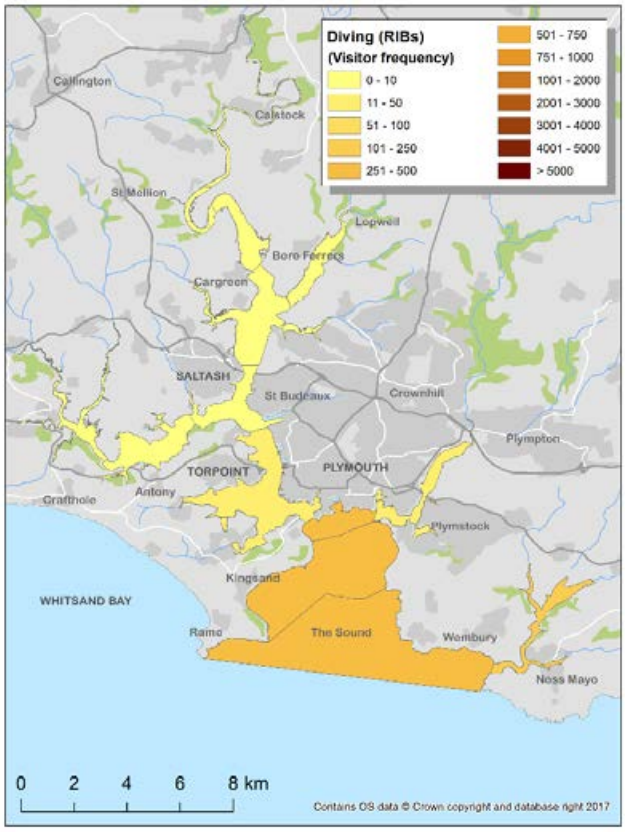
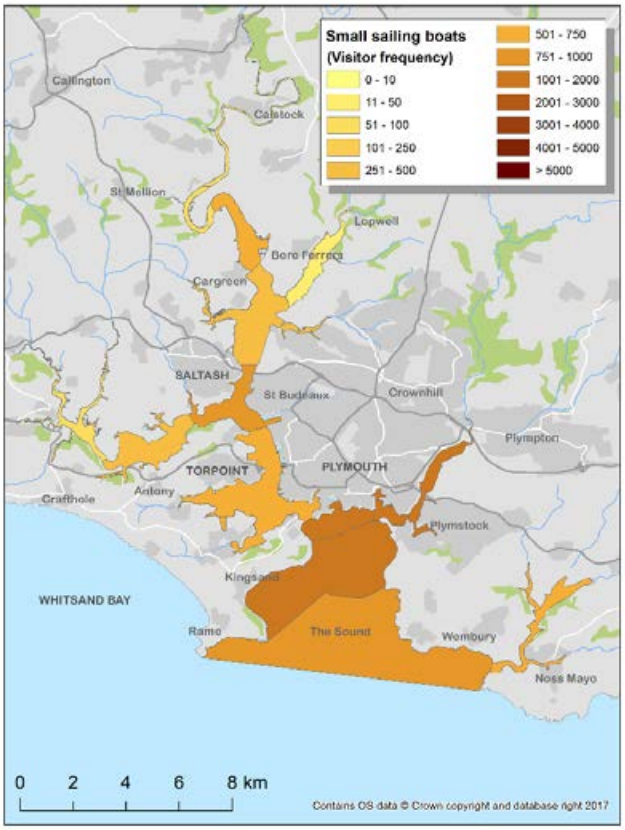


Figure 62. Distribution and estimated intensity of all water based activities using small craft, based on online survey responses for the Plymouth Sound and Estuaries EMS management areas.

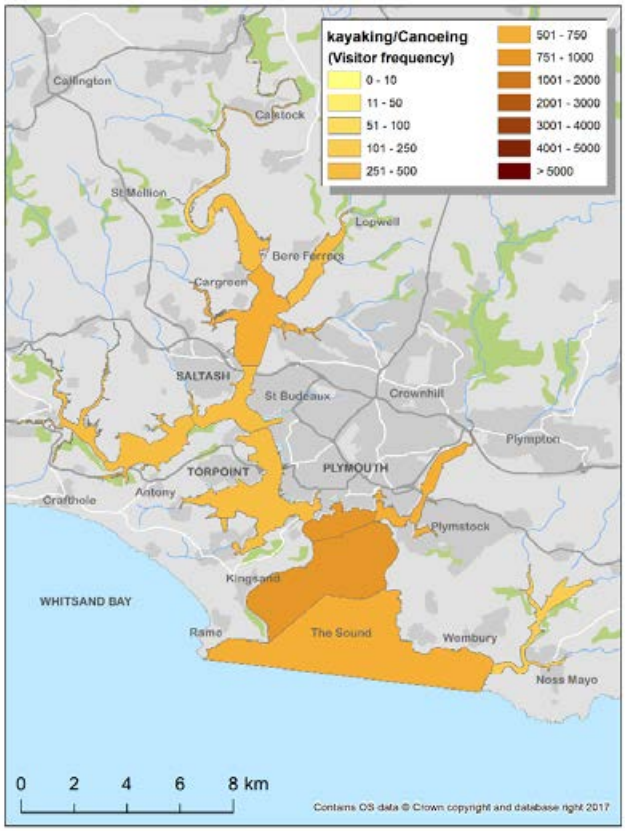
Diving boats



Small sailing boats



Kayaking/canoeing



Rowing

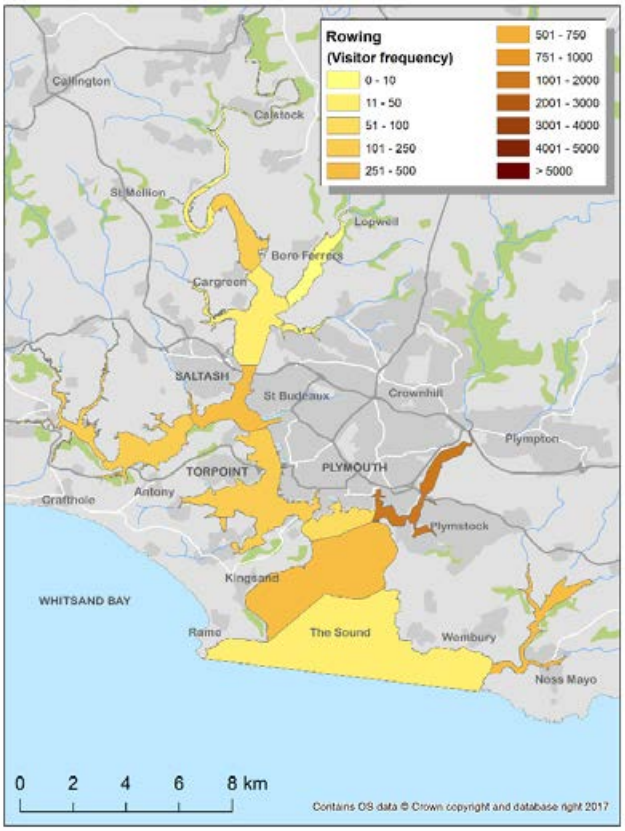


Figure 63. Distribution and estimated intensity of small craft activity visits by type, based on online survey responses for the Plymouth Sound and Estuaries EMS management areas.

Small power boats

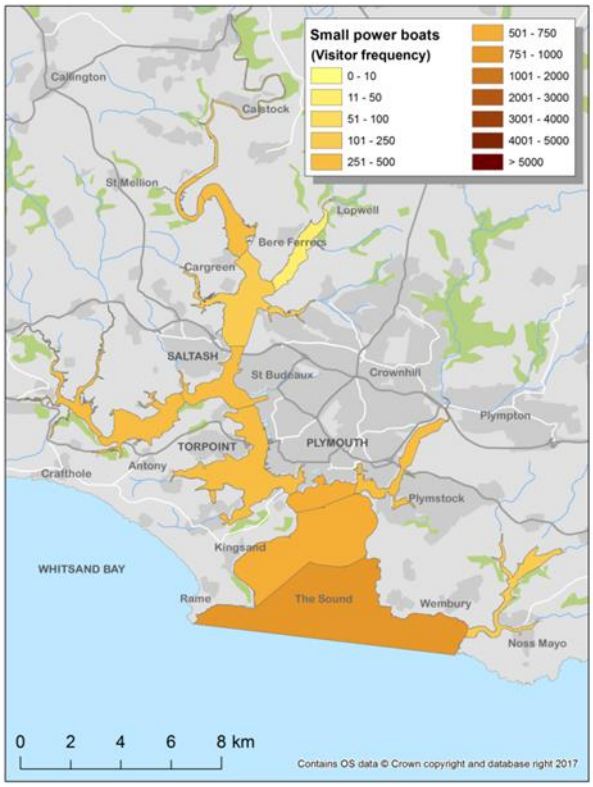


Figure 64. Distribution and estimated intensity of small power boating visits by online survey respondents to the Plymouth Sound and Estuaries EMS management areas.

10.3.6Water based activities using large craft

- 190 (39%) of online survey respondents take part in water based activities using large craft
- These respondents were estimated to undertake 18,753 visits the EMS to sail yachts
- An estimated 5,629 visits were made by survey respondents to the EMS to take part in recreational powerboating
- Moorings in the Plymouth Sound and Estuary EMS were the most popular place for survey respondents to keep their boats (78 respondents, 52%)
- 56 (37%) of survey respondents keep their boats at pontoons in the Plymouth Sound and Estuaries EMS.
- Just over 10% of respondents used trailers or marinas or mooring outside of the EMS

Respondents to the online survey were asked if they took part in recreational activities using large water craft (larger power boats and yachts), 190 (39%) of respondents took part. Yachting was particularly popular with 18,753 estimated visits to the EMS by survey respondents associated with this activity. Powerboating was associated with an estimated 5,629 visits. Both activities occur

throughout the EMS (Figure 65). Key areas for yachting were Management Area G (Tamar (Saltash)) and the lower seaward parts of the EMS. This pattern in activity intensity is similar to powerboating visits with Management Area G and the seaward parts of the estuary popular (Figure 65).

Survey respondents were asked where they kept their boat and were asked to select one option from those in Table 48. Most respondents who took part in this activity (167, 88%) answered this question. Most respondents kept their boats at moorings 47%) and marine pontoons (34%), inside the Plymouth and Sound Estuaries area). Seven of the 'other' responses also referred to marinas or moorings.

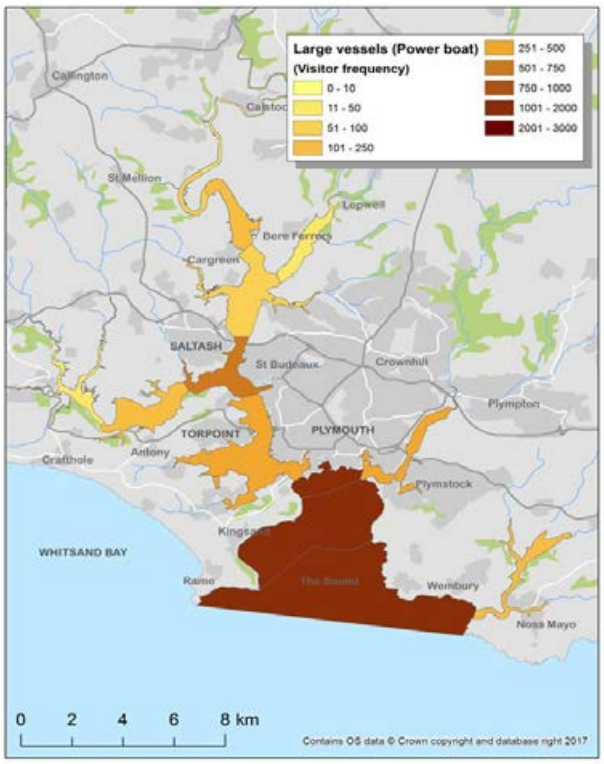
Table 48. Online survey responses to the question 'where do you keep your boat'

Options	No. of respondents	% Respondents
Marine/pontoon (in the Plymouth Sound and Estuaries area)	56	34
Marine/pontoon (outside of the Plymouth Sound and Estuaries area)	1	1
Mooring (in the Plymouth Sound and Estuaries area)	78	47
Mooring (outside of the Plymouth Sound and Estuaries area)	9	5
Trailer/hard standing or similar, water accessed via slipway for visits	6	4
Other (please specify)	17	10

Table 49. Number of estimated visits by survey respondents to participate in powerboating and yachting by management area throughout year.

Management Area	Power boat	Yacht	Total
A	44	87	**131**
B	44	133	**177**
C	63	200	**263**
D	124	659	**783**
E	30	81	**111**
F	61	901	**962**
G	664	1986	**2650**
H	39	481	**520**
J	174	725	**899**
K	441	1566	**2007**
L	359	1937	**2296**
M	1214	2883	**4097**
N	1102	2881	**3983**
P	1152	2963	**4115**
Q	118	1270	**1388**
Total	**5629**	**18753**	**24382**

Large vessels (power boats)



Large vessels (yachts)

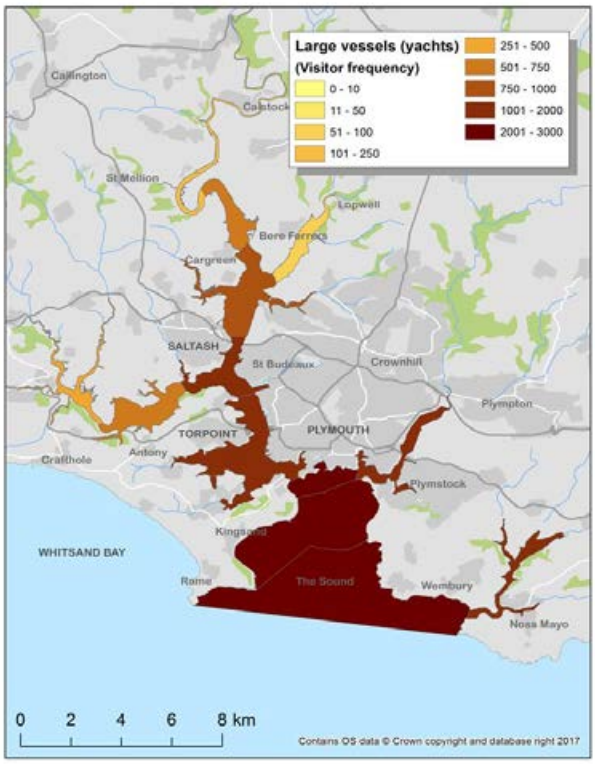


Figure 65.Distribution and estimated intensity of powerboat and yacht visits by online survey respondents to the Plymouth Sound and Estuaries EMS management areas.

10.3.7Swimming and scuba diving

- **183 (39%) of online survey respondents took part in swimming or diving in the EMS**
- **An estimated 5,616 visits for swimming were made by survey respondents to the EMS.**
- **Survey respondents swim throughout the EMS but the lower reaches of the estuary and the sound are more popular.**
- **An estimated 1,935 diving trips were made to the EMS by survey respondents, scuba diving occurs largely in the lower, more seaward parts of the EMS**

Swimming and scuba diving was the final activity type that respondents were asked about. 183 (39%) of online survey respondents took part in these activities in the EMS. Based on survey responses, the number of visits associated with each activity in the EMS were estimated (see Table 50).

The pattern of visits was similar to that observed for other recreational activities, with Management Area G (Tamar (Saltash) and the lower, seaward parts of the EMS receiving more visits. Respondents

do not report scuba diving in the upper parts of the estuary as conditions are unsuitable (due to tides and poor visibility levels). Swimming, however, occurs throughout the EMS but there are less visits reported to the upper estuary areas.

Table 50. Estimated number of visits by online survey respondents to participate in swimming or scuba diving by management area throughout the year.

Management Area	Scuba diving	Swimming	Total
A	0	7	**7**
B	0	7	**7**
C	0	47	**47**
D	0	54	**54**
E	0	15	**15**
F	0	79	**79**
G	48	45	**93**
H	0	41	**41**
J	0	23	**23**
K	49	16	**65**
L	40	669	**709**
M	465	2261	**2726**
N	416	1112	**1528**
P	710	1229	**1939**
Q	207	220	**427**
Total	**1935**	**5616**	**7551**

Swimming **Scuba diving**

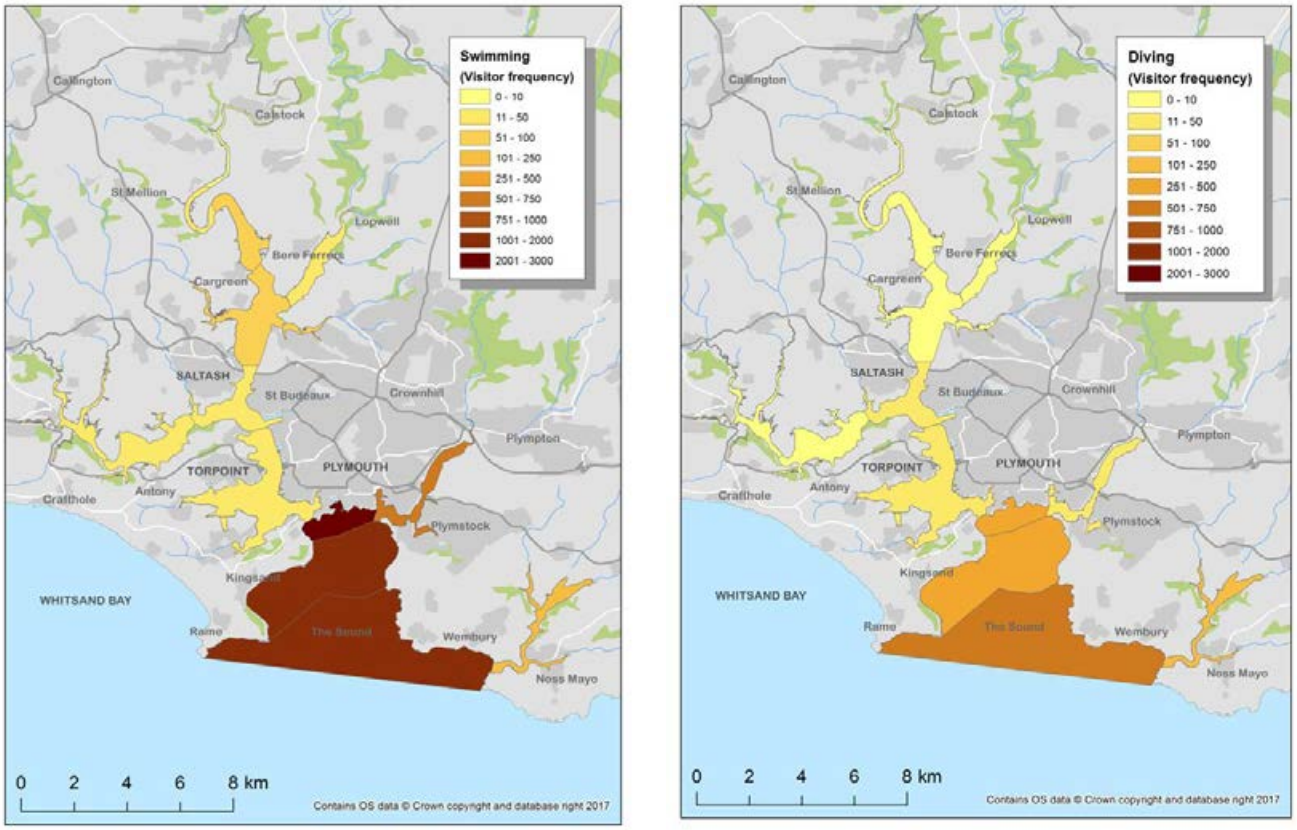


Figure 66. Distribution and estimated intensity of swimming and scuba diving visits by online survey respondents to the Plymouth Sound and Estuaries EMS management areas.

10.3.8 Regions visited –summary

- **Data from each main activity type shows a similar trend for the number of respondents that visit each management area**
- **Larger areas of the estuary, where there is more coastline and infrastructure such as slipways and car parks and that are also closer to the larger population centres of Plymouth, Plymstock and Saltash are visited by more people than smaller areas of the estuary.**

In general the data from each main activity type shows a similar trend for the number of respondents that visit each management area (see previous figures and Figure 67). The most visited areas of the EMS are the seaward larger areas where there is also more coastline and infrastructure such as slipways and car parks. These areas are also closer to the larger population centres of Plymouth, Plymstock and Saltash.

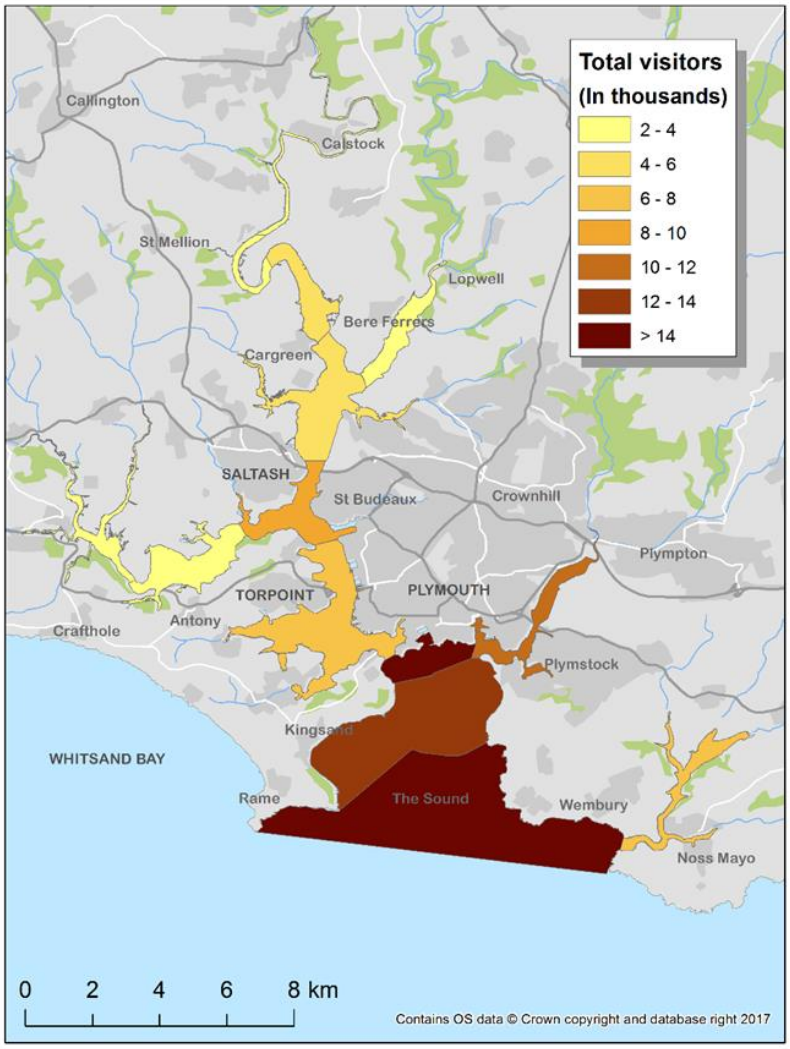


Figure 67. Distribution and estimated intensity of all visits by survey respondents to the Plymouth Sound and Estuaries EMS management areas.

10.3.9Season of visit

- **For all activity types the main seasons for visiting the site were spring/summer**
- **For land/shore based recreational activities, more respondents (70%) visited at the same frequency throughout the year than for water based activities**

Respondents were asked to provide information on the main season they carried out their activity in each management area. Respondents could select one choice from ‘spring’, ‘summer’, ‘autumn’

'winter', 'spring and summer' and 'autumn and winter' and the 'same all year'. These choices were compiled into Spring/Summer and Autumn/Winter.

For all activities most respondents tend to visit the EMS in the spring and summer (see Table 51 below). Respondents that took part in land/shore based activities were most likely to visit throughout the year (897, 70% of respondents). Dog walking was a popular activity and owners will take their pets out for exercise throughout the year. Other visitors who took part in activities on, or in, the water would be more affected by cold water temperatures and respondents tend to take part in their activity in the warmer months. Winter months are also associated with shorter days, wetter and stormier conditions reducing the amount of time that is available to take part in activities in suitable conditions.

Table 51. Seasonality within recreation activities based on online survey responses (Count. is the sum of respondents answering the question for each management area).

Activity Type	Spring/Summer		Autumn/Winter		Same all Year	
	Count	%	Count	%	Count	%
Fishing	123	69	19	11	35	20
Land/based shore activities	279	22	112	9	897	70
Water based activities using small craft	491	61	22	3	295	36
Water based activities using large craft	478	69	22	3	190	27
Swimming or diving	164	66	6	2	78	31

10.3.10 Why visitors choose locations

- Respondents were asked why they chose to visit locations
- For all activities the suitability for the activity undertaken, attractive scenery and views and proximity to home were important factors in site choice

For each activity type that they took part in, survey respondents were asked what made the locations they use attractive to them to visit (respondents were allowed to choose more than one option). For all activities the suitability for the activity undertaken, attractive scenery and views and proximity to home were important factors in site choice (see Table 52). Some patterns in location choice were noted between activity groups:

- The availability and condition of launching facilities was important for people undertaking water based activities.
- Wildlife interest was more important to people doing land/shore based activities
- In general refreshments/toilets don't influence location choice

- For fishermen the suitability of locations for fishing and suitability given weather conditions are important considerations- (as well as proximity to home and attractive scenery/views.

Table 52. Summarised responses to the question 'what makes the locations you use attractive to you' for each activity type.

	Fishing	Land/based shore activities	Water based activities using small craft	Water based activities using large craft	Swimming/ scuba diving	Total	%
Don't know	1	3	2	4	1	**11**	0.3
Close to home	58	252	127	76	82	**595**	15.0
Others in party/club choose	4	29	58	34	20	**145**	3.7
Good/easy parking	25	107	77	50	40	**299**	7.6
Feel safe here	21	93	66	28	59	**267**	6.8
Refreshments	4	38	16	11	17	**86**	2.2
Toilets	11	44	34	20	28	**137**	3.5
Attractive scenery/views	45	341	132	70	81	**669**	16.9
Right place for activity (e.g. good fishing)	67	137	178	63	123	**568**	14.4
Particular wildlife interest	14	118	49	19	45	**245**	6.2
Suitability given weather conditions	43	95	121	69	61	**389**	9.8
Ability to let dog off lead	5	84		51	6	**146**	3.7
Particular launching facilities	12	34	121	85	16	**268**	6.8
Condition of launching facilities	7	15	71	29	8	**130**	3.3

10.3.11 What factors would lead to other locations being chosen

- **Online survey respondents were asked what factors might lead them to change the locations they visited**
- **Better paths surfaces and routes available at other sites may induce people taking part in land/shore based activities to change locations**
- **Better launching/access to water would influence site choice in respondents taking part in water based activities**
- **Better easier/car parking and cheaper car parking would be a factor when choosing alternate locations (22% of respondents)**

- **For 15% of respondents no factors would make another location more preferable, suggesting overall satisfaction with sites chosen**

The online survey respondents were asked: 'what features would be necessary to make other locations attractive for you to use instead of those you most frequently visit'. For 15% of respondents no features would make them visit another location which suggests a high level of satisfaction with the site used (see Table 53).

Better paths and surfacing were an important location feature for people taking part in land/shore based activities.

Car parking was an important feature with 22% of respondents citing better/easier parking or cheaper/free parking as important to them.

As section 4.3.10 indicated many people chose sites based on attractiveness and proximity to their home and these features were also cited as influencing location choice. If there were locations closer to home that were as attractive, or more attractive, people would be likely to choose these in preference.

Overall facilities did not appear to be of major factor influencing site selection with less than 10% of respondents citing toilets, refreshments and better information/maps or boards indicating that these would entice them to visit other locations in preference to the sites they used.

Table 53. Summarised online survey responses to the question 'what would make another location more attractive to you to visit for each activity type.

	Fishing	Land/ based shore activities	Water based activities using small craft	Water based activities using large craft	Swimming/ scuba diving	Total	%
No features/ nothing	36	88	75	53	49	**301**	**15**
More dog friendly	5	50	N/A	5	7	**67**	**3**
Better launching/ access to water	27	53	117	31	30	**258**	**13**
Better mooring/ pontoon facilities	-	-	-	48	-	**86**	**4**
Better path surfacing/routing	7	65	15	5	18	**110**	**6**
Refreshments (e.g. cafe)	3	41	23	14	13	**94**	**5**
Better information/ maps /boards	5	66	19	5	12	**107**	**5**
Measures to control other users	12	27	23	9	18	**89**	**5**
Toilets	9	58	30	13	25	**135**	**7**
Better/easier parking facilities	15	70	63	21	28	**197**	**10**
Cheaper/free parking	21	111	57	23	25	**237**	**12**
Closer to home	11	47	29	10	19	**116**	**6**
Attractive scenery	18	88	36	9	18	**169**	**9**

10.3.12 Transport

The online survey respondents were asked what form of transport they mainly used to arrive at the sites they visited, for each activity type (respondents could select one option only). Car/motorcycle was the dominant form of transport used for all activities (see Table 54).

Transport on foot was the second most popular transport form for land-based activities (92 respondents, 22%) and was the main form of transport for 41 (24%) of swimmers/divers Water transport was the second most popular for fishing (37, 34% of respondents) and small water craft users (49 respondents, 17%) and may refer to arriving in management areas by water from other entry points.

Few people used public transport (passenger ferries, buses or trains) to get to the locations they visited, with only 1.4%, 1.8 and 0.4% of respondents, respectively using these as their main form of transport.

Table 54. The type of transport used by respondents within each activity group to arrive at the site. Note the percentages in the main body of the table refer to the activity group responses NOT the overall number of responses from all activity groups. Percentages therefore sum to a hundred or close (depending on rounding) across rows but not down columns. The final % shown at the bottom of the table refer to the total number of responses.

	Bicycle		Bus		Car/motorcycle		On foot		Other by water (e.g. canoe, sail boat, motor boat etc)		Passenger ferry		Train	
Activity Type	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Fishing	1	0.9	0	0	59	54	11	10	37	34	1	0.92	0	0.0
Land/based shore activities	31	7.3	10	2.3	263	62	92	22	19	4	6	1.42	3	0.7
Water based activities using small craft	9	3.2	4	1.4	186	66	26	9	49	17	7	2.47	2	0.7
Water based activities using large craft	3	1.9	0	0	118	75	27	17	9	6	1	0.63	0	0.0
Swimming or diving	9	5.3	7	0	92	54	41	24	20	12	1	0.59	0	0.0
Total No.	**53**	**-**	**21**	**-**	**718**	**-**	**197**	**-**	**134**	**-**	**16**	**-**	**5**	
%	**-**	**4.6**	**-**	**1.8**	**-**	**63**	**-**	**17**	**-**	**12**	**-**	**1.4**	**-**	**0.4**

10.3.13 Respondent comments

Respondents were asked if they had any comments about features that made the locations they used attractive or for comments on why they may use other locations. A range of comments were received and it was clear that some issues affect specific activity groups only (based on survey responses), while other concerns are more general. Some respondents used the opportunity to make suggestions about management or other ideas.

Access to the EMS was a key concern for respondents from all activity types. The lack of shore access in Plymouth was noted. An angler commented that redevelopment of the waterfront was squeezing out anglers and that public access points that were still available were falling into disrepair. A similar comment was also noted by a respondent who flagged up that provision for shore access in Plymouth was limited and that access roads were in poor condition at Mountbatten. Respondents noted concerns about access, litter and safety on the Hoe foreshore, with concerns about anti-social behaviour, theft and broken glass.

Some respondents would like to see better access by bus or other forms of public transport. Better beach access by the water was suggested to put off road transport and the need for more car parks. While others would like 'non-greedy' car parking fees and more/improved parking at some sites such as at Newton Ferrers, Mountbatten and Eastern Kings/Devils Point.

Concern was also raised about the lack of visitor moorings and facilities and that this would put visitors off. Some respondents commented on the lack of facilities such as showers, secure changing facilities.

The balance between facility provision and peacefulness is a key one. A respondent highlighted that the EMS is a 'precious place' and noted the need to balance between protection from development while ensuring good facilities for locals and visitors. A few users commented on the peacefulness or naturalness of the site and commented that they value the tranquillity and quiet of the site and the chance to get away from other people or organised activities. One user noted that they prefer 'no facilities at all'. Provision of more facilities would please some people but would be viewed as detrimental to the site character by others.

Other comments referred to activity management and the need for balancing access between users. Suggested management changes included demarcated swimming areas, signage to indicate swimming areas and designated naturist areas. Some respondents noted that other users impacted on them, such as the respondent who noted that jet skis did not conform to speed limits outside of designated ski areas. One respondent wanted to see a code of practice to stop their activity being given a bad name while another suggested a code of practice between all users.

A number of users positively commented on the EMS and services within such as catering and launch services. One respondent noted 'travel 200 miles each way, basically speaks for itself, a great place to visit'. Others highlighted particular factors that were relevant to their activities, with a diver noting the 'spectacular' reefs and wrecks around Plymouth. A swimmer noted that one spot in the EMS was

'one of the best spots in Cornwall for regular sea swimming'. Others noted clean water as an attraction (although it should be noted that other swimmers were concerned about water quality).

10.3.14 Awareness of the European Marine site

The online survey respondents were asked if they were aware that the waters of Plymouth Sound and the Tamar Estuaries are designated as a "European Marine Site" and are legally protected because of the species and habitats found there. A large proportion of respondents (67%) answered the question and 343 (78%) indicated that they were aware of the protection. This suggests that at least half (52%) of the 655 survey respondents were aware of the site protection.

10.4 Conclusions

To supplement the data on the distribution and intensity of recreational activities in the Plymouth Sound and Estuaries EMS an online survey was created and promoted as widely as possible using targeted invites to recreational/sports groups and social media. The survey ran for six weeks and we received 655 responses. The majority of survey respondents were local (resident in Devon and Cornwall) and visited the EMS for land/shore based activities although water based activities were also popular amongst respondents. Most visitors to the EMS arrived by car or motorcycle.

Most activities were carried out through the EMS but the most visited areas of the EMS are the seaward larger areas where there is also more coastline and infrastructure such as slipways and car parks. These areas are also closer to the larger population centres of Plymouth, Plymstock and Saltash. Visitor intensity varied throughout the year and spring and summer were the most popular seasons to visit the EMS although for all activities there were some respondents who participate throughout the year. Land based activities were most likely to occur throughout the year while water-based activities, particularly those where participants are most exposed to the water (e.g. swimming and diving and activities using small water craft) are more likely to be undertaken in the warmer months.

In general, respondents visit sites on the basis of suitability for chosen activity, proximity to home and attractiveness of scenery. Generally there was a high level of awareness of the conservation designation of the area with people generally satisfied with the sites they visited. Overall, people appear to be generally satisfied with the sites they visited with many indicating the importance of maintaining the character of the sites. Provision of facilities such as toilets and refreshments do not appear to be key issues although access to sites through slipways or other access points, mooring facilities, car parking and pathways were highlighted as important to site users.

It is recognised that the on-line survey can only provide a general indication of the level of site use and that some activities such as jet skiing and windsurfing are likely to be under represented. However, we consider that overall the general patterns of site use are valid and informative.

11 Discussion

The Plymouth Sound and Estuaries EMS is widely used for recreational activities, and this study reveals a complex pattern of recreational activities being undertaken throughout the site. The three approaches that were applied in this study (onsite surveys, targeted workshops and online survey) all revealed different aspects of the recreational use and users of the Plymouth Sound and Estuaries EMS.

The on-site survey provided detailed information on the visitor groups interviewed, the activities they were undertaking and routes through the site. It also yielded in depth of information on the patterns of visits (frequency, duration, time of day, seasonality) and insights into why visitors chose to visit the site and how changes to the site may affect their future visiting patterns.

The targeted workshops gathering high resolution information on areas within the site used by anglers, sailing and motor vessels, sub-aqua divers and paddle-sports and the intensity of this use. This was accompanied by seasonal patterns of use, and the key areas where pressures on intertidal and subtidal species and habitats may be located from activities such as anchoring and launching. The participants of these workshops were local, although many were club representatives with a wider pool of constituents.

The online surveys provided an opportunity to widen the participation to more non-local recreational users, to capture this important component that was likely to be missed by on-site surveys. The data gathered reinforced the distribution and intensities of recreational use by activity type and provided more information on the numbers of visitors to the site.

What emerged from these three approaches combined was that predominantly recreational users are local to Devon and Cornwall (87% of visitor groups in the on-site survey and 82% on online survey respondents). This is comparable with the findings of the Penhale study (in prep) (also 87% of visitors were reported as local residents). There were seasonal trends in the data with more visitors from outside of Devon and Cornwall using the site in summer as would be expected with tourists visiting the area from further afield.

Terrestrial activities (such as walking, dog walking and outing with family) accounted for 2/3 of the visitors surveyed in the on-site surveys. Responses from the online surveys also indicated a large proportion of users undertaking terrestrial activities (85%). There were clear preferred locations that emerged from the on-site surveys within the EMS (upper Tamar (Calstock-Cotehele area), the Tavy (Lopwell Dam – Bere Ferrers area), Hoe (Devil's Point to Barbican) and the coast path between Mount Batten and Wembury. The online survey indicated that the Outer Estuary (management zone M) and the Open Coast (zone P) were most used, with much lower patterns of use in the upper Tamar and Tavy. This likely reflects the main access points to the EMS and proximity to the main population centre of Plymouth.

The most popular marine-based recreational activities were canoeing/kayaking, angling, sailing and swimming. This was consistent between both the on-site and online surveys, although the latter revealed the proportional representation of small craft users to large craft users as 60:39. The on-site survey identified the main areas for these activities varied by type.

The upper parts of the estuaries (Tamar, Tavy, Yealm) were most important for paddle-sports. This pattern was not consistent with the online survey results or the Workshop results for kayaking/canoeing, which found little differences in intensity of use by across the site, and predominant use of the seaward three management zones respectively. Given the conflicting patterns of use in this specific case, most confidence would be place in the results of the targeted workshop on paddle-sports which was likely most representative of the activity.

Areas within the site used by sailing vessels (yachts and dinghies) were highly consistent between the three approaches and indicate the importance of the outermost three management zones to this activity. Management zones G (Tamar – Saltash) and J (Lynher) had no data related to the intensity of use from the workshops, which is clearly misleading since there are a large number of boat moorings and several busy slipways in these management zones. However, the online survey provided data on the intensity of use of these areas by the different types of watercraft, illustrating the benefits of running parallel surveys in providing comprehensive data coverage.

The online survey indicated these outermost management zones were also most important for sub-aqua diving, and maps derived from the targeted workshop revealed specific dive sites within these zones, and the seasonal pattern of their use.

Recreational angling has an overall pattern of increased intensity with proximity to the open coast (online survey), but these data represent both shore-based and vessel based fishermen. Vessel based fishermen clearly use the Open Coast (zone P) the most, and the maps that emerged from the targeted angling workshop reinforce this, and provide detail on the specific locations for vessel based angling around the Plymouth Breakwater, Cawsand Bay, reefs outside of the Breakwater and Penlee Point. Shore based angling was found to be slightly different in pattern between the different survey approaches; the online survey suggested that the Open Coast (zone P) was marginally more important than the Sheltered Bay (N) and Outer Estuary (M), while the workshops indicated that shore based angling activity was focussed in zone N, and further up the Tamar in zones K (Tamar Torpoint) and G (Tamar Saltash). The latter has more concordance with the on-site survey results which show the highest densities of anglers at Mount Batten Breakwater (within management zone N) and St Budeaux (management zone K). This may be a reflection of different user groups being sampled by the different survey methods, and the online survey reaching a more widely distributed group of fishermen who prefer the open coast.

Swimming was found to be strongly centred in the Outer Estuary (M), Sheltered Bay (N) and Open Coast (P) from the responses to the online survey. This is where the beaches are located within the EMS and is what would be expected. The on-site survey results support this with high intensities of use at Wembury, Cawsand/Kingsand, Bovisand, Batten Bay and Firestone Bay which are all popular and accessible beaches within the EMS. Interestingly though, swimming and rockpooling was also

reported from sites that would not automatically be associated with these activities further up the estuaries, such as Lopwell Dam and Bere Ferrers on the Tavy and Wacker Quay on the Lynher, from the on-site survey.

As well as providing a picture of what activities are distributed at which locations in the EMS and their seasonality and intensity, an indication on what makes the site attractive to visitors was gained. 'Attractive scenery' and 'Close to home' were consistently the highest scoring responses in both the on-site (26% and 23% of responses) and online surveys (17% and 15%), indicating the strong association for the site by local residents. This was also consistent for SPA sites as well as the wider EMS. This insight into site preferences is also supported by the responses to the question about what factors would lead to an alternative site being chosen. In the on-site survey, 17% of local resident visitor groups stated that no features of another site would make it more attractive to visit over the EMS, and 15% of responses in the online survey, suggesting again, the strong relationship that local visitors have with the EMS. This is comparable to the findings from the Penhale survey which determined that 28% of responses would visit the site regardless of features of alternative sites. Responses to speculative changes to the site yielded a similar finding in that 54% of local residents stating that none of the suggested changes would alter the amount of time they spent at the site (on-site survey). Again this reiterates the value of the EMS to local users, and their strong site fidelity.

The Zone of Influence based on all visitors with the distances weighted by visit frequency clearly skews the core visitor catchment area much closer to the SAC and SPA (based on buffers of 5.4 and 7 km respectively). The other ZoI options presented drew larger buffers around the EMS (12.3-9.4 for the SAC and 12.1-8.7 km for the SPA). The smaller, distance weighted buffer may be considered to accurately reflect that the majority of visits to the EMS are by people that live locally and visit frequently. However, as 50% of site survey respondents originate outside of this boundary and account for 25% of visits (within the ZoI analysis) it could be considered that this boundary is relatively small. The Zone of Influence options are smaller than the (unweighted by distance) 19km Zone of Influence around the Penhale site (in prep), but similar to the Zone of Influence identified for Thanet (7.2km and 9.8km defined using slightly different techniques) (Fearnley et al. 2014). The Zone of Influence defined for the Exe Estuary sites (in prep) of 7.8km for Exe Estuary Zone, 6.9km for Pebblebed Zone and 10km for Dawlish Warren Zone. A standard methodology for identify Zones of Influence has yet to be defined, with these other studies using slightly different approaches to mark a boundary that is representative of patterns of site visitors.

For all the options, the convex hull was considered to offer a better representation of the core visitor group as it is based on where visitors live and can be seen to be biased towards larger roads and population centres which influence visitor numbers. The straight-line Euclidean buffer is drawn as a line from the site boundary and typically encompasses much of the sparsely populated areas to the west of the EMS which supply few visitors to the site . This study provides a snapshot of the patterns of recreational use of the EMS. Three approaches were used in combination to ensure that the most comprehensive picture of recreational use was obtained, each method contributing a different aspect to the overall picture. However there are limitations to the study as a whole:

1) The on-site surveys were conducted by trained volunteer surveyors. On occasion, they did not complete the work or lost the survey forms which led to gaps in the overall coverage of the on-site surveys. Wherever possible, these were in-filled by MBA staff, but a few gaps still remain. This is a risk associated with using volunteers over paid staff to conduct surveys.

2) Sampling effort was not even across all the on-site surveys sites and seasons, and surveys took place at different times of day (this was due to the fact that some sites are only used at certain states of the tide plus volunteer availability).

3) Other factors strongly determine the intensity of activities such as weather, tides and holidays, and while efforts were focussed at times of predicted high use, we do not know if we achieved this fully.

4) Some sites were not well defined, with different activities occurring in different parts of them e.g. Mount Batten which as a busy slipway used for launching small vessels plus a break water that is a popular shore angling mark. Surveyors moved between the different parts of the site, but splitting into two sites would have allowed more consistent tallying of visitors at the site.

5) The fact that three approaches were undertaken alongside each other introduces the risk of double counting; some respondents may have contributed to more than one approach e.g. attending a workshops plus completing an online survey which may have biased results.

6) As with the on-site surveys and workshops, the online survey can provide only a snapshot of activities within the EMS. Activity patterns and intensity can only be estimated. Although we publicised the survey as widely as possible, only a proportion of users can be reached and those choosing to take the survey are a self-selecting group.

7) Some activities are more associated with clubs than others within the online surveys. Activities where people take part without club membership, such as fishing and jet skiing, may be particularly under-represented as we were less able to promote the survey to these groups.

Although those taking part in land/shore based activities may not be part of clubs the site survey and the promotion of the survey to a range of shore based users mean that this group are still well represented.

Despite these limitations, the project results are considered to reflect the underlying activity patterns within the Plymouth and Sound EMS. The on-site surveys, workshops and online survey results are largely in agreement with regard to where activities take place and where activity intensities are greatest.

Notwithstanding these limitations, this study comprises the most comprehensive survey of recreational use of the Plymouth Sound and Estuaries EMS to date and has provided detailed information about recreational activities and recreational users of the site. Future work that needs to be done, in order to build on this understanding and identify where management needs to be focussed in relation to the conservation objectives of the site, would comprise the sensitivity assessment of the site features against the pressures that arise from the distribution and intensity of

recreational activities shown here. This work would be facilitated by the availability of the updated sensitivity assessments used by Natural England in their site advice.

This study has also provided an important opportunity to engage with recreational users, initiate a dialogue about site management and raise awareness of the conservation importance of the site features. From our discussions and engagement with people that use the EMS for recreation it was clear that the local community value the site and access to it. Many people and their families have a long-term interest in the site and its protection. A clear example of this was the concerns of anglers that we spoke to about illegal fishing and over fishing. This group also highlighted the actions that clubs and responsible participants take to mitigate impacts of their activity on target species and the site e.g. at least one fishing club has a policy whereby members collect litter from angling sites they visit.

12 Conclusions

The survey of recreational activity in the Plymouth Sound and Estuaries EMS shows provides a snapshot of how the site is used by visitors engaging in different activities, and the intensity of these activities throughout the site. Although there were limitations and associated biases with each of the three survey methods used (on-site visitor surveys, targeted workshops, online surveys), there was considerable concordance between the three methods. This indicates that patterns of activities assembled here are representative of the wider patterns of use of the site, and thus greater confidence can be attributed to results that if one method had been used in isolation.

The vast majority of users were found to be local to Devon or Cornwall, indicating the local draw of the site, and importance to local residents for the recreational opportunities that it affords. Most visitors were visiting the site to engage in terrestrial activities; these were located according to site access (car parks, ferries, coast path) and followed key coastal routes. Marine activities accounted for approximately a third of visitors and were spread among a wide range of activities, predominately occurring within the Plymouth Sound. Activities that directly impact on the intertidal and seabed habitats were aggregated in hotspots (e.g. anchoring, small craft haul outs, dive shots, deployment of dinghy racing markers). Marine activities showed a strong seasonal trend with most recreational use in Spring and Summer. Few differences were identified between the SAC and SPA sites indicating that management of recreational activities could be undertaken at the scale of the EMS.

The findings of this work will directly inform the Mitigation Strategy for additional recreational disturbance pressures at Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA that will arise as new homes are built in the areas surround the site (22,700 new homes by 2031, Plymouth Plan 2011-2031). In addition, the zone of influence for local resident visitors was mapped using their origin. This can inform the Community Infrastructure Levy on new housing and support the ongoing management of the site ensuring its conservation for the enjoyment for recreational use in the future.

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13 Final Conclusions

This report presents the scoping report (Griffiths et al., 2016a) and the final recreational survey report (Langmead et al., 2017). Based on the scoping and survey reports some of the key findings are discussed below.

The scoping report provided a brief spatial investigation into areas of possible interaction between a number of common recreation activities as defined by data available through Plymouth City Council and EMS features of conservation importance.

The scoping project used spatial overlay analysis using ArcGIS v10.3 software to determine where recreational activity overlaps with designated habitats and species within each management area within the EMS. This was done by mapping available data for feature distribution (and abundance in the case of the protected bird species in the SPA) within the EMS, and overlaying these maps with a recreation intensity layer (Figure 2). This layer was constructed by aggregating 1) the number of different recreational activities, and 2) infrastructure that would permit access for recreational users, within a 200m grid cell (recreational layers used included, car parks, slipways, public footpaths within 2km of the coastline, mooring areas, crab tiling, high speed boating areas, marinas, yacht anchorages and swimming areas)

The scoping study identified that recreational activities can adversely affect habitats and disturb species, primarily through noise, abrasion / penetration of the seabed, litter, organic enrichment, contamination (synthetic compounds / organo - metal / hydrocarbon / PAH), spread of non-indigenous species, physical change (to other seabed types) and introduction of light. All but one of the habitat subfeatures were sensitive to at least one activity (Subtidal course sediment was the exception), and one habitat (Intertidal rock, showed sensitivity to all the activities/proxies).

The recreational survey (Langmead et al., 2017) identified that shore/land based and marine recreational activities occur throughout the European Marine site and that there is some overlap between activities and the conservation features (species and habitats) that have some sensitivity to these activities.

13.1 Interpreting sensitivity assessments- general considerations

Some general points are made regarding the interpretation of species and habitat sensitivity and the potential impacts of recreational activities and further work. The MarLIN group at the MBA are a national and international authority on the development and application of sensitivity assessments through work on the MarLIN project (Hiscock et al., 1999), Marine Protected Area projects (Tillin et al., 2010) and additional work for the Statutory Nature Conservation Bodies, including the development of the seabed habitat sensitivities used in Natural England's Advice on Operations and the updated MarESA sensitivity assessments (Tyler-Walters et al., 2016) . The MBA advice on the application of sensitivity assessments draws attention to the following key points that are relevant to the further interpretation of the recreation survey.

The sensitivity assessments are generic and NOT site specific. They are based on the likely effects of a pressure on a 'hypothetical' population in the middle of its 'environmental range'.

- Sensitivity assessments are NOT absolute values but are relative to the magnitude, extent, duration and frequency of the pressure effecting the species or community and habitat in question; thus the assessment scores are very dependent on the pressure benchmark levels used.

- Sensitivity assessment takes account of both resistance and resilience (recovery). Recovery pre-supposes that the pressure has been alleviated but this will generally only be the case where management measures are implemented.

- There are limitations of the scientific evidence on the biology of features and their responses to environmental pressures on which the sensitivity assessments have been based.

It follows from the above, that the sensitivity assessments are general assessments that indicate the likely effects of a given pressure (likely to arise from one or more activities) on species or habitats of conservation concern. The sensitivity assessments are not an assessment of impact, they provide information that will support an impact or vulnerability assessment when interpreted in relation to the assessed feature and combined with further consideration of exposure to pressures, pressure benchmarks and further site and activity specific information. For example, the bird features are sensitive to the removal of non-target species, if however, the non-target species likely to be removed from a supporting habitat feature are not prey items, or do not have a significant ecological relationship with prey items then this pressure may not be of particular concern (although the birds could still be sensitive to noise and visual disturbance from the presence of fishers).

Where recreational activities occur at high intensities and frequencies features may not recover between exposure events and sensitivity to activities may be greater than a generic sensitivity assessment suggests. Therefore, when considering impact and mitigation, consideration should be given to exposure levels and feature recovery/resilience rates

13.2 SPA features, overlap with recreational activities- summary of key findings

The scoping study and recreational survey indicate that there is an overlap between the SPA bird features and their supporting habitats and recreational activities. The SPA bird features, little egrets (Egretta garzetta) and avocets (Recurvirostra avosetta) are directly sensitive to noise and visual disturbance and the introduction of light and to be indirectly sensitive to the removal of non-target species. The Advice on Operations from Natural England indicates that the bird features are sensitive to transition elements and organo-metals. It is not clear, whether this refers to direct impacts on birds or the effects of antifoulants on prey species.

A number of studies and recent projects have researched impacts from noise and visual disturbance on birds, including impacts on feeding, the duration of effects and habituation have also been researched. This evidence could be used to identify the potential impact on bird species. The

recreational survey found that marine activities show a strong seasonal trend with most recreational use in spring and summer. Land/shore based activity frequencies also peak in these months but a large number of on-site and on-line survey respondents take part in these activities all year. Although exposure may be lower during the key winter months when the birds are present there is still potential for a resulting impact on the bird features.

The supporting habitat features are sensitive to abrasion, penetration and disturbance of sediment below the surface and the introduction of non-indigenous species. As these assessments are generic and have been updated by the recent MarESA assessments (ref) the evidence base referred to in the sensitivity assessment should be considered in relation to the value of the supporting features as feeding and roosting sites etc. Consideration of bird diet is likely to be particularly relevant when interpreting sensitivity.

13.3 SAC features, overlap with recreational activities- summary of key findings

Shore dock (Rumex rupestris) is found well above the high water mark; many activities were assessed as Not Relevant (Natural England 2015). A number of pressures were 'Not assessed' and potential sensitivity to these should be given some consideration. The distribution of this species was not discussed in the scoping report and therefore the extent of its overlap with recreational activities is not known.

The SAC species Allis shad (Alosa alosa) is sensitive to collision below water and underwater noise changes (Natural England 2015) indicating interactions with high speed boating areas, marinas, slipways, mooring areas and small craft anchorages. Very little is known about the distribution of this species within the SAC and whether particular areas provide critical habitats that are key to sustaining the population. As on-water activities occur throughout the EMS, Allis shad are potentially exposed to both pressures. Fish are likely to be able to avoid objects moving through the water such as keels and paddles, although they may be more vulnerable to disturbance from underwater noise. Assessing the vulnerability of this species to recreational activity impacts would require additional research into the species sensitivity to underwater noise and the likely noise levels resulting from recreational activities. This species could be removed by anglers but the overlap between this species and key areas and angling activities could not be ascertained due to the lack of information on distribution. It should be noted, however, that angling (shore and boat based) occurs at higher intensities in the lower, more seaward parts of the estuary. Even if caught anglers may return individuals to the water.

The habitat features are sensitive to physical disturbance (abrasion and penetration and disturbance of sediments) and physical change and the introduction of non-indigenous species and organic enrichment. These pressures may arise from the recreational activities considered.

Accessible intertidal habitats may be exposed to abrasion from shore and land based activities and may be exposed to launching and water craft recovery/haulout. Intertidal moorings that dry out will also result in sediment disturbance from mooring chains and boats resting on the surface.

There were clear preferred locations that emerged from the on-site surveys within the EMS (upper Tamar (Calstock-Cotehele area), the Tavy (Lopwell Dam – Bere Ferrers area), Hoe (Devil's Point to Barbican) and the coast path between Mount Batten and Wembury. The online survey indicated that the Outer Estuary (management zone M) and the Open Coast (zone P) were the most popular areas visited by survey respondents, with much lower patterns of use in the upper Tamar and Tavy. This likely reflects the main access points to the EMS and proximity to the main population centre of Plymouth.

Infralittoral and circalittoral rock occurs in the outer estuary and open coast (management areas M and P) and some patches of infralittoral rock occur in the Tamar (Torpoint) management area. These habitats may experience some abrasion from anchoring and moorings and scuba divers particularly in the outer estuary. Most boat-based anglers are likely to be drifting rather than anchoring on rock in the open coast and abrasion from this source is likely to be limited. Some abrasion may also occur from contact with fishing gear. Subtidal rock habitats are colonised by epifauna and epiflora that can be tangled and damaged in fishing lines.

No overlap was recorded between intertidal seagrass and bed disturbing activities (anchoring, mooring etc). However, these habitats may be vulnerable to land activities and shore access. Subtidal seagrass beds in management areas Tamar (Torpoint) and Outer Estuary (management areas M and K), overlap with mooring and anchoring areas and this may be the primary source of abrasion and physical disturbance to these habitats.

Intertidal and subtidal muds occur in sheltered parts of the EMS where tidal flows and wave action does not remove fine sediment. Areas of these habitats are present in the Tamar (Torpoint, Saltash, Kingsmill-Ernesettle, Weir Quay, Halton and Cotehele), Tavy, Yealm and the Lynher (management area s). In these areas subtidal muds overlap with moorings and anchoring areas, this is perhaps the main source of abrasion to these habitats. No information was collected for bait collecting in muddy habitats in the upper areas of the estuary (past the Tamar- Kingsmill-Ernesettle area), most likely due to unsuitability for targeted species which prefer higher salinities. Below this areas of intertidal mud supports bait collecting activities which may affect species that rely on collected species for food. Bait collecting may lead to physical disturbance and removal of target and non-target species.

Intertidal and subtidal habitats may be colonised by a variety of non-native species, with some of these already present on artificial surfaces in Plymouth marinas. Boats moored, anchored and transiting within the management areas may inadvertently transport non-native species. Exposure to this pressure occurs throughout the EMS (based on the on-line and on-site surveys results for the presence of small and large water craft).

13.4 Concluding summary

The survey of recreational activity in the Plymouth Sound and Estuaries EMS shows provides a snapshot of how the site is used by visitors engaging in different activities, and the intensity of these activities throughout the site.

The findings of this work, coupled with further evidence gathering, monitoring and interpretation to support impact assessments will directly inform the Mitigation Strategy for additional recreational disturbance pressures at Plymouth Sound and Estuaries SAC and Tamar Estuaries Complex SPA that will arise as new homes are built in the areas surround the site (22,700 new homes by 2031, Plymouth Plan 2011-2031).

Conclusion References

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Appendix A

A1 On-Site Visitor Questionnaire

Questionnaire to be used for visitor surveys

Date:		Time:	
Location:		Surveyor:	
Survey Number:			

"Good morning/afternoon. Please could you spare between 5 and 10 minutes to take part in a survey about your visit today? Plymouth City Council are undertaking this survey to assess how people use this area for recreation."

Q1. What is the purpose of your visit today? *Read list, tick single closest answer only.*		
1		Living in Devon/Cornwall on a day trip or short visit
2		Living outside of Devon/Cornwall on holiday in the area
3		Living in Devon/Cornwall visiting as part of an organised activity on the site
4		Living outside Devon/Cornwall visiting as part of an organised activity on the site
5		Other (please add further detail)

Q2.What activities will you be doing while you are here today? *No prompt, multiple answer.*		
	Terrestrial	
1		Birdwatching/ wildlife watching
2		Cycling
3		Dog walking
4		Horse riding
5		Jogging/power walking/Nordic walking
6		Kite Flying
7		Outing with children/family
8		Walking
	Marine	
9		Bait digging/cockling/crab tiling
10		Canoeing/kayaking
11		Fishing - Angling
12		Fishing – Spear Fishing
13		Jet ski
14		Kite surfing
15		Motor Yacht
16		Sailing Yacht
17		Small sailing craft (Dingy etc.)
18		Stand up paddle board
19		Surfing
20		Windsurfing
21		Sub Aqua Diving
22		Swimming
23		Rockpooling

24		Other

Q3.Do you visit this particular location for other activities? *No prompt, multiple answers ok, tick as appropriate.*		
	Terrestrial	
1		Birdwatching/ wildlife watching
2		Cycling
3		Dog walking
4		Horse riding
5		Jogging/power walking/Nordic walking
6		Kite Flying
7		Outing with children/family
8		Walking
	Marine	
9		Bait digging/cockling/crab tiling
10		Canoeing/kayaking
11		Fishing - Angling
12		Fishing – Spear Fishing
13		Jet ski
14		Kite surfing
15		Motor Yacht
16		Sailing Yacht
17		Small sailing craft (Dingy etc.)
18		Stand up paddle board
19		Surfing
20		Windsurfing
21		Sub Aqua Diving
22		Swimming
23		Rockpooling
24		Other

Q4.How long have you spent/will you spend at this site today? *Read list, tick single closest answer only.*		
1		Less than 1 hour
2		1-2 hours
3		2-3 hours
4		More than 3 hours

Q5. Over the past year, roughly how often have you visited this particular location for recreational purposes? *Tick closest answer, probe if interviewee struggles. Single answer only.*		
1		Most days (>180 visits)
2		A few times a week (60-180 visits)
3		Several times a month (20-60 visits)
4		About once a month (12-20 visits)
5		Less than once a month (2-12 visits)
6		Don't know
7		First time
		Any further specific detail provided:

Q6. Do you tend to visit this particular location at a certain time of day? *Tick closest answer, multiple answers ok.*		
1		Before 9am
2		Between 9am and 12
3		Between 12 and 3pm
4		Between 3pm and 5pm
5		After 5pm
6		Dependant on tide times
7		Dependant on weather/sea conditions
8		First visit
		Any further specific detail provided:

Q7. Do you tend to visit this site more during a particular season? *Multiple answers ok.*		
1		Spring
2		Summer
3		Autumn
4		Winter
5		First visit
6		Don't know
7		Same all year

Q8. Only ask Q8 if Q3 was answered: Do you do those different activities you told me about at different times of year? *Multiple answers ok.(Write activities next to season)*		
1		Spring
2		Summer
3		Autumn
4		Winter
5		First visit
6		Don't know
7		Same all year

Q9. What form of transport did you use to get here today? *Single answer only. Add if necessary; Do not prompt, categorise if appropriate.*		
1		Car/motorcycle
2		On foot
3		Bus
4		Train
5		Horse
6		Bicycle
7		By water (e.g. boat, canoe etc.)
		Free text/other detail

10. Do you visit any other places for similar purposes as you visited here today? *If yes;* which two or three do you use most often? *Multiple answers ok. Do not prompt. Record locations. Leave blank if no other locations named.*
1.
2.
3.
Additional details/sites/specific location.

Q11. What makes you come here, specifically, rather than another local site? *Multiple answers ok. Do not prompt. Tick closest answers as appropriate. Use free text box for reasons that didn't fit with categories and for extra detail.*					
1		Don't know	8		Attractive scenery/views
2		Close to home	9		Right place for activity (e.g. Kite surfing/fishing/good for kids)
3		Others in party chose	10		Particular wildlife interest
4		Good/easy parking	11		Suitability given weather conditions
5		Feel safe here	12		Ability to let dog off lead
6		Refreshments	13		Particular launching facilities
7		Toilets	14		Condition of launching facilities
Free text: other reasons/detail. Draw out site specific features and note details here.					

Survey continues on next page:

11.a) Route around the site today

Now I'd like to ask you about the route you've taken / will take around this location today. Could you tell me where you have / will start and finish your route and what you will be doing along the way?

Probe to ensure route accurately documented. Write a full description of the route and note any of the relevant points given below (P, E, X etc). If relevant add tide.
P = parking
E = start point
X = exit
S = a planned/taken stop, e.g. picnic/ lunch/ swim/ dive
B = pulling up onto a beach
DS = dive shot
F = fishing
A = anchor dropped
M = mooring
MO = mooring overnight
C = overnight camping

Route Description

Q12. For the activity you are undertaking today is/was your route a typical length for you when you visit this location?
Tick single closest answer only, do not prompt, code as appropriate.

1		Yes, normal
2		Longer than normal
3		Shorter than normal
4		First visit/visit erratically/no typical visit
5		Not sure

Q13. What (if anything) influenced your choice of route around the site today?
Multiple answers ok. Do not prompt. Tick closest answers as appropriate. Use free text box for reasons that didn't fit with categories and for extra detail.

1		Rainfall	7		Muddy tracks/paths
2		Daylight	8		Wind
3		Temperature	9		Tide
4		Visibility (above and below water)	10		Wave height
5		Other users	11		Activity undertaken (e.g. presence of dog)
6		Time available	12		Particular members of group (e.g. kids)

Free text: other reasons/detail:

Q14. And in terms of this location, if the following changes were made, would you spend more, less or the same amount of time here?
Tick single closest answer only, do not prompt, code as appropriate.

	More (1)	Less (2)	Same (3)	Don't know (4)	Comment
Site became busier with more people					
Better path surfacing/routing					
Parking charges introduced or increased					
Dogs required to be on leads					
Provision of dog waste bins					
Presence of warden/beach manager					
Part of shore closed in areas sensitive for wildlife					

Q15. What features would be necessary to make another site attractive for you to use instead of here?
Do not prompt, categorise as appropriate.

1		No features/nothing	7		Measures to control other users
2		More dog friendly	8		Toilets
3		Better launching/access to water	9		Better/easier parking facilities
4		Better path surfacing/routing	10		Cheaper/free parking
5		Refreshments (e.g. cafe)	11		Closer to home
6		Better information/maps/boards	12		Attractive scenery

Free text: other reasons/detail:

Q16. Do you have any other comments about this area?

Q17. How many people are in your party today?

Finally, so that we can check whether we have a representative sample, please answer the following questions. This information will not be used for any other purpose.

Q18. What is your full home postcode?
If unable/refuse to give postcode: What is the name of the nearest village/town or if in city the nearest district/suburb? *Enter as much detail as possible to allow the location to be mapped.*

Q19a. *Ask question if respondents are visiting from outside the area and staying locally.* If visiting the area please provide the postcode / name of the accommodation you are staying in.

Q19b. What type of accommodation are you staying in? *Do not prompt, categorise as appropriate. Tick one only.*

1		Hotel	7		Glamping
2		B&B / Guest houses	8		Farms
3		Self-catering	9		Holiday parks
4		Cottages	10		Self Catering Agency
5		Caravan	11		Inns / pubs
6		Camping	12		Holiday village

Visitor survey tally

Tally sheet to be used for recording visitor numbers

Location			
Date		Recorder	
Day of week		Site Number	
Time of high tide		Time of low tide	

Time Period (tick one)		
1	07.00 - 09.00	
2	09.00 - 11.00	
3	11.00 - 13.00	
4	13.00 - 15.00	
5	15.00 - 17.00	
6	17.00 - 19.00	

No. refusals during 2 hr period		Total no. interviews during 2 hrs	
No. already interviewed		Start no. for questionnaire nos.	

Weather

Rainfall (tick one)			% Cloud cover in middle of period	
1	None		Temperature (tick those that apply)	
2	Yes, less than ¼ of the 2 hour period		1	Cold
3	Yes, ¼ to ½ of the 2 hour time period		2	Mild
4	Yes, ½ to ¾ of the 2 hour period		3	Warm
5	Yes, more than ¾ of the 2 hour period		4	Hot

Give any further descriptions of weather conditions (especially if likely to influence visitor numbers- e.g. ice/snow, rain (light/moderate/heavy), thunder storm or high winds). Also any tide details if relevant to access.

Tally: record people passing or within predefined count area (use notes box to describe how tally completed if no clear entrance/exit.

Entering Site			Leaving Site		
No. people	No. groups	No. dogs	No. people	No. groups	No. dogs

Activity	No. of people/groups
Terrestrial	
Birdwatching/ wildlife watching	
Cycling	
Dog walking	
Horse riding	
Jogging/power walking/Nordic walking	
Kite Flying	
Outing with children/family	
Walking	
Marine	
Bait digging/cockling/crab tiling	
Canoeing/kayaking	
Fishing - Angling	
Fishing – Spear Fishing	
Jet ski	
Kite surfing	
Motor Yacht	
Sailing Yacht	
Small sailing craft (Dingy/ etc)	
Stand up paddle board	
Surfing	
Windsurfing	
Sub Aqua Diving	
Swimming	
Rockpooling	
Other	

Notes: record any incidents, unusual activities, unusual types of access and also any reasons for unusual numbers of visitors.

A2 Comments provided by interviewed groups

General Positive Comments
Nice to walk next to river
Relaxing place to walk (next to the river)
Beautiful & Relaxing. Heavily used by church group.
Lucky to live near water
Keep as is
good that survey is being done
Beautiful scenery and wide assortment of marine life in rockpools
Lovely area and hard to beat, great for activities
Great as is, keep protected.
Lovely in the sunshine can't beat it
Improved. Like the many coloured flowers.
Beautiful
well accommodated always park here
Pretty Clean
like easy access, easy to walk
well maintained small beach away from any roads, easy access from campsite
Lovely pleasent beach, a hidden beach, compared to Barry island beach,which has been commercialised, this is a lovely area i hope it stays like this, nice, the paths are natural
first visit nothing to judeg it by
not really rather nice down here
clean beaches, appreciate pollution warning, water quality notice board, well maintained paths.
a surprise lovely
havent visited the site properly but seems lovely
only just arrived like the location seems peaceful and quiet
really nice
picturesque part of the world, nice visitors
beautiful area come rain or shine
beautiful. Nice to watch shipping area compared to n wales
lovely area, tidy and organised, dramatic coastline and scenery
not too busy, interesting, accessible
nothing, sand. clean. Like coming here
lovely place. Lots of happy memories
good as is
its fine
closed still for a couple of years overall nice
cleanliness of the sea
nice to get the kids out of the house, exercise
Nice to look at river and fresh air
relaxing scenery
Ver nice, clean beach; good for children;would prefer it if there were more places with shade
Nice sceneric spot, althoug the beach isn't very sandy, unlike other beaches
It's lovely and unspoilt
Leave it as it is. Don't fuss with , lovely as it is
Pleasant
Not, it's fine. People should take advantage of it.
Peaceful, Pleasant

General Positive Comments
No, attractive area, nice café
Peaceful
nice with a cafe to bring in more people
beautiful keep unchanged as people
love it, perfect
stunning
lovely
Beautiful sign for toilet
Kept well
Lovely, peaceful area. Will be coming back next year.
Likes the view (sea, boats in harbour etc.)
Nice views
good that toilets were redone. Also good that access was improved. Diverse site in terms of people who use it. Good that Amer way was reopened to the royal william yard. Would be good if childrens pool cleaned and maintained more regularly.
Keep it lovely, don't build a marina
Cotehele is one of my favourite places to visit and I don't think there needs to be any changes
Clean, tidy, good contrast to the consumerism, good balance
Good view, good to walk, fresh air, clean
Come again, fishing
Good scenery
Hidden gem, no more car parks, keep the grass, good resevoir, lower parking of RWY
Good that its not commercialised, good ferry watching sites, good industrial and millitery aspects, good view, good historical building
It's great
Beautiful, waterfront won't alter, good assisted housing, good for outing, it is nice as it is- don't change it
It looks lovely
The reason we came here was because it was so close
Lovely area
Site well run/ Bovisand very quiet area
Beautiful
Lovely local area with beautiful scenery brilliant for the dog
Lovely scenery with plenty to do with the family
Don't change anything, keep it friendly and open as 15
Don't spoil it, ferries are good
Lovely
Lovely
Lovely
Wonderful
Nice area- love coming here
So far exceeding expectations- yet to undertake activitites today. Appears to have good level of rural facilities, wouldn't want it to be too commercialised
Enjoying visiting regularly
Great stopping point
Great natural area, dogs can be off putting if owners not responsible.
Beautiful light,, as keen photograph
Well kept
Very pleasant to walk in
Very beautiful

General Positive Comments
Lovely
Nice
Pretty, multiprpose, Human and dog recreation should be seperate
Nice area, peaceful
Nice
Very nice. Litter can be a problem. Don't like the Edinburgh Woollen Mill - out of keeping with the area. Bus facilities - better bus routes into Barbican.
Love it here. Very attractive, good for shops (not a high street)
Busy in Summer
Happy as it is, but improvements can only be a good thing.
Waterfront tidied up.
We like to see the changing of the seasons
It is lovely. I do not like the new road layout to Cotehele house
I simply love it as it is
Beautiful!
Stunning scenery, peaceful surroundings and tranquil setting
Fun place to go, nice day out, not overcrowded
Lovely in Summer
Useful site for Capturing our Coast project as there is access to toilets and food from the local pub
Has stayed the same since he was young and would not want to see it changed
Beautiful
No, it's stunning, really beautiful
Perfect. Dam was broken for a time which affected the business
It's lovely, I should come more often. Nice and quiet, lots to offer - good parking
Unspoilt, unregulated, free
I love it. Café is great.
Very pretty
Brilliant place to live. Better public transport would be good.
It is nice to come to.
Really enjoy the local walking.
Don't mess with it unless in context of conservation.
Exploring on recommendation
Exactly the same as when I was 8, so unchanged.
It's quite quiet. Wish there was more surf.
A good place to live.
I like it, been coming here for about 10 years.
A lovely place to live.
Beautiful
Lived in the 'Plymouth travel to work' area for 35 years and has always valued the River Tamar as it has been and would definitely not like to see it developed.
Nice view
Loves it & Drakes Island should be explored
Unspoilt, love it
Very clean
Keep it unspoilt & natural including coastal erosion - no artifical structures
Leave it as it is, very enjoyable. Fill pot holes in car park.
Love the area, it's very nice.
Keep it how it is.

General Positive Comments
It's lovely, peaceful, love the sound of water.
Area improved. Well looked after. Dog mess reduced.
Love it. Lucky to have it.
No changes? Rest of comment is illegible
Has been greatly improved over the years. Don't touch it! Never really busy.
Beautiful
Grateful pool still kept clean. Peaceful, no traffic. Not commercial. No noise.
Lovely
Very good job of the paths & everyone.
Really nice place for a walk.
Don't spoil it! Less houses, more green space.
It is well kept. A lot of dog mess.
love as is
Love it as it is. Love wildlife - owls calling in Summer. Toilets not open (public).
quiet, easy access
Close and easy to get to - always wildlife to see (swans)
very nice + quiet
Gravel surface improved
Leave it alone, perfect as it is.
All positive feedback, nothing negative to say.
Beautiful & unspoilt: Would not like to see any changes made.
Lovely and unspoilt
Pool sorted out
Its lovely, apart from the fish & chips at Saltash, which were horrible
Very beautiful and tranquil, come here for 24 years
Wonderful place, camp also once a year at quay
Nice views, nice to sit on the grass with the kids
Nice views, pleasant to come to
Dogs enjoy walking on the beach (low tide), feel safe here (was elderly lady with 2 big dogs)
Find it calming to look at the river
Beautiful quiet place
like it the way it is because feels local community makes good use of it
lovely place that changes with the seasons
Nice place to rest
take scenery for granted
love it, visits the area weekly to see his wifes ahes and speaks with her, favourite place in the world
we like to feed the swans and look at the river
lovely, quiet probably because inaccessible to most people without a car
lovely, off beaten track, hidden
keep it as it is, don't change it, dont charge parking
beatiful, very nice, peaceful
used to come here as a child, nice and quiet, peaceful, scenic
road is terrible on the way in, too narrow, passing places for the narrow road, but lovely views and nice walks
very pleasant
nice area, lovely
shame about the bridge, lovely area, natural beauty, swans & birds, relaxing, peace of mind
nice place to walk

General Positive Comments
doing a good job, well done, this is free
tranquil, different place to explore
really good first impression, striking view - many deciduous trees
like it here because it's secluded, not well known, and not many people use it, a beautiful setting, unregulated
free - dont pay to launch
very good - don't change anything
its nice but no so much today, a little crowded
good view
fantastic area, NT very good to us, would like better toilet facilities
lovely, put in use other slipway - just needs clearing of mud, this one here is kept clean by Canoe Tamar, nearer carpark for canoe and not need to negotiate visitors
love it here
very beautiful, dont want it spoilt & use it for lots of different recreational activities, wildlife, clear river debris & dangerous protruding trees, harbourmaster duty to clear & is not done - makes it difficult dangerous for navigating
very pretty
thank you nat. Trust for keeping it accessible
lovely area, nice view
very beautiful, hope it doesn't get developed
great place to live, convenient, 2 minute car journey
no commute
it's very beautiful
nice walk, scenic, great place to walk the dog off the lead
should take more interest in the area
it's beautiful
fabulous, peaceful
just like it, beautiful unspoilt
love it
enjoy coming to an unspoilt area, good facilities, cafe, toilets, parking, close to home
choose to live here
nice area to walk, pleasant to walk next to the sea
relaxing and enjoyable, great for children, seaview is important
good beach, however litter issues are slightly offputting
love the view over the sound, would be nice to have a less expensive boat into Plymouth
as marine conservation students, like how remote and untouched it is
Dogs – positive comments
The dogs love it! Nice to live near area
Dog enjoys river
Lovely local area with beautiful scenery brilliant for the dog
Dog friendly
Area improved. Well looked after. Dog mess reduced.
Dogs enjoy walking on the beach (low tide), feel safe here (was elderly lady with 2 big dogs)
nice walk, scenic, great place to walk the dog off the lead
beautiful place to bring dogs & children
Dogs – negative comments
more neforcement of dog messing and owners not cleaning up after their pets
needs a dog wardena dn general policing to alleviate unwanted roughs, encourage water activities like fishing and kayaking, more parking but keep free so locals can continue to use the site, clean pool more regularly
Aren't any dog bins up on carpark

General Positive Comments
Dog fouling an issue bins need to be cleaned out more regularly
Would like dogs on lead, nice and quiet
Great natural area, dogs can be off putting if owners not responsible.
Bins and dog waste bins would be nice
Parking very expensive. Cheaper 30 minute tickets? Dog waste bins and bins need to be emptied on Bank Holidays/after events etc. Favourably more dog bins
Spoilt by dog mess
It is well kept. A lot of dog mess.
Dog mess. Bins are there, but people don't care. Easy access.
Slipways very busy summer; Pomphlett Road - Parking terrible, -litter - need more bins / street cleaners; need to empty dog bins
Swimming – positive comments
Fabulous for swimming
Grateful pool still kept clean. Peaceful, no traffic. Not commercial. No noise.
weekdays better for swim; -weekends in summer gets very busy - eg. Jetskis; boating well monitored; slipway kept clean – powerwash
Swimming – negative comments
I have lived here for 30years and have noticed the quality of water detionate. I would not encourage my children to swim here like I used to do. Used to snorkel here, but now is disappointing with wildlife now, visibility now very poor. Snorkeling not great here, but better previously- though to be due to sediment from whitsand bay? Like the fact that cafe is open year round. Better access for launching boats for recreational use, providing bins, monitoring fly-tipping, cleaning up area used for swimming
Boating – positive comments
Good sailing club, safe place to sail, reasonable mooring fees
Wonderful area for sailing. Annoying is speed boat users. Not respecting speed limits.
weekdays better for swim; -weekends in summer gets very busy - eg. Jetskis; boating well monitored; slipway kept clean - powerwash free - dont pay to launch
Boating – negative comments
Wonderful area for sailing. Annoying is speed boat users. Not respecting speed limits.
Slipways very busy summer; Pomphlett Road - Parking terrible, -litter - need more bins / street cleaners; need to empty dog bins Better access for launching boats for recreational use, providing bins, monitoring fly-tipping, cleaning up area used for swimming Launching somewhere nice along the estuaries
I would like a tide barrier so that we could use river whatever the tide, dont think it should be dredged though
Fishing issues comments
Restrictions on recreational bass fishing too strict compared to commercial operations. Stocks of bass improved/ Mackerel stocks deteriorated pontoon to fish off, bigger wider space
nice as it is, seabass illegal to fish for off a boat, but allowed when fishing on the shore - enough (reasonable) conservation methods in place
Good for children comments
Children enjoy grass area and sandy park
Child loves the sand digger in the park
Kids love the place especially the digger in the sand playpark
nice here for kids for an hour or so
relaxing and enjoyable, great for children, seaview is important
beautiful place to bring dogs & children
Access issues comments

General Positive Comments
Implementation of one-way system for cars
Better bus access to weir quay
Ferry between Oreston and Turnchapel would be good. More access by road , bridge etc.
Remember it from living here young. Would have come a different way if right of way through holiday park was open
Very nice. Litter can be a problem. Don't like the Edinburgh Woollen Mill - out of keeping with the area. Bus facilities - better bus routes into Barbican. Good access, car park can get busy.
It is lovely. I do not like the new road layout to Cotehele house
Widening of the road as parking can be disruptive. Cars speed through village.
Brilliant place to live. Better public transport would be good.
Improve bus access i.e. Seasonal at the moment.
Hope it doesn't change too much. Water transport would be useful.
Bridge to Hooe - Walking Bridge; more police - Hooe crime; stop building here; + so much traffic with one way
Would be great to have more access to the Liney
lovely, quiet probably because inaccessible to most people without a car
lovely area but dam needs to be repaired - it's a real shame we cannot access the scenic walk, Plymouth Council should sort this out road is terrible on the way in, too narrow, passing places for the narrow road, but lovely views and nice walks
tide affects time of access & accessibility - due to broken dam and overgrown paths, poorly marked paths
more signage would help to find house, more passing points on road
would be good access points
love the view over the sound, would be nice to have a less expensive boat into Plymouth
Maintenance issues
Paint railings and fencing, improve pot holes on path for walking
Conscious of schedule slipway repairs and impact it could have. -Beautiful scenery. Limited Survey time due to launching of vessel. New mud banks have caused inconvenience to boats, JCB caused a kink in the lanuching channel, path to playing field needs repair work due to tide and agriculture use Issue regarding the digger that got stuck near the launching point, as the path is now inaccessible, due to layer of mud, asks for potencial to have mud scraped off. Would appreciate handrail across walk way and for potholes to be plugged to aid walking across dam (safely)
Public footpath towards lopwell (from Bere Ferrers) eroding away. Repairs necessary
Weir quay slipway could do with lighting for night time launching
Potholes a problem around this area. Prefer it to be left unspoilt by further work. Measures to control water sport users.
Bigger kids playing area, and also some maintenance on existing facilities. Note: visiting for bike rally
Jennycliff- path repair, overgrown foot path
Leave it as it is, very enjoyable. Fill pot holes in car park.
When Plymouth corporation worked after it ws very well maintained. Grass cutting. Doesn't know who looks after it now but it looks alright. Dam walkway needs repairing, SWN & others arguing who owns it and responsibility for upkeep, walking route ways either side of rivers are restricted - paths need clearing dam is taking a long time to be repaired but the coffee is good
lovely area but dam needs to be repaired - it's a real shame we cannot access the scenic walk, Plymouth Council should sort this out shame about the bridge, lovely area, natural beauty, swans & birds, relaxing, peace of mind
tide affects time of access & accessibility - due to broken dam and overgrown paths, poorly marked paths
lovely, put in use other slipway - just needs clearing of mud, this one here is kept clean by Canoe Tamar, nearer carpark for canoe and not need to negotiate visitors very beautiful, dont want it spoilt & use it for lots of different recreational activities, wildlife, clear river debris & dangerous protruding trees, harbourmaster duty to clear & is not done - makes it difficult dangerous for navigating
Recreational facilities – positive comments
Good facilities - Union Inn pub (Saltash) does good beer.

General Positive Comments
Good local facilities + Not too busy in summertime
One of the best places to kayak
Beautiful place great for kayaks
Fantastic place. Nearest thing to a beach. Kids love it. Would like more information on area - eg. River Tavy
Mt. Batten water sports centre excellent for the kids, very pleased with it.
Recreational facilities – negative comments
Encourage use of pub and picnic tables, more toilet facilities, kayaking /canoeing rentals
Provide dedicated fire pits to avoid damage on ground
Marine Activities (paddle board etc.) rental. Tours/ beachwalks
Seating would be good
better signposting indications to get to the beach
more picnic tables would be nice
more education info
Would like a map to show you - where you can go, bird life, wild life
needs a dog wardena dn general policing to alleviate unwanted roughs, encourage water activities like fishing and kayaking, more parking but keep free so locals can continue to use the site, clean pool more regularly
Fantastic place. Nearest thing to a beach. Kids love it. Would like more information on area - eg. River Tavy
Mt. Batten water sports centre excellent for the kids, very pleased with it.
No clear signage about tide times - ie. People get stuck one side of dam if unaware of tides and walkway being covered.
more signage would help to find house, more passing points on road
Litter issues comments
More rubbish bins would be useful
more public bins
Lack of provisional waste bins. Clearer litter picking sign. Otherwise great beach.
Introduction of water fountains and more waste bins
happy w/ beautiful. Litter bin by side would be good
Bins along edges not enough atm
great live it. Rubbish is a problem especially in busy periods
beach clean,seaweeds removed occasionally, bins?
It would be nice to see more waste bins. People don't take their litter home. Great for children.
More bins general waste
Bins and dog waste bins would be nice
Litter and seaweed on beach after storm, was cleared after council was informed
Very nice. Litter can be a problem. Don't like the Edinburgh Woollen Mill - out of keeping with the area. Bus facilities - better bus routes into Barbican.
A bit of litter in Summer. Council doesn't help much with this, lots of litter on road. Bins are way too small for summer and get burned down by BBQ - need to be bigger, sturdier and more frequent collection.
Slipways very busy summer; Pomphlett Road - Parking terrible, -litter - need more bins / street cleaners; need to empty dog bins
Rubbish bin would be useful
Needs bins
Better access for launching boats for recreational use, providing bins, monitoring fly-tipping, cleaning up area used for swimming
would like people to pick up own litter
good beach, however litter issues are slightly offputting
Parking issues comments
Beautiful area, easy to launch rib, though parking can be an issue, especially with large trailers
Cafe is really good. Carparking may need improving
Building limitations; constant for 10 years, building vehicles issues blocking road. Lack of parking: lift of parking restrictions for locals or permits (or 4 hour limit instead of 45 minutes). Weight restrictions sign for large vehicles

General Positive Comments
long term parking, no barrier and no height restrictions, kayak etc
I think the parking fee is a little high, or free parking for cafe users
needs a dog wardena dn general policing to alleviate unwanted roughs, encourage water activities like fishing and kayaking, more parking but keep free so locals can continue to use the site, clean pool more regularly Hidden gem, no more car parks, keep the grass, good resevoir, lower parking of RWY
Parking being used by RWY staff
Good access, car park can get busy.
Parking very expensive. Cheaper 30 minute tickets? Dog waste bins and bins need to be emptied on Bank Holidays/after events etc. Parking in the area could be more. - restricted to times.
Slipways very busy summer; Pomphlett Road - Parking terrible, -litter - need more bins / street cleaners; need to empty dog bins car parking limits you to a time if you pay for a certain time
keep it as it is, don't change it, dont charge parking
stop people parking on slipway
lovely, put in use other slipway - just needs clearing of mud, this one here is kept clean by Canoe Tamar, nearer carpark for canoe and not need to negotiate visitors
Pylon issues
Pylons affecting aesthetics, underwater cables would be better. Closure of post office and general store. Please reintroduce these amenities. Pylons are eyesore- undersea cables desired
Toilet facilities issues
Introduction of public toilets would be useful. Survey rushed due to launching of canoes and children
Need some toilets close by!
Would be good to re-think closing the public toilet over the winter months.
Love it as it is. Love wildlife - owls calling in Summer. Toilets not open (public).
Toilets closed between Nov-Feb - not good. Lives in the area - Noss Mayo.
improve public toilets
toilets are terrible
fantastic area, NT very good to us, would like better toilet facilities
Wildlife comments
Used to be more swans and geese in the area. Great area.
Used to see more swans in the area
Info board with wildlife info in ther are- what to look for
Would like a map to show you - where you can go, bird life, wild life
Emphasis on wildlife conservation: More conservation methods should be introduced.
Distressed by increasing amount of pheasant shooting which must disrupt wildlife.
Since the floods, wildlife doesn't seem to be as present, put something in place to stop people using site as a houshold dumping ground
Fly-tipping issues comments
Problem with flytipping
Better access for launching boats for recreational use, providing bins, monitoring fly-tipping, cleaning up area used for swimming Since the floods, wildlife doesn't seem to be as present, put something in place to stop people using site as a houshold dumping ground
Cafe facilities comments
I love it. Café is great.
nice with a cafe to bring in more people
No, attractive area, nice café
Owners of Cliff Edge Café have become friends, and I see other people I know. From Bristol but father now has to have 24h care. When he is with other people - I keep my sanity by walking this local coastline & socialising at the café.

General Positive Comments
Cafe is really good. Carparking may need improving
dam is taking a long time to be repaired but the coffee is good
enjoy coming to an unspoilt area, good facilities, cafe, toilets, parking, close to home
Tourists/holiday home issues comments
would prefer a less busy beach. Lovely peice of coastline, lived in the village for 28 years, beach hasnt changed too much.
Claims there are 62% holiday homes locally and restrictions (such as a cap on number of holiday homes) show be enforced/ increase council tax Community is very important & community spirit is declining, as so many second homes now and locals cant afford to be residents. Strong community spirit. Getting too built up. Getting too packed, too many cars and people.
Lives in Noss Mayo - happy. Less holiday - makers preferably
pretty place to live but quite expensive to buy
its nice but not so much today, a little crowded
Planning/development issues comments
concerned about sutton harbour future of the quay
an area of outstanding beauty. Private chalets ruin the aesthetic of the coastal path
Bridge to Hooe - Walking Bridge; more police - Hooe crime; stop building here; + so much traffic with one way
Love Tamar Valley but they are building too much on it. ADNB & Nat. Parks need more control, and needs to come from Gov. regarding housing Vitally important that local councils respect the value of the rural aspects - serios concern of impact of urban influence
Miscellaneous
better policy at night
Look at Torpoint Plan, which is a community group working on making Torpoint mine attractive and well known for recreation. Visit website for more info torpointplan.org.uk 3000 kids a year get to go out on bell boats that he organises
Should be open more of the year e.g. Winter
do bring picnic sometimes
used to come all the time from Tamerton Foliate

Appendix B Workshop promotion and attendees

B1 Key organisations targeted

Organisation	Activity	Type
Aces High	Angling	Charter boat
Fish N Trips	Angling	Charter boat
Mirage	Angling	Charter boat
Plymouth Angling Centre	Angling	Bait & Tackle Shop
Sea Angling Plymouth	Angling	Charter boat
Deepsea	Angling	Charter boat
Plymouth boat fishing	Angling	Charter boat
Plymouth Boat trips	Angling	Charter boat
QM Quality Service	Angling	Bait & Tackle Shop
Rob's Bait & Tackle Supplies	Angling	Bait & Tackle Shop
Size Matters	Angling	Charter boat
South West Sea Baits	Angling	Bait & Tackle Shop
The Tackle Barn	Angling	Bait & Tackle Shop
Aquanauts	Diving	Dive school
Discovery divers	Diving	Dive school
In Deep Dive Centre	Diving	Dive school
Plymouth Diving Centre	Diving	Dive school
Plymouth Sound BSAC	Diving	Dive school
Sandford & Down	Diving	Dive shop
Sound Diving	Diving	Dive Shop
Tamar Trails Centre	Canoeing	Tours
Tamar Canoe Association	Canoeing	Club
British Canoeing	Canoeing	National Association
Freelance outdoor education instructor	Canoeing, kayaking, and other	freelance
UPSU Canoe Club	Canoeing	Club
Mount Batten Centre	Canoeing / Kayaking / SUP / sailing / windsurfing / power boating / coasteering	Watersports Activity Centre
Cattewater Pilot Gig Club	Rowing / Kayaking	Club
Cotehele Quay gig club	Rowing / Kayaking	Club
Mayflower offshore rowing club	Rowing / Kayaking	Club
Plymouth Amature Rowing Club	Rowing / Kayaking	Club
Port of Plymouth Canoe Association	Rowing / Kayaking	Club
Rame Gig Rowing Club	Rowing / Kayaking	Club
Tamar & Tavy Gig Club	Rowing / Kayaking	Club
University of Plymouth rowing club	Rowing / Kayaking	Club
Yealm Pilot Gig Rowing club	Rowing / Kayaking	Club
Plymouth Marine Center	Sailing/Boating	Center
Cargreen yacht club	Sailing	Club
Cattedown Harbour Authority	Sailing	Harbour authority
Cattewater Cruising Club	Sailing	Club
Cawsand Bay Sailing Club	Sailing	Club
Cremyl Sailing / The Island trust	Sailing	Sailing school / outreach
Hooe Point sailing club	Sailing	Club
Mayflower Sailing Club	Sailing	Club
Morvaugh Sailing Project	Sailing	Sailing school / outreach
Plym yacht club	Sailing	Club
Plymouth and Devon Schools Sailing Association	Sailing	Sailing school / outreach
Plymouth Sailing School	Sailing	Sailing school / outreach
Plymouth Students Union Sailing Club / Yacht Club / Sailing and Powerboat Club	Sailing	Club
Plymouth Yacht Haven	Sailing	Club
Port of Plymouth Sailing Association	Sailing	Association
Quay Sailing Club	Sailing	Club
Queen Anne Battery	Sailing	Harbour authority
Queens Harbour Master	Sailing	Harbour authority

Organisation	Activity	Type
River Yealm Harbour Authority	Sailing	Harbour authority
Royal Plymouth Corinthian Yacht Club	Sailing	Club
Royal Western yacht club of England	Sailing	Club
Saltash Sailing Club	Sailing	Club
Southdown Marina	Sailing	Boat services
Sutton Harbour Authority	Sailing	Harbour authority
Tamar River Sailing Club	Sailing	Club
The Yealm yacht club	Sailing	Club
Top Cat Cruising School	Sailing	Sailing school / outreach
Torpoint mosquito sailing club	Sailing	Club
Torpoint yacht club	Sailing	Club
Weir Quay Boatyard	Sailing	Boat services
Weir Quay Sailing Club	Sailing	Club
West Hoe Sailing Club	Sailing	Club
Kayaks for Hire	Canoeing	Kayak hire
Plymouth Marine Centre	boating/jetski	centre
Plymouth Jet ski training	jet ski	training centre

B2 Flyers and social media promoting workshops

The Chandlers
Jolly Jacks
Queen Annes battery marina office
Queen Annes Battery- Royal Western yacht club
Queen Annes Battery- Sound bites
Queen Annes Battery- Chandlery
Osborne and Gragg Fishing shop
Peter's Fishing and Sport Shop
Go Outdoors
Plymouth University
Plymouth City library
Plymouth Marine Centre
Millets
Fish N' Trips
Marine Bazaar Plymouth
Gould's Outdoor
Cargreen slipways (x2)
Landulph memorial hall -Cargreen (x2)
Cotehele house (reception) x2
Cotehele House, Mt Edgcumbe arms (for approval) x3
Calstock Slipway noticeboard(x1)
Calstock Village notice board(x1)
Calstock social club (x1)
Calstock _Tamar Inn (x1)

Bere ferers-Slipway (x1)
Bere Ferrers -The Plough
Devils point car park and fishing areas (x 3)
Aladdin's Cave embankment Road
Mountbatten Centre x 2, pub and fishers nose (x2)
Radio Plymouth- announcements and on the Events Page, angling, sailing and paddler workshops advertised
Marine Biological Association events page
MBA twitter
MBA staff- invited all staff and asking to publicise
Fishing facebook
Ben Holt- CoCoast sent round their volunteers
Local MBA members emailed
Southwest Sea fishing (messaged on facebook)
Yumping (jet ski) Facebook message, will pass info on
Liam faisey (local angling and kayaking co-ordinator)
Plymouth Yacht Haven-sending round their social network
UPSU Canoe club, sent message on facebook
Port of plymouth canoe association, post on facebook
Kayaks and Paddles, post message on facebook
Plymouth Angling Centre Facebook page
Plymouth Environment action- sent round their network
Alix Harvey- MBA staff member-sent round social media network
Jack Sewell-MBA member, sent round his network
http://heyevent.uk/event/vnr4pegzhunnqa/free-recreational-angling-workshop
Tom Rahder- local sailor; shared around his network

Appendix C Targeted workshop workbooks

C1 Angling Workshop Outline

Note taker Name:

Please hand in this outline at the end of your workshop, please make sure all maps and workbooks and other material that you have used have your initials.

Question 1) Where do you fish? (Add marks to map- use coloured dots and/or draw on outlines as needed)

- Write quick outline below of people in your groups activities

- For boat fishermen, add launch sites, pontoons, marinas to map, Ask if they ever anchor while fishing, add each of these to map and annotate as needed.

- Annotate Maps A for anchoring, ON for overnight. P for pelagic fishing only- no contact with seabed, S for sinker weights. Annotate, mooring, slipway, pontoon just on map- no abbreviation

- For shore fishermen ask where they go to fish, use a dot to add this onto map, if more than one goes to same place just use same area but record frequencies separately (see tables below). **Add P to dot for pelagic fishing only, S for sinkers, S/P for mixed. Use dots with name codes if needed: use key at the back to record.**

- Ask them what time of day they usually fish and add code to table cell. When do they generally fish- **N -night, M-morning- A- Afternoon**

- Ask them to estimate fishing frequency: record each persons results in the tables below – see separate sheets for spares. Add simple confidence after each score: *, **,***

TABLE 1. AMOUNT OF TIMES THEY VISIT EACH OF THEIR SITES DURING A YEAR. FOR VESSELS ADD NUMBER IN BOAT IN BRACKETS, ADD TIME OF DAY AND CONFIDENCE

Time period (all 2016)	No of times at each location (use a code			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

. TABLE 1. AMOUNT OF TIMES THEY VISIT EACH OF THEIR SITES DURING A YEAR. FOR VESSELS ADD NUMBER IN BOAT IN BRACKETS, ADD TIME OF DAY AND CONFIDENCE

Time period (all 2016)	No of times at each location (use a code			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Question 2) Where do you see others fishing and other activities (same map)

Add to map locations where they see other people fishing (not their own spots) use a different colour pen or dot. Fill in table below for general estimate (with confidence of other people fishing) at their own and other sites.

Using space at end of workbook record at their sites what also happens other water users or terrestrial users, very close by.

TABLE 2. AMOUNT OF OTHER PEOPLE/VESSELS THEY SEE AT THEIR OWN AND OTHER SITES DURING A YEAR. FOR VESSELS ADD NUMBER IN THEIR BOAT IN BRACKETS, ADD TIME OF DAY AND CONFIDENCE

Time period (all 2016)	No of times at each location (use a code			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				

TABLE 2. AMOUNT OF OTHER PEOPLE/VESSELS THEY SEE AT THEIR OWN AND OTHER SITES DURING A YEAR. FOR VESSELS ADD NUMBER IN THEIR BOAT IN BRACKETS, ADD TIME OF DAY AND CONFIDENCE

Time period (all 2016)	No of times at each location (use a code			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				

3) General questions: Record Answers on blank sheets at back of books!

Litter

Do you ever see litter from fishing at sites you visit?

What do delegates think would help to manage this, litter bins?

Record general comments below at the end of the workbook- for litter identify worst sites by name. If not enough space use extra sheets and staple together at the end of the workshop

Bait collecting

What bait do you use, shop bought, caught e.g. fish or worms and crabs that you capture dig for yourselves.

- If they bait dig ask them to add a B to the map for areas used and fill a table on frequency
- If you collect peelers please add a Cr to the map and fill a table on frequency and number of tiles they have in brackets.

Bait answers: what do people in your group use? If not enough space below use extra sheets and staple together at the end of the workshop. If they use crab tiles how many and how often do they visit.

Table 3. Bait digging Bait digging *(B), Crab tiling

Time period (all 2016)	**No of times at each location (use a code**			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				

4) General Fish spotting-Shad and smelt, ask them to put gold stars on the Allis shad map and silver stars on the smelt map

These maps are on separate boards

Map key

Table: Identify what you've called your map e.g. HT:, detail any annotations or colours you have used on map, any site codes etc.

Name:	**Map name:**

Question 2. Other water users at the sites that they use. Give details and approximate number of events, is that all year round.

Question 3. Is there anything they'd like to raise as a concern/issue.

Name (optional) …….

C2 Recreational Sailing Workbook for Individuals

Question 1. How do you access the water?

1A) From a tender out to a swing moorings? Yes /No or trot moorings Yes /No (please circle)

Number of swing moorings you own/use……..

For swing moorings can you give average diameter of mooring

block?.....Don't know

Approximate length of chain on seabed……..

Do you move your moorings monthly / annually/ every 2 years / every 5 years/ never (please circle)

1B) From marina pontoons? Yes/No (please circle)

If yes, if the pontoons are serviced with electricity, are there lights on at night. Yes/No……

1C) From trailers/dry storage via slipways? Yes / No

Are slipways accessed through the year? Yes / No

1D) Other methods…….Please give details……

Mapping: On the large map on your table could you please draw on and label the following:

1A) Any swing mooring areas and **mark with SM**

1 B) Any trot moorings and **mark with TM**

1C) Any pontoons and **mark with PN**

1D) Any slipways used **mark with SW**

Question 2 Description of sailing activities

2A) Do you undertake racing activities? Yes / No (please circle).

If yes could you give approximate numbers of race events during the week (PLEASE INDICATE NUMBER OF PEOPLE TAKING PART IN BRACKETS). If you need more tables, spare sheets are available.

Time period (all 2016)	**No of times at each location per week (please add number of vessels in brackets)**			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

If you use marker buoys that are consistently placed in the same spot can you please add these to the map using the fluorescent green stickers.

2B) Do you undertake training activities? Yes / No, (please circle).

If yes, could you please provide approximate number of training events during the week for each season.

Time period (all 2016)	No of times at each location (per week)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

2C) Do you undertake recreational trips within or through the Plymouth Sound and Estuaries site? Yes / No, (please circle).

If yes could you please provide approximate numbers of times during the week

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Time period (all 2016)		No of times at each location (per week)			
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				

Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate

Mapping: On your large maps could you draw on the following

2A) Racing areas- if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

2B) Training areas- if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

2C) Recreational trips –could you show tracks or areas used; if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

3) Anchoring and mooring.

Do you/your members typically anchor or moor during trips (not permanent moorings as this is addressed in question 1)

3A) Do you or club members prefer to anchor / moor /mix of anchoring and mooring/ Don't know…….(please circle)

Mapping: On your maps could you please draw on anchoring and mooring areas and label A for anchoring, SM (swing mooring) or TM (trot mooring) for moorings and HO for pulling up tenders on shore. Can you please add an ON to the area if you anchor or moor there overnight.

<u>Question 3 General questions on practice.</u>

We'd like to ask for your input on some examples of environmental best practice below. We are interested in learning if there any issues such as cost, lack of information or anything else that you think prevents adoption? If you need more space to answer any questions please use the back of the booklet and ask for spare sheets if needed.

1) **Have you heard about the RYA Green Blue initiative?** Yes/ No (Please circle)

2) **Are you aware of the presence and impacts of invasive species that can colonise marinas and pontoons and other hard surfaces?** Yes / No / (Please circle)

3) **Have you attended a RYA Green Blue workshop?** Yes / No / (Please circle)

4) **Do you know about the European Marine Site?** Yes / No / (Please circle)

5) **Do you know where eelgrass beds are located ?** Yes / No / (Please circle)

6) If you use a swing or trot mooring would you consider changing to an eco-friendly mooring? Yes/ No / Don't use moorings (please circle)

7) Do you think there are there any barriers to switching to ecomoorings, such as cost, insurance or lack of proven technologies (please write in space below)

8) What would you think about paying to anchor on eco-friendly moorings?

9) Do you have a sea toilet on board? Yes / No / (please circle)

10) Do you have a holding tank fitted Yes / No / (please circle)

If no, would you consider getting one fitted Yes / No / Don't know (please circle)

What are the main issues if no (please write below):

11) Do you eco-friendly cleaning products? Yes / No / Don't know (please circle)

12) How often do you or club members tend to scrub down / antifoul? How do you protect the environment when you do this? Do you have access to any advice or special equipment?

C3 Recreational Sailing Workbook for clubs

Name (optional) …….

Club (optional)…….

Approximate number of sailors that you represent……..

Question 1. How do your members access the water?

1A) From tenders out to swing moorings? Yes /No or trot moorings Yes /No (please circle)

Number of swing moorings used by club ……..

Number of mooring risers/buoys if trot moorings……

If swing moorings are these a standard size, can you give average diameter of mooring block?.....Don't know/ Size varies

Approximate length of chain on seabed……..

Do you move moorings monthly / annually/ every 2 years / every 5 years/ never (please circle)

1B) From marina pontoons? Yes/No (please circle)

If yes, Please identify approximate number of boats……if the pontoons are serviced with electricity, are there lights on at night. Yes/No……

1C) From trailers/dry storage via slipways? Yes / No

Are slipways accessed through the year? Yes / No

1D) Other methods…….Please give details……

Mapping: On the large map on your table could you please draw on and label the following:

1A) Any swing mooring areas and **mark with SM**

1 B) Any trot moorings and **mark with TM**

1C) Any pontoons and **mark with PN**

1D) Any slipways used **mark with SW**

Question 2 Description of sailing activities

2A) Do your members undertake racing activities? Yes / No (please circle).

If yes could you give approximate numbers of race events during the week (PLEASE INDICATE NUMBER OF PEOPLE TAKING PART IN BRACKETS). If you need more tables, spare sheets are available.

Time period (all 2016)	**No of times at each location per week (please add number of vessels in brackets)**			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

If you use marker buoys that are consistently placed in the same spot can you please add these to the map using the fluorescent green stickers. Can you write next to these how often they are lifted.

2B) Do your members undertake training activities? Yes / No, (please circle).

If yes, could you please provide approximate numbers of training events during the week for each season and numbers taking part in the table below (PLEASE INDICATE NUMBER OF PEOPLE TAKING PART IN BRACKETS).

Time period (all 2016)	No of times at each location (per week)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

2C) Do your members undertake recreational trips within or through the Plymouth Sound and Estuaries site? Yes / No, (please circle).

If yes could you please provide approximate numbers of recreational events during the week (PLEASE INDICATE NUMBER OF PEOPLE TAKING PART IN BRACKETS).

Time period (all 2016)		No of times at each location (per week)			
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Mapping: On your large maps could you draw on the following

2A) Racing areas- if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

2B) Training areas- if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

2C) Recreational trips –could you show tracks or areas used; if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

3) Anchoring and mooring.

Do you/your members typically anchor or moor during trips (not permanent moorings as this is addressed in question 1)

3A) Do you or club members prefer to anchor / moor /mix of anchoring and mooring/ Don't know…….(please circle)

Mapping: On your maps could you please draw on anchoring and mooring areas and label A for anchoring, SM (swing mooring) or TM (trot mooring) for moorings and HO for pulling up tenders on shore. Can you please add an ON to the area if you anchor or moor there overnight.

Question 3 General questions on practice.

We'd like to ask for your input on some examples of environmental best practice below. We are interested in learning if there any issues such as cost, lack of information or anything else that you think prevents adoption? If you need more space to answer any questions please use the back of the booklet and ask for spare sheets if needed.

1) **Has your club heard about the RYA Green Blue initiative?**

Yes/ No / Some members likely to be aware but not all (Please circle)

2) **Are you as a club aware of the presence and impacts of invasive species that can colonise marinas and pontoons and other hard surfaces? Yes / No / Some members likely to be aware but not all (Please circle)**

3) **Has your club hosted a RYA Green Blue workshop? Yes/No / Don't know (Please circle)**

Would you be interested in holding one Yes/No (if yes please provide contact details, email or telephone in the space below)

4) **Do club members know about the European Marine Site? Yes / No / Some members likely to be aware but not all / Don't know (please circle)**

5) **Do club members know where eelgrass beds are located ? 1) Yes / No / A little/ Don't know (please circle)**

6) **If the club uses swing or trot moorings would you consider changing to an eco-friendly mooring? Yes/ No / Don't use moorings (please circle)**

7) **Do you think there are there any barriers to switching to ecomoorings, such as cost, insurance or lack of proven technologies (please write in space below)**

8) **What are club members thoughts, do you think, around paying to anchor on eco-friendly moorings?**

9) **Do club members generally have a sea toilet on board? Yes / No / Don't know (please circle)**

10) **Do club members generally have a holding tank fitted Yes / No / Don't know (please circle)**

If no, in your opinion would members consider getting one fitted Yes / No / Don't know (please circle)

What are the main issues if no (please write below):

11) **Do club members consider using eco-friendly cleaning products? Yes / No / Don't know (please circle)**

12) **How often do you or club members tend to scrub down / antifoul? How do you protect the environment when they do this? Does the club offer any advice, special equipment?**

C4 Recreational Powerboat Workbook for Individuals

Name/Club name (optional) …….

Activity type:

Question 1. How do you access the water?

1A) From a tender out to a swing or trot mooring? Yes /No or trot moorings Yes /No (please circle)

Number of swing moorings you own/use……..

For swing moorings can you give average diameter of mooring

block?.....Don't know

Approximate length of chain on seabed……..

Do you move your moorings monthly / annually/ every 2 years / every 5 years/ never (please circle)

1B) From marina pontoons? Yes/No (please circle)

If yes, if the pontoons are serviced with electricity, are there lights on at night. Yes/No……

1C) From trailers/dry storage via slipways? Yes / No

Are slipways accessed through the year? Yes / No

1D) Other methods…….Please give details……

Mapping: On the large map on your table could you please draw on and label the following:

1A) Any swing mooring areas and **mark with SM**

1 B) Any trot moorings and **mark with TM**

1C) Any pontoons and **mark with PN**

1D) Any slipways used **mark with SW**

Question 2 Description of activities

Could you please provide approximate numbers of times during the week you undertake your activity at different locations/sites) (could you indicate in brackets how many people usually take part). Can you please annotate the map to identify what activity you are undertaking, e.g. jet ski, dive site, motor-boating etc.

Time period (all 2016)		**No of times at each location (per week)**			
Season					
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					
Time period (all 2016)		**No of times at each location (per week)**			
Season					
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Time period (all 2016)		No of times at each location (per week)			
Season					
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Mapping: On your large maps could you draw on the following

Tracks or areas used; if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn. Can you either add a brief description to map e.g. add dive sites, areas you visit.

3) Anchoring and mooring and shot lines

Do you/your members typically anchor or moor during trips or deploy shot lines on the seabed?

Mapping: On your maps could you please draw on anchoring and mooring areas and label A for anchoring, SM (swing mooring) or TM (trot mooring) for moorings and HO for pulling up tender, RIBs or other vessels on shore. If you place a shot line can you add SL to the map. Can you please add an ON to show night moorings, anchorages and sites.

4) Gathering shellfish (e.g. crab, lobster, scallops)

Do you/your members typically gather shellfish to take home and eat?

Mapping: On your maps could you please identify areas that you collect shellfish from and annotate what types of shellfish you are gathering.

Question 3 General questions on practice.

We'd like to ask for your input on some examples of environmental best practice below. We are interested in learning if there any issues such as cost, lack of information or anything else that you think prevents adoption? If you need more space to answer any questions please use the back of the booklet and ask for spare sheets if needed.

1) **Have you heard about the RYA Green Blue initiative?** Yes/ No (Please circle)

2) **Are you aware of the presence and impacts of invasive species that can colonise marinas and pontoons and other hard surfaces?** Yes / No / (Please circle)

3) **Have you attended a RYA Green Blue workshop?** Yes / No / (Please circle)

4) **Do you know about the European Marine Site?** Yes / No / (Please circle)

5) **Do you know where eelgrass beds are located ?** Yes / No / (Please circle)

6) **If you use a swing or trot mooring would you consider changing to an eco-friendly mooring?** Yes/ No / Don't use moorings (please circle)

7) **Do you think there are there any barriers to switching to ecomoorings, such as cost, insurance or lack of proven technologies (please write in space below)**

8) **What would you think about paying to use eco-friendly moorings?**

9) **Do you have a sea toilet on board?** Yes / No / (please circle)

10) **Do you have a holding tank fitted** Yes / No / (please circle)

If no, would you consider getting one fitted Yes / No / Don't know (please circle)

What are the main issues if no (please write below):

11) **Do you eco-friendly cleaning products?** Yes / No / Don't know (please circle)

12) **How often do you or club members tend to scrub down / antifoul? How do you protect the environment when you do this? Do you have access to any advice or special equipment?**

C5 Recreational paddle-sports/rowing workbook for clubs and individuals

Name (optional) …….

Club (optional)…….

Approximate number of people that you represent……..

Question 1. How do you or club members access the water?

Mapping: On the large map on your table could you please draw on and label the following:

- Any shores where you access the water (**mark with Shore access)**
- Any pontoons and (**mark with Pontoon)**
- Any slipways used (**mark with Slipway)**
- Any shore areas where you land during trips (**please mark as Haulout)**
- Other ? please mark on the map and annotate.

Question 2: Where do you carry out your activity in the Plymouth Sound and Estuaries Area?

On the maps could you draw on the tracks or show the areas used; if these vary seasonally, could you mark with W, for winter, Sp, for Spring, Su for summer and Au for Autumn.

Could you please provide approximate number of times you are out during the week at different times of the year. (PLEASE ESTIMATE NUMBER OF PEOPLE TAKING PART IN BRACKETS IF YOU ARE REPRESENTING A CLUB).

We need to relate the areas that you've draw on the maps to the number of times you are using them, you can number your areas on the map and just add those numbers to the tables below in the top row. We have spare tables if you need more, just ask.

Time period (all 2016)		**No of times at each location (per week)**			
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Time period (all 2016)	No of times at each location per week (please add number of vessels in brackets)			
Dec-Jan-Feb				
March-April-May				
June-July-Aug				
Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate				

Question 3. Using a different colour pen could you please mark on the maps any areas that you know are popular with other people doing the same activity.

Could you please add an estimate of the number of people you think use the areas you've added during the week.

Time period (all 2016)		No of times at each location (per week)			
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Time period (all 2016)		No of times at each location (per week)			
Winter	Dec-Jan-Feb				
Spring	March-April-May				
Summer	June-July-Aug				
Autumn	Sept-Oct-Nov				
Confidence * Low, very uncertain ** Medium, pretty good guess *** High, confident it's a good estimate					

Question 4. Couple of questions on awareness of European Marine Site

We'd like to ask for your input on some examples of environmental awareness below. We are interested in learning if there any issues such as cost, lack of information or anything else that you think prevents adoption? If you need more space to answer any questions please use the back of the booklet and ask for spare sheets if needed.

13) Had you or club members heard about the European Marine Site designations (SAC and SPA for the Plymouth Sound and Estuaries area?)

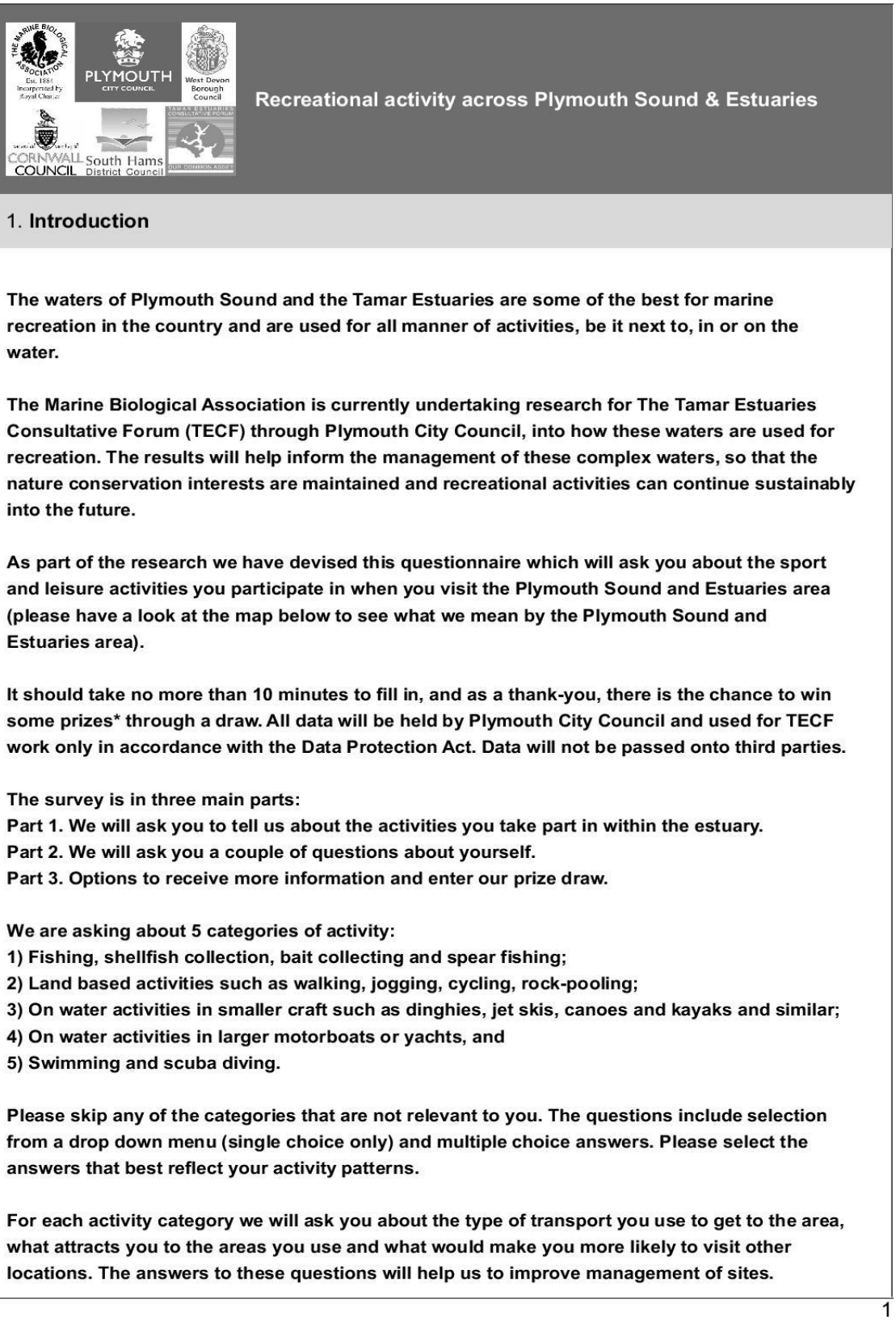
Yes / No / Some members likely to be aware but not all / Don't know (please circle)

14) Do you or club members know where eelgrass (seagrass) beds are located in the area ?

Yes / No / A little/ Don't know (please circle)

Question 5. If you have ever seen/caught shad or smelt in the Plymouth Sound and Estuaries please add to the maps at the back of the room.

Appendix D Online questionnaire



***Prizes include £50 of vouchers, an annual membership of the Marine Biological Association of the UK and a family ticket to the National Marine Aquarium (Plymouth).**
To move between sections please press the NEXT button. You can go back and alter answers before submitting the survey using the previous/back button.

The area highlighted in solid pink and pink cross-hatching is the "Plymouth Sound and Estuaries Area" that we refer to in this questionnaire (the SAC and SPA in the key).

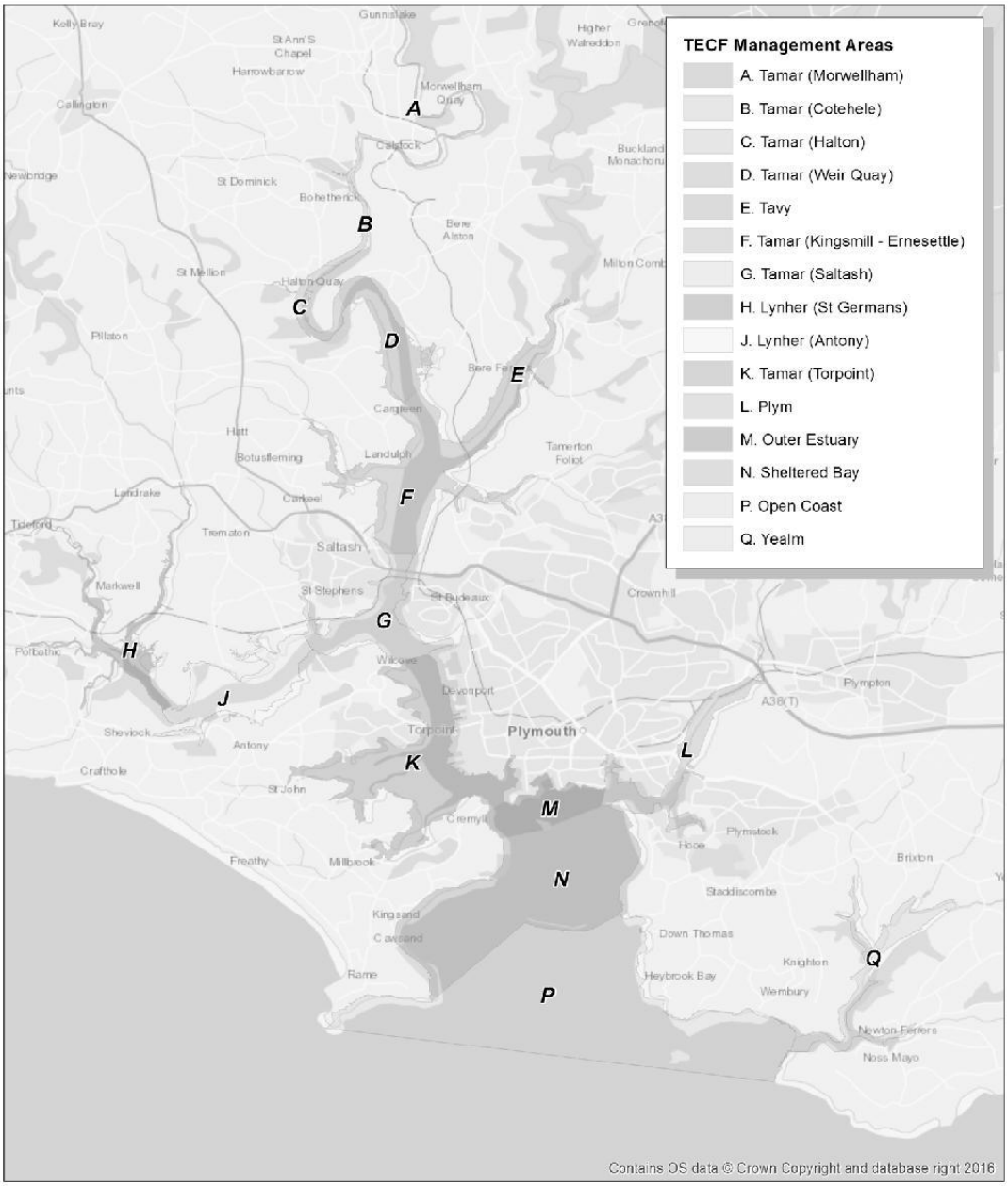
2. **PART 1 - Fishing Activities: Do you take part in any type of fishing activities?**

* 1. In the past 12 months have you taken part in any fishing activities and bait collecting such as shore-based angling, fishing from boats or spear fishing in the Plymouth Sound and Estuaries area? **(Please press next when you have made your selection)**

- ◯ Yes
- ◯ No

2. Looking at the map below showing the management areas, please think about which fishing activities (shore angling, angling from small boats, bait collecting, spear fishing etc) you have taken part in over the last 12 months. Please input how many times a year you have done the activity at each area. If you take part in more than one activity e.g. bait collecting and angling, please select the activity you do most often in each management area. If you pass through more than one management area e.g. when fishing from a boat please add the information to each management area that you use.

	Fishing activities (select from list).	Roughly how often have you visited in the past 12 months.	What time of year do you tend to visit?
A. Tamar (Calstock - Morwellham)			
B. Tamar (Cothele)			
C. Tamar (Halton)			
D. Tamar (Weir Quay)			
E. Tavy			
F. Tamar (Kingmill - Ernesettle)			
G. Tamar (Saltash)			
H. Lynher (St Germans)			
J. Lynher (Anthony)			
K. Tamar (Torpoint)			
L. Plym			
M. Outer Estuary			
N. Sheltered Bay			
P. Open Coast			
Q. Yealm			


TECF Management Areas
A. Tamar (Morwellham)
B. Tamar (Cotehele)
C. Tamar (Halton)
D. Tamar (Weir Quay)
E. Tavy
F. Tamar (Kingsmill - Ernesettle)
G. Tamar (Saltash)
H. Lynher (St Germans)
J. Lynher (Antony)
K. Tamar (Torpoint)
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Plymouth
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6

3. What is your main form of transport for arriving at the sites you use?(Select one option only. If you used more than one mode of transport, please select the main one you use).

- ◯ Car/motorcycle
- ◯ On foot
- ◯ Bus
- ◯ Train
- ◯ Bicycle
- ◯ Passenger ferry
- ◯ Other by water (e.g. canoe, sail boat, motor boat etc)

4. What makes the locations you use attractive to you? (You may select more than one option).

- ☐ Don't know
- ☐ Close to home
- ☐ Others in party/club choose
- ☐ Good/easy parking
- ☐ Feel safe here
- ☐ Refreshments
- ☐ Toilets
- ☐ Attractive scenery/views
- ☐ Right place for activity (e.g. good fishing)
- ☐ Particular wildlife interest
- ☐ Suitability given weather conditions
- ☐ Ability to let dog off lead
- ☐ Particular launching facilities
- ☐ Condition of launching facilities

Please add any further reasons you visit the sites you do. Or if you wish to add more detail please do so.

5. What features would be necessary to make other locations attractive for you to use instead of those you most frequently visit? (You may select more than one option).

- [ ] No features/nothing
- [ ] More dog friendly
- [ ] Better launching/access to water
- [ ] Better path surfacing/routing
- [ ] Refreshments (e.g. cafe)
- [ ] Better information/maps/boards
- [ ] Measures to control other users
- [ ] Toilets
- [ ] Better/easier parking facilities
- [ ] Cheaper/free parking
- [ ] Closer to home
- [ ] Attractive scenery

Please add any further reasons or comments here.

6. Do you have any further comments about the locations you visit?

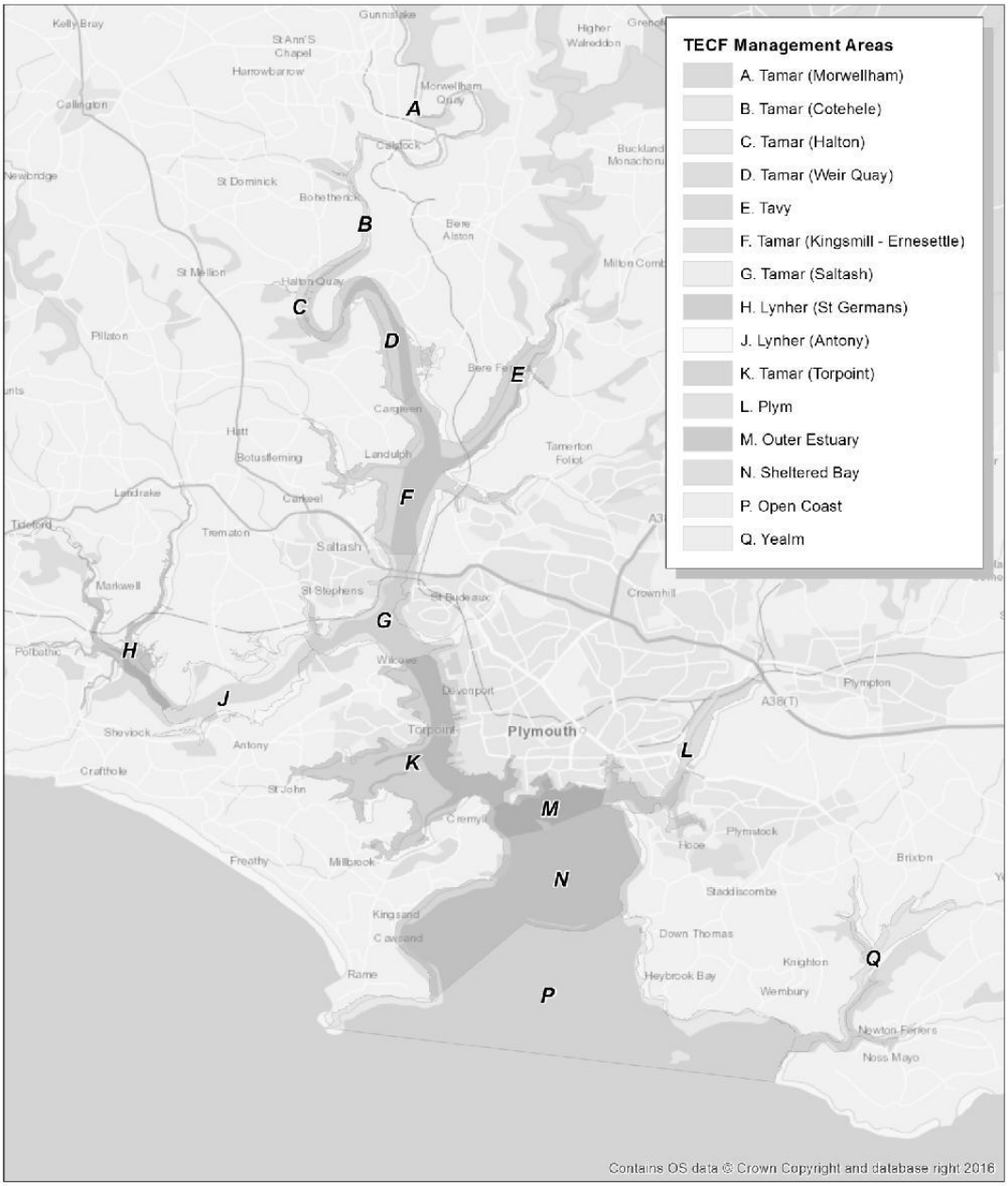
4. **Part 1. Land/shore based activities.**

* 7. Do you take part in any land/shore-based activities such as walking, cycling, rock pooling etc (not fishing). **(Please press next when you have made your selection).**

- ◯ Yes
- ◯ No

8. Looking at the map below showing the management areas, please think about which land-based activities (walking, cycling etc) you have taken part in next to the shore over the last 12 months. Please input how many times a year you have done the activity at each area. If you undertake more than one activity e.g. walking and cycling, please select the activity you do most often. If you pass through more than one management area during your visits please add the information to each management area that you use.

	Land based activities next to water (select from list).	Roughly how often have you visited in the past 12 months.	What time of year do you tend to visit?
A. Tamar (Calstock - Morwellham)			
B. Tamar (Cothele)			
C. Tamar (Halton)			
D. Tamar (Weir Quay)			
E. Tavy			
F. Tamar (Kingmill - Ernesettle)			
G. Tamar (Saltash)			
H. Lynher (St Germans)			
J. Lynher (Anthony)			
K. Tamar (Torpoint)			
L. Plym			
M. Outer Estuary			
N. Sheltered Bay			
P. Open Coast			
Q. Yealm			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9. What is your main form of transport for arriving at the sites you use?(Select one option only. If you used more than one mode of transport, please select the main one you used).

- ◯ Car/motorcycle
- ◯ On foot
- ◯ Bus
- ◯ Train
- ◯ Horse
- ◯ Bicycle
- ◯ Passenger ferry
- ◯ Other by water (e.g. canoe, sail boat, motor boat etc)

10. What makes the locations you use attractive to you?(You may select more than one option).

- ☐ Don't know
- ☐ Close to home
- ☐ Others in party/club choose
- ☐ Good/easy parking
- ☐ Feel safe here
- ☐ Refreshments
- ☐ Toilets
- ☐ Attractive scenery/views
- ☐ Right place for activity (e.g. Kite surfing/fishing/good for kids)
- ☐ Particular wildlife interest
- ☐ Suitability given weather conditions
- ☐ Ability to let dog off lead
- ☐ Particular launching facilities
- ☐ Condition of launching facilities

Please add any further reasons you visit the sites you do. Or if you wish to add more detail please do so.

13

11. What features would be necessary to make other locations attractive for you to use instead of those you most frequently visit? (You may select more than one option).

- [ ] No features/nothing
- [ ] More dog friendly
- [ ] Better launching/access to water
- [ ] Better path surfacing/routing
- [ ] Refreshments (e.g. cafe)
- [ ] Better information/maps/boards
- [ ] Measures to control other users
- [ ] Toilets
- [ ] Better/easier parking facilities
- [ ] Cheaper/free parking
- [ ] Closer to home
- [ ] Attractive scenery

Please add any further reasons or comments here.

12. Do you have any further comments about the locations you visit?

6. **Water based activities using small craft.**

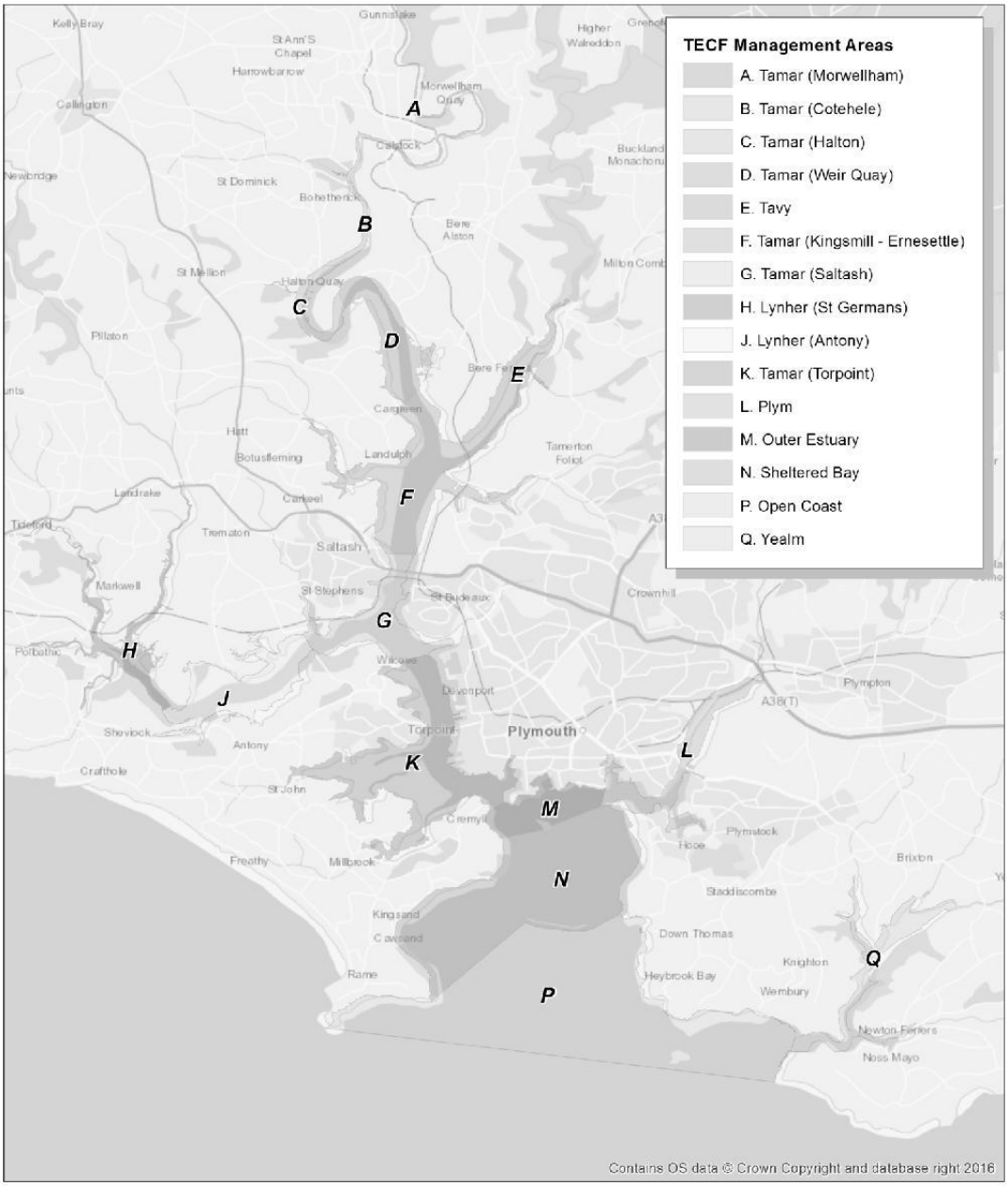
* 13. Do you take part in any water based activities using small craft, such as kayaking, canoeing, jet skis, RIBs, stand up paddleboards, surfboards, windsurfing or dinghy sailing? **(Please press next when you have made your selection).**

- ◯ Yes
- ◯ No

7. **Part 1. Water based activities using small craft continued**

14. Looking at the map below showing the management areas, please think about which on water-based activities with small craft (kayaking, rowing, surfing, diving from a RIB or hard boat etc) you have taken part in next to the shore over the last 12 months. There are a range of choices in the drop down menu but please only select the one that is closest. If you undertake more than one activity e.g. kayaking and stand-up paddle boarding, please select the activity you do most often. Please input how many times a year you have done the activity at each area and the time of year you tend to do this activity. If you pass through more than one management area during your visits please add the information to each management area that you use.

	On-water based activities with small craft (select from list).	Roughly how often have you visited in the past 12 months.	What time of year do you tend to visit?
A. Tamar (Calstock - Morwellham)			
B. Tamar (Cothele)			
C. Tamar (Halton)			
D. Tamar (Weir Quay)			
E. Tavy			
F. Tamar (Kingmill - Ernesettle)			
G. Tamar (Saltash)			
H. Lynher (St Germans)			
J. Lynher (Anthony)			
K. Tamar (Torpoint)			
L. Plym			
M. Outer Estuary			
N. Sheltered Bay			
P. Open Coast			
Q. Yealm			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15. What is your main form of transport for arriving at the locations you use?(Select one option only. If you used more than one mode of transport, please select the main one you used).

- ◯ Car/motorcycle
- ◯ On foot
- ◯ Bus
- ◯ Train
- ◯ Bicycle
- ◯ Passenger ferry
- ◯ Other by water (e.g. canoe, sail boat, motor boat etc)

16. What makes the locations you use attractive to you?(You may select more than one option).

- ☐ Don't know
- ☐ Close to home
- ☐ Others in party/club choose
- ☐ Good/easy parking
- ☐ Feel safe here
- ☐ Refreshments
- ☐ Toilets
- ☐ Attractive scenery/views
- ☐ Right place for activity (e.g. safe kayaking areas)
- ☐ Particular wildlife interest
- ☐ Suitability given weather conditions
- ☐ Particular launching/haulout facilities
- ☐ Condition of launching/haulout facilities

Please add any further reasons you visit the sites you do. Or if you wish to add more detail please do so.

19

17. What features would be necessary to make other locations attractive for you to use instead of those you most frequently visit? (You may select more than one option).

- [ ] No features/nothing
- [ ] Better launching/access to water
- [ ] Better path surfacing/routing
- [ ] Refreshments (e.g. cafe)
- [ ] Better information/maps/boards
- [ ] Measures to control other users
- [ ] Toilets
- [ ] Better/easier parking facilities
- [ ] Cheaper/free parking
- [ ] Closer to home
- [ ] Attractive scenery

Please add any comments here

18. Do you have any further comments about the locations you visit?

8. **Water based activities using large craft.**

* 19. Do you take part in any water-based activities with large craft (larger powerboats and yachts)?**Please press next when you have made your selection.**

- ◯ Yes
- ◯ No

9. **Water based activities using large craft continued.**

20. Looking at the map below showing the management areas, please think about which on water-based activities with large craft (yachts or power boats etc.) you have taken part in over the last 12 months. If you undertake more than one activity e.g. yachting and power boating, please select the activity you do most often. Please input how many times a year you have done the activity at each area and the time of year you tend to do this activity.

	On-water based activities with large craft (select from list).	Roughly how often have you visited in the past 12 months.	What time of year do you tend to visit?
A. Tamar (Calstock - Morwellham)			
B. Tamar (Cothele)			
C. Tamar (Halton)			
D. Tamar (Weir Quay)			
E. Tavy			
F. Tamar (Kingmill - Ernesettle)			
G. Tamar (Saltash)			
H. Lynher (St Germans)			
J. Lynher (Anthony)			
K. Tamar (Torpoint)			
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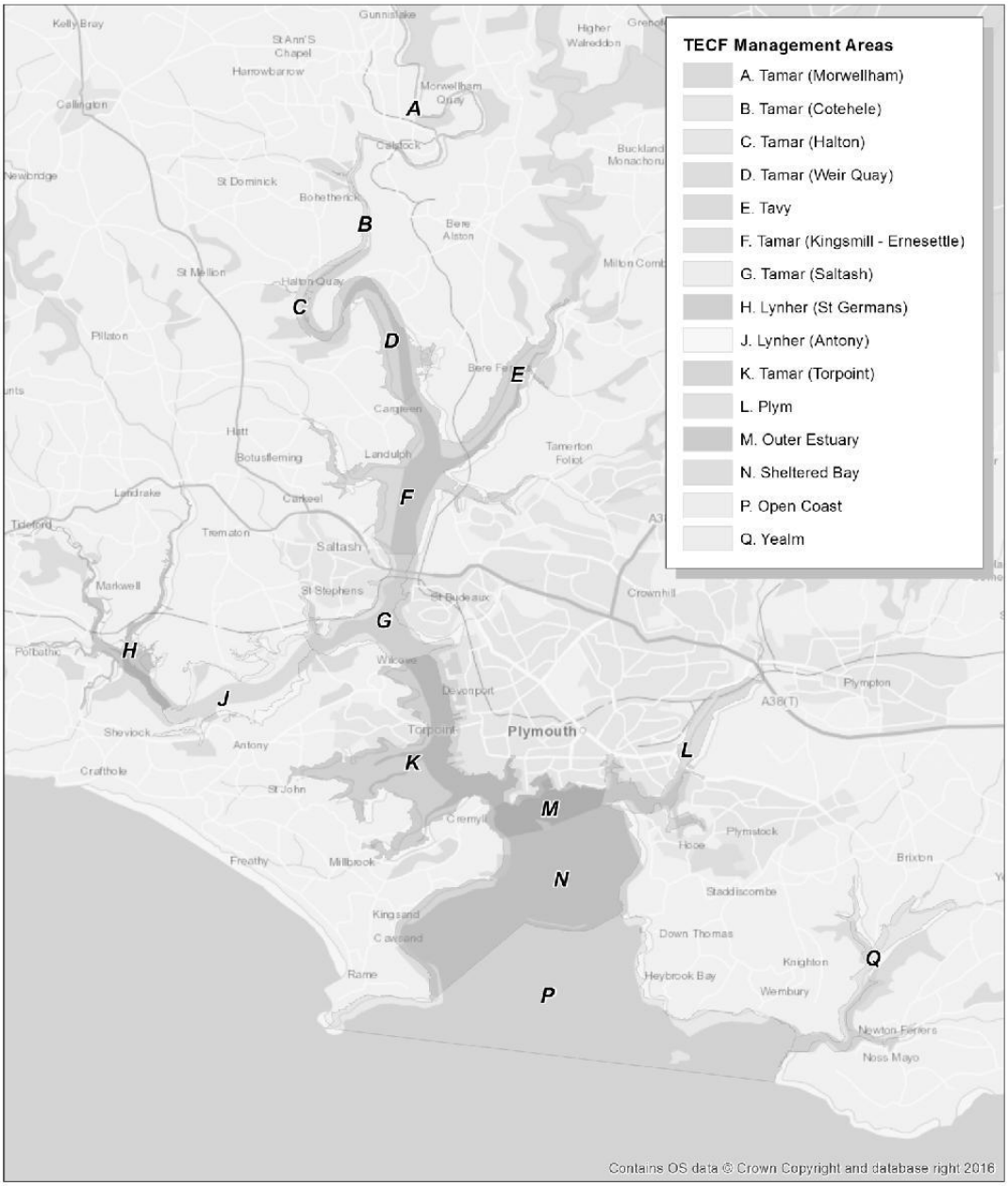
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21. Where is your boat kept? (Select one option only. If you used more than one mode of transport, please select the main one you used).

- ◯ marine/pontoon (in the Plymouth Sound and Estuaries area)
- ◯ marine/pontoon (outside of the Plymouth Sound and Estuaries area)
- ◯ mooring (in the Plymouth Sound and Estuaries area)
- ◯ mooring (outside of the Plymouth Sound and Estuaries area)
- ◯ trailer/hard standing or similar, water accessed via slipway for visits

Other (please specify)

22. What is your main form of transport for arriving at the sites where you start your activity? (Select one option only. If you used more than one mode of transport, please select the main one you used).

- ◯ Car/motorcycle
- ◯ On foot
- ◯ Bus
- ◯ Train
- ◯ Bicycle
- ◯ Passenger ferry
- ◯ Other by water (e.g. canoe, sail boat, motor boat etc)

23. What makes the locations you use attractive to you?(You may select more than one option).

- [ ] Don't know
- [ ] Close to home
- [ ] Others in party/club choose
- [ ] Good/easy parking
- [ ] Feel safe here
- [ ] Refreshments
- [ ] Toilets
- [ ] Attractive scenery/views
- [ ] Right place for activity (e.g. good fishing)
- [ ] Particular wildlife interest
- [ ] Suitability given weather conditions
- [ ] Particular launching/slipway/pontoon facilities
- [ ] Suitable mooring facilities
- [ ] Condition of launching facilities

Please add any further reasons you visit the sites you do. Or if you wish to add more detail please do so.

25

24. What features would be necessary to make other locations attractive for you to use instead of those you most frequently visit? (You may select more than one option).

- [ ] No features/nothing
- [ ] More dog friendly
- [ ] Better launching/access to water
- [ ] Better mooring/pontoon facilities
- [ ] Better path surfacing/routing
- [ ] Refreshments (e.g. cafe)
- [ ] Better information/maps/boards
- [ ] Measures to control other users
- [ ] Toilets
- [ ] Better/easier parking facilities
- [ ] Cheaper/free parking
- [ ] Closer to home
- [ ] Attractive scenery

Please add any comments here

25. Do you have any further comments about the locations you visit?

10. **Swimming and diving activities.**

* 26. Do you take part in swimming or diving activities? **(Please press next when you have made your selection).**

- ◯ Yes
- ◯ No

11. **Swimming and diving activities continued.**

27. Looking at the map above showing the management area, please think about where you have taken part in swimming or scuba diving activities over the last 12 months. If you undertake both activities, please select the activity you do most often in each area from the drop down choices. Please input how many times a year you have done the activity at each area and the time of year you tend to do this activity.

	Swimming and diving	Roughly how often have you visited in the past 12 months.	What time of year do you tend to visit?
A. Tamar (Calstock - Morwellham)			
B. Tamar (Cothele)			
C. Tamar (Halton)			
D. Tamar (Weir Quay)			
E. Tavy			
F. Tamar (Kingmill - Ernesettle)			
G. Tamar (Saltash)			
H. Lynher (St Germans)			
J. Lynher (Anthony)			
K. Tamar (Torpoint)			
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P. Open Coast			
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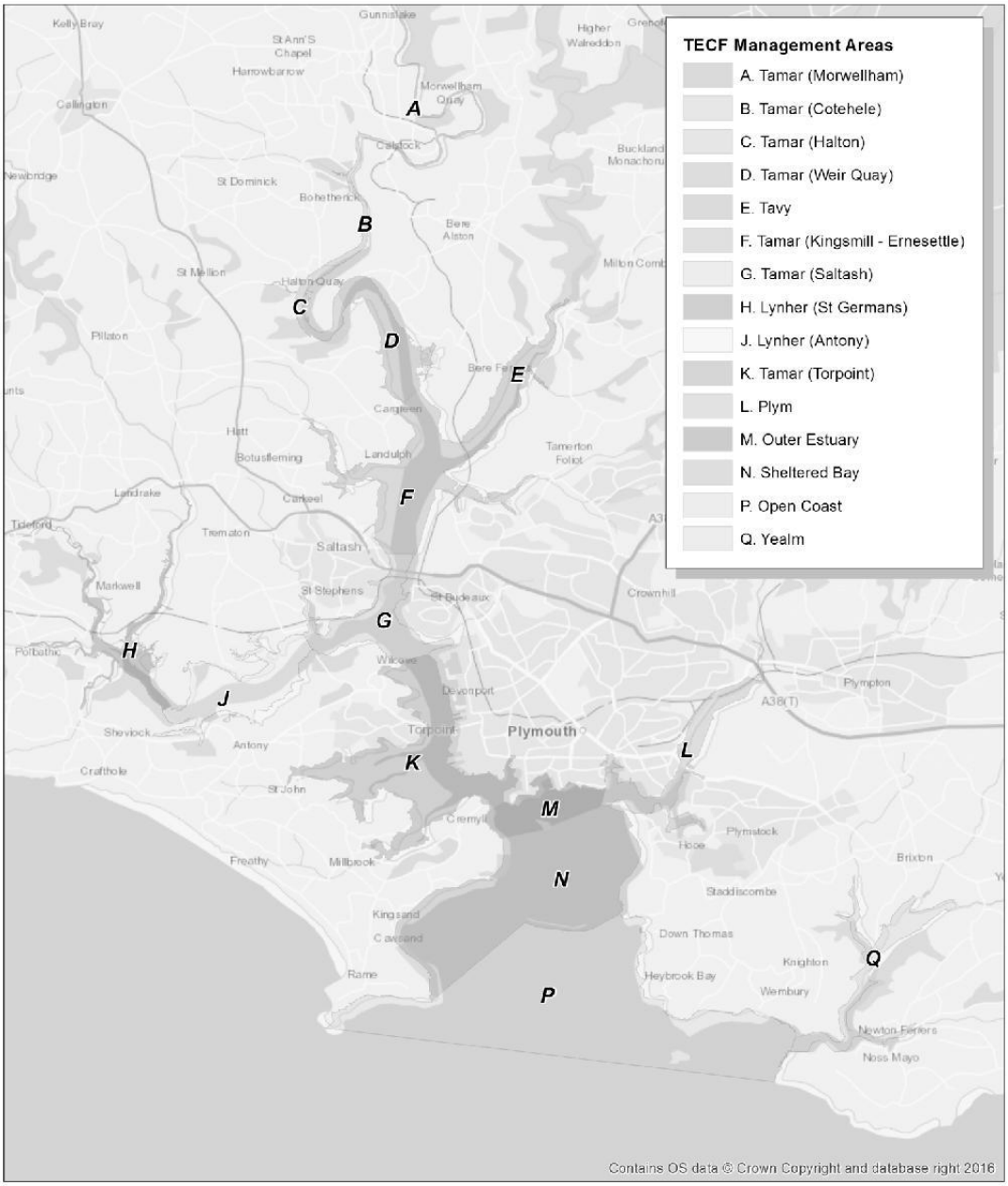
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28. What is your main form of transport for arriving at the sites you use?(Select one option only. If you used more than one mode of transport, please select the main one you used).

- ◯ Car/motorcycle
- ◯ On foot
- ◯ Bus
- ◯ Train
- ◯ Bicycle
- ◯ Passenger ferry
- ◯ Other by water (e.g. canoe, sail boat, motor boat etc)

29. What makes the locations you use attractive to you?(You may select more than one option).

- ☐ Don't know
- ☐ Close to home
- ☐ Others in party/club choose
- ☐ Good/easy parking
- ☐ Feel safe here
- ☐ Refreshments
- ☐ Toilets
- ☐ Attractive scenery/views
- ☐ Right place for activity (e.g. good area for swimming)
- ☐ Particular wildlife interest
- ☐ Suitability given weather conditions
- ☐ Ability to let dog off lead
- ☐ Particular launching facilities
- ☐ Condition of launching facilities

Please add any further reasons you visit the sites you do. Or if you wish to add more detail please do so.

30

30. What features would be necessary to make other locations attractive for you to use instead of those you most frequently visit? (You may select more than one option).

- [ ] No features/nothing
- [ ] More dog friendly
- [ ] Better launching/access to water
- [ ] Better path surfacing/routing
- [ ] Refreshments (e.g. cafe)
- [ ] Better information/maps/boards
- [ ] Measures to control other users
- [ ] Toilets
- [ ] Better/easier parking facilities
- [ ] Cheaper/free parking
- [ ] Closer to home
- [ ] Attractive scenery

Please add any further reasons or comments here.

31. Do you have any further comments about the locations you visit?

31

12. **Part 2. Please answer a couple of questions about yourself**

32. When you visit this area which of the following applies to you?(Select just one option).

- ◯ Living in Devon/Cornwall on a day trip or short visit
- ◯ Living outside of Devon/Cornwall on holiday in the area
- ◯ Living in Devon/Cornwall visiting as part of an organised activity on the site
- ◯ Living outside Devon/Cornwall visiting as part of an organised activity on the site

Other (please specify)

33. If you visited the Plymouth Sound and Estuaries while on holiday, could you please provide the postcode or the name and address of the accommodation, marina or anchoring/mooring area next to the most appropriate accommodation type.

Hotel	
B&B / Guest house	
Staying aboard a boat	
Cottage	
Caravan	
Camping	
Glamping	
Farm	
Holiday park	
Self-catering agency	
Inn / pub	
Holiday village	

34. **Please can you provide your full home postcode.**

(If you are uncomfortable with this please consider just providing the first part of the postcode, or the name of the village / town / city district you live in. This information is extremely important to the study, will not be traceable or published and will not be used for any purpose other than this study).

33

13. Part 3.Options to receive more information and enter our prize draw.

35. **If you would like to be entered into our prize draw please enter your email address below.**

Email Address

36. **Plymouth Sound and the Tamar Estuaries - a very special environment**

Did you know that the waters of Plymouth Sound and the Tamar Estuaries are designated as a "European Marine Site" and are legally protected because of the species and habitats found there?

- ◯ Yes
- ◯ No

37. **Would you like to be informed of the outcomes of this and further work undertaken by TECF (the Tamar Environmental Consultative Forum)?**

- ◯ Yes please
- ◯ No thank you

Please add email contact details to receive electronic updates.