

# Evidence base for designation of Prawle Point to Plymouth Sound and Eddystone Special Area of Conservation

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## **1. Introduction**

### **1.1 Purpose**

1.1.1 This is the Impact Assessment (IA) for the recommendation that the Prawle Point to Plymouth Sound and Eddystone Special Area of Conservation (SAC) is designated. Natural England is recommending designation of the site to the Department for Food, Environment and Rural Affairs (Defra). The site lies in the Western English Channel (in the UK's Western English Channel Regional Sea), off the coast of Devon and Cornwall within 12 nautical miles (nm) of the shore.

1.1.2 The IA informs the government of impacts the site could have on the UK economy<sup>1</sup> and the site's potential environmental and social effects. It should not inform the decision to designate the site (which should be based on the site's Selection Assessment Document). This is because under the European Union's (EU's) Habitats Directive<sup>2</sup> economic or social impacts should not influence selection of SACs or delineation of their site boundaries. However, information provided on the type and level of activities taking place in and near the site may be used to inform management measures for the site.

### **1.2 Rationale for government intervention**

1.2.1 Government intervention is required to protect marine habitats and species. Though some activities (such as fisheries, marine aggregate extraction and wind farms) are regulated this is not necessarily designed to achieve nature conservation objectives. Consequently marine habitats and species may be at risk of degradation or population decline as a result of human activities now or in the future.

1.2.2 The UK has one of the world's richest marine environments: it includes a diversity of habitats and a huge variety of animals and plants. Many species of seabird occur in internationally important numbers in UK waters. Conservation of marine habitats, plants and animals helps improve the environment (a principle of sustainable development<sup>3</sup>). It also contributes to the wellbeing of current and future generations.

1.2.3 The UK government is aiming to recover and protect the richness of our marine environment and wildlife through development of a strong, ecologically coherent and well managed network of marine protected areas that is well understood and supported by all sea users by 2012<sup>4</sup>. Establishment of this network plays a key part in delivering the government's vision for the marine environment of clean, safe, healthy, productive and biologically diverse oceans and seas<sup>5</sup>. The network of marine protected areas (MPAs) will include Special Areas of Conservation (SACs) designated under the European Union (EU's) Habitats

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<sup>1</sup> In keeping with guidance provided by the Defra impacts on the other Member States and other countries are not considered in this Impact Assessment.

<sup>2</sup> Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna.

<sup>3</sup> HM Government, 2005.

<sup>4</sup> Defra, 2009.

<sup>5</sup> Defra, 2002.

Directive and Special Protection Areas (SPAs) designated under the Birds Directive<sup>6</sup>. Further information on the MPA network is provided in Annex 2.

### 1.3 Intervention objectives and intended effects

1.3.1 The UK (as a Member State of the EU) is required to take measures to maintain or restore favourable conservation status<sup>7</sup> of natural habitats and species that are considered to be most in need of conservation at a European level and to introduce robust protection for them. Habitats that are in need of conservation (listed in Annex I of the Habitats Directive<sup>8</sup>) are described as those in danger of disappearance within their natural range, or that have a small natural range, or that are outstanding examples of typical characteristics of the biogeographical regions listed in the Directive<sup>9</sup>. The Directive not only aims to conserve these habitats but also their typical species (the approach adopted for typical species in this IA is set out in Annex 9).

1.3.2 Under the Habitats Directive, habitats (and their typical species) in need of conservation are to be protected by a coherent European ecological network of sites (the 'Natura 2000' network<sup>10</sup>). The network is being identified by the European Commission from lists of national sites proposed by each Member State. The sites are designated as SACs by the Member State once the Commission adopts them into the Natura 2000 network.

1.3.3 The UK's existing contribution to the European coherent ecological network of sites is insufficient for Annex I reef habitat<sup>11</sup>. Additional sites are needed both to represent the range of habitat sub-types in the UK and to ensure sufficient proportion of the UK resource of reefs is included within the network. Natural England has identified additional sites that will contribute towards sufficiency. It considers that all of the sites it is recommending in 2010 (plus a small number of other UK sites still under consideration) will be needed to achieve sufficiency (further details on the process for site identification are provided in Annex 2).

1.3.4 Prawle Point to Plymouth Sound and Eddystone possible SAC<sup>12</sup> (pSAC) has been identified by Natural England as one of the best examples of the range and diversity of reefs in the UK for protection under the Habitats Directive ((based on the habitats' biological quality, geographical location, the proportion of the UK resource of the habitats the site contains, and other factors. For further details see Annex 2). The boundary for the most easterly component of this site when it was consulted on has been revised considerably in light of new scientific evidence on reef habitat in the area. Consequently, that easterly component, Prawle Point to Start Point, will be

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<sup>6</sup> Council Directive 2009/147/EC on the conservation of wild birds.

<sup>7</sup> The conservation status of a habitat is described as favourable when the 'natural range' and area it covers within that range are stable or increasing, and the specific structure and functions which are necessary for its long term maintenance exist and are likely to exist for the foreseeable future, and the conservation status of its typical species is favourable'.

<sup>8</sup> The species are listed in Annex II of the Directive.

<sup>9</sup> Council Directive 92/43/EEC Article 1(c).

<sup>10</sup> which comprises SPAs as well as SACs.

<sup>11</sup> This was endorsed by the outcome of a 'moderation' meeting of the European Commission and Member States for the Atlantic biogeographic region in Galway 24-25 March 2009.

<sup>12</sup> The site is referred to as a 'possible SAC' from public announcement of the site on formal consultation until submission of the site to European Commission.

subject to another public consultation (with an IA focussed on that component) and the decision to designate it will be separate to designation of Prawle Point to Plymouth Sound and Eddystone SAC. In the event that both components are designated, Natural England may recommend that the Prawle Point to Start Point component should form part of the Prawle Point to Plymouth Sound and Eddystone SAC, which would then be renamed.

1.3.5 The Conservation of Habitats and Species Regulations 2010<sup>13</sup> that implement the Habitats Directive provide significant protection to the habitat and its typical species that an SAC aims to protect. Key features of the protection that is provided are (further details are provided in Annex 3):

- Competent authorities<sup>14</sup> are required to consider whether any plan or project (either alone or in combination with other plans and projects) is likely to have a significant effect<sup>15</sup> on any SACs or SPAs when considering whether to consent it. A plan or project can be consented when it has been ascertained that there will be no significant effect.
- If it finds that a plan or project<sup>16</sup> is likely to have a significant effect, the competent authority is required to undertake an 'Appropriate Assessment' with advice from the appropriate statutory nature conservation adviser(s). Appropriate Assessment assesses the potential impacts of the plan or project on achievement of the conservation objectives of the SAC or SPA and is limited to the implications of the plan or project for the specific habitats or species for which the SAC or SPA is designated. This can increase costs to the developer (as developers are responsible for providing and paying for the information required) and can cause delays though the risk of this is reduced if appropriate consultation<sup>17</sup> is instigated early on. Many types of plan or project are required to undergo comprehensive environmental assessment under existing legislation<sup>18</sup>. Under these circumstances Appropriate Assessment under the Conservation of Habitats and Species Regulations and the Offshore Marine Conservation Regulations may not add significantly to assessment costs, since much of the information required for assessment under those Regulations will be available from the wider environmental assessment.
- The competent authority considers this assessment when deciding whether to grant consent. When doing so, it is required to apply the precautionary principle<sup>19</sup> and consequently can only grant consent if it can ascertain that the plan or

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<sup>13</sup> The Conservation of Habitats and Species Regulations 2010 implement the Habitats Directive in English territorial waters within 12 nautical miles (nm) off the coast.

<sup>14</sup> A competent authority is a public body or statutory undertaker that grants consents for regulated activities, for example, the Department of Energy and Climate Change (DECC) is the competent authority for wind farm and oil and gas licensing. It is responsible for taking into account the 2010 Conservation of Habitats and Species Regulations and 2007 Offshore Marine Regulations when it considers consenting activities under the regulations within its remit. It is also responsible for applying the Conservation of Habitats and Species Regulations and Offshore Marine Regulations tests (as required) for plans and projects which may affect how the site's conservation objectives are maintained or reached.

<sup>15</sup> A 'significant' effect is one that brings a significant risk of not achieving the designated site's conservation objectives. Assessment of significance in this respect is established on a case by case basis.

<sup>16</sup> That is not directly connected with or necessary to the management of the site.

<sup>17</sup> Consultation of nature conservation bodies, The Crown Estate, regulatory authorities, non-government organisations (NGOs) and other stakeholders.

<sup>18</sup> Environmental Impact Assessment (EIA) of projects and "Strategic Environmental Assessment" (SEA) of plans and programmes.

<sup>19</sup> The precautionary principle and its application in this context are described in Annex 3.

project will have no adverse effect on the SAC or SPA. This greatly enhances the protection provided for SACs and SPAs compared with some other designations (further details are provided in Annex 3).

- Derogations may be made under very limited circumstances (discussed in Annex 3).

This greatly enhances the protection provided for SACs and SPAs compared with some other designations (further details are provided in Annex 3)

#### **1.4 Features of conservation interest in the site<sup>20</sup>**

1.4.1 The reefs in the Prawle Point to Plymouth Sound & Eddystone site are some of the most biologically diverse in the country and play an important role in supporting important species that are considered rare or are occurring at the limit of their biogeographic boundaries. The site is a mosaic of three areas of reef that meet the Annex I habitat description of 'reef' a total area of approximately 31,525 ha, covering 8,974 ha of reef (Figure 1, which can be found along with the other figures at the end of the main body of the Evidence Base, just before the references).

1.4.2 The outcropping bedrock from Bigbury Bay to Plymouth Sound is characterised in the west by boulders and rocky gullies, fissures, crevices and in the east by rugged inclines, steep faces, slate ridges and overhangs. Waters below a depth of about 20 metres host a range of animal communities including starfish, pink sea fans, soft corals, sponges, sea urchins, tube worms, and fleshy bryozoans<sup>21</sup>. There are large kelp forests close to the coast and in shallow waters.

1.4.3 In the area between Plymouth Sound and Prawle Point, 'The Drop-off', a submerged cliff line, is an important habitat for many rare and scarce species including the football seasquirt, trumpet anemone, carpet coral, pink sea fingers, large populations of the nationally rare sunset cup coral<sup>22</sup> and the most extensive and dense beds of the pink sea fan<sup>23</sup>. The file shell, which is unusual in south-west Britain, is found in areas further offshore. Blackstone Point is especially important for nationally scarce brown seaweed. Stoke Point has an especially rich community of branching sponges, including a nationally rare species, and is the only location known for accumulations of dog cockle

1.4.4 The other area in the site, Eddystone Reefs is an important example of a permanently submerged offshore reef. It comprises flat-faced, angular vertical cliffs and overhangs of schist, siltstone, and limestone. These host a rich biological community that exhibits classic rocky zonation from deep to shallow water. A wide range of species are found here including soft corals, sea cucumbers, sea urchins, sponges, jewel anemones, and kelp parks. The sea fan anemone and sunset cup coral (both nationally rare species) and the pink sea fan have been observed. Hatt Rock attracts deeper water species such as the cushion star (a species rarely found

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<sup>20</sup> For further details see Natural England, 2010.

<sup>21</sup> Royal Haskoning, 2008.

<sup>22</sup> Hiscock & Breckels, 2007.

<sup>23</sup> The pink sea fan is of conservation concern partly because of its infrequent reproduction and therefore likely slow recovery from damage and loss. It is a species listed in the Wildlife and Countryside Act 1981 and is a priority species under the UK Biodiversity Action Plan.

in south-western waters), the slipper lobster, the sea fan anemone, and parchment tube worms.

## **1.5 The options**

1.5.1 Option 1, the preferred option is to designate the SAC. This is assessed relative to a baseline of the situation if the site is not designated (the 'do nothing' option). Other options are not considered here as Natural England is recommending this site as a necessary contribution by the UK to the network of SACs for reefs (based on its biological quality, geographical location, the proportion of the UK resource of the habitat the site contains, and other factors). If this site is not designated there is a significant risk that the European Commission (EC) will judge the UK's contribution to the network of SACs for reefs (listed in the Habitats Directive) to be insufficient, which could lead to infringement proceedings<sup>24</sup>. Known alternatives were considered during the site identification process but not recommended on scientific grounds. Sites of similar quality and overall extent of these habitats were not found and are not currently known to exist. Though the site could be conserved under voluntary agreements or a national designation this would not contribute to fulfilling the requirements of the Habitats Directive.

## **1.6 Overview of the IA**

1.6.1 This IA replaces the IA that was formally consulted on in 2009-10 and has been modified in light of new information and responses to the formal consultation.

1.6.2 It assumes that the site is designated in 2010. Impacts have been assessed in the IA over a time scale of ten years (based on the Impact Assessment guidance and toolkit. It is anticipated that costs and benefits of the site will occur for as long as it is designated, but because these are difficult to predict further into the future (for example, due to changes in technology and regulation), a ten year time frame is used for the analysis. Figures used in the calculations have been rounded for presentation in the text and tables in the Evidence Base. Further details of the method used are set out in Annex 4.

1.6.3 The baseline ('do nothing' option) against which the option to designate the site is assessed is set out in Section 2. This describes current and (known) planned human activities in the site and their potential impact on the reef habitats and their typical species. Section 3 assesses the potential costs and benefits of Option 1, designate the site.

1.6.4 The Figures (showing charts) that are referred to in the text can be found at the end of the main body of this evidence base, before the reference list. Annexes provide further detail of the policy and legislative drivers (Annex 2), further information on the regulation and nature of human activities occurring at the site (Annexes 3 and 5), and the combined costs of the recommended suite of Natura 2000 sites on those activities (Annex 8). A summary of abbreviations used in the IA is provided in Annex 1, Annex 6 is a glossary of fishery and ecological terms, Annex

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<sup>24</sup> The outcome of the 'moderation' meeting of the EC and Member States for the Atlantic biogeographic region, held in Galway 24-25 March 2009 was that the existing UK network of sites for Annex I reef and sandbank habitat is insufficient and additional sites are required.

7 describes the method used to estimate the value of landings from fisheries, and Annex 9 describes the approach to typical species adopted in the IA.

## 2. The Baseline (the 'do nothing' option)

### 2.1 Human activity at the site

2.1.1 This section describes current and proposed human activities<sup>25</sup> that are expected to occur over the next ten years in the area of the Prawle Point to Plymouth Sound and Eddystone pSAC that may be impacted on by the site. It describes activities that are expected to occur if the site is not designated and includes all those that may be impacted on by designation of the site. Human activities in the terrestrial and marine environment (including developments promoted by Local Development Frameworks and their equivalent) that are not likely to be impacted on by the site are not included in this description or in the analysis for this Impact Assessment. For example, some activities will not be impacted on because they do not have a significant mechanism for interaction with the site's interest features<sup>26</sup>. All current and proposed activities that may be impacted on by the SAC have been identified as falling under the following sector headings:

- Fisheries;
- Shipping;
- Recreation;
- National defence;
- Activities that result in land-based sources of pollution.

2.1.2 Descriptions of these activities are provided in Annex 5 and the regulatory processes that manage their potential impacts on or risks to the environment are described in Annex 3. The size of each sector in the UK is discussed in the analysis of cumulative impacts in Annex 7.

2.1.3 Assessment of the potential environmental impacts is informed by the vulnerability of the interest features to pressures caused by human activities. Section 2 ends with an overview of the condition of interest features in the site under the baseline.

#### *Vulnerability of interest features in the site to pressures from human activities*

2.1.4 An initial assessment of the vulnerability of interest features in the site to pressures from human activities is provided in the table in Appendix A at the end of this document<sup>27</sup>. In summary, the reef habitats, their communities and typical species are highly sensitive to removal, abrasion, changes in organic loading and salinity, and selective extraction of species. They are moderately sensitive to smothering, changes in nutrient loading and thermal regime.

2.1.5 In the sections that follow, assessment of the potential impacts of human activities on interest features in the site if it is not designated is informed by the table in Appendix A. This provides the baseline against which the potential impacts of designating the site (Option 1) are assessed later.

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<sup>25</sup> Including outstanding consents and permissions and proposed projects.

<sup>26</sup> 'Interest features' is used throughout the document to refer to the site's features of conservation interest, which are described in Section 1.4.

<sup>27</sup> Natural England, 2009a.

## Commercial fisheries

2.1.6 This section provides an overview of commercial fishing activity in the site, estimates of the scale of activity and its potential impact on the interest features.

### Overview of commercial fishing activity

2.1.7 The description below draws on information supplied by the Marine and Fisheries Agency (MFA)<sup>28</sup> in response to a request from Natural England, information provided by specialists in Natural England and information in consultation responses.

2.1.8 The three components of the pSAC support a diverse range of fishing methods that are of high importance to local fishing communities. They are located mainly within the 6nm fishery limit, an area that is fished only by UK vessels. The westerly tip of the Eddystone component of the site extends beyond 6 nm (Figure 2.1) into an area where Belgian vessels targeting demersal stocks<sup>29</sup> and French vessels targeting lobster, crawfish, scallops and demersal stocks have legal access rights. These vessels fish as close to the shore as possible depending on the season and are mainly 18 to 30 metres long. A brief description of the fishing in the site, according to gear type, is provided below.

2.1.9 **Scallop dredging** occurs over a reasonably large area (that is predominantly sediment) within the site. Sightings data<sup>30</sup> indicate that a total of 25 vessels fished the three components of the site from 2006 to 2009. These are purpose-built vessels, mostly 9 to 15 metres long based in Exmouth, Brixham, Plymouth and Looe. Some vessels displaced by the Lyme Bay Designated Area (Fishing Restrictions) Order (2008) now work very regularly in this area.

2.1.10 **Beam trawling** in the site targets Dover sole which is a high value species, but also take a diverse range of demersal species<sup>31</sup> including cuttlefish, anglerfish, plaice, lemon sole, turbot, brill, john dory, gurnard, red mullet, cod, ling, pollack and haddock. It occurs over a reasonably large proportion of the site (predominantly sediment) but contributes a small proportion to beam trawl landings from the wider area, particularly because of restrictions on fishing by large vessels within 12 nm in the site<sup>32</sup> and within 6nm in half of the site<sup>33</sup>. Sightings data show that from 2006 to 2009 12 beam trawlers fished the components of the site between Plymouth Sound and Prawle Point and 7 fished the Eddystone component. Most of the vessels are over 15 metres (mostly from Brixham, Plymouth and Newlyn); only 3 to 4 smaller beam trawlers (from other ports) work the area with a relatively low level of effort.

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<sup>28</sup> The functions of the MFA have since been absorbed by the Marine Management Organisation (MMO)

<sup>29</sup> Demersal species are those that live on or near the seabed, such as plaice and sole.

<sup>30</sup> From what at the time was the MFA surveillance database.

<sup>31</sup> Demersal species live on or near the seabed, such as plaice and sole.

<sup>32</sup> Beam trawling by vessels with engine capacity of over 221kw is prohibited by a byelaw in the Devon Sea Fisheries (SFC) District.

<sup>33</sup> A byelaw prohibits vessels of over 15.24 metres fishing in the Devon SFC District. 2 beam trawlers of 23m and 25m have "grandfather" rights to fish between 3 and 6nm.

2.1.11 **Demersal otter trawling** in the site targets a mixture of demersal fish including quota species such as cod, haddock, ling, sole and plaice as well as a diverse range of non-quota species such as lemon sole, red gurnard, squid, turbot, brill, conger and bib. Sightings data from 2006 to 2009 show that about 39 demersal trawlers operated in the Eddystone area and 34 fished in the Prawle Point area, though some of the vessels were also equipped with other gear types. The vessels operate out of Exmouth, Teignmouth, Brixham, Plymouth, Looe, Polperro, Mevagissey and more distant ports, particularly Newlyn and Ilfracombe.

2.1.12 **Potting** is broadly split between the fisheries for crab (green, velvet and spider) and lobster, and the whelk fishery. Surveillance data indicates the number of vessels responsible for the majority of fishing effort in the site, though it does not include small cove vessels. It shows that from 2006 to 2009 around 30 vessels were potting components of the site between Plymouth Sound and Prawle Point (which is of very high importance to potting fisheries) and about 14 in the Eddystone component. The fleet is large, centred around Salcombe, Kingswear and Dartmouth but there is also considerable potting activity from Exmouth, Brixham, Plymouth, Fowey, Megavissey and Looe, as well as smaller ports and coves in the area. Most of the vessels are under 15 metres.

2.1.13 **Gill netting** in the site targets mainly sole, bass, cod, pollack and ling. Large mesh nets are used for ray, turbot, brill and anglerfish. Gill net fisheries are dominated by the under 10 metre fleet in the relevant areas. Sightings data from 2006 to 2009 show that about 14 vessels fished in the components of the site between Plymouth Sound and Prawle Point and 12 vessels in the Eddystone component. The vessels fish mostly within 6nm.

2.1.14 **Lining:** A number of vessels work hand lines (mainly for mackerel) from the ports of Polperro, Looe, Plymouth and Brixham. About 12 registered vessels fish using hook and line in the site. The fishery is split between rod and line fishers (who tend to target pollack, cod, ling, and ray amongst other species) and hand line/gurdy fishers that target mackerel.

2.1.15 **Mid-water trawling** is rare in this area. The few pelagic trawlers<sup>34</sup> that do operate in the area are based in local ports and target sprat, herring, pilchard and anchovy at certain times of the year.

2.1.16 The main ports in the area include Mevagissey, Fowey, Looe, Polperro, Plymouth, Salcombe, Dartmouth and Brixham (Figure 2.1). Fisheries are an important aspect of tourist attractions in ports in the area and further afield. Tourists enjoy viewing the boats in port and seeing fishers at work in port and at sea and also purchase fish and seafood from boats, market stalls, shops and restaurants. Fisheries in the site supply the local population with fish and seafood as well as the wider population in the UK and consumers overseas

#### Value of landings

2.1.17 In the absence of audited statistics on fisheries that are specific to the site, a description of landings is provided here for fisheries in the ICES rectangles<sup>35</sup> that

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<sup>34</sup> Pelagic species feed in the water column.

contain the site (29E5 and 29E6, as shown in Figure 2.1). The description uses data from the Fishing Activity Database (FAD) and is summarised in tables in Appendix C. Note that fisheries within the site may differ from those in each rectangle as a whole because the site only covers a proportion of the rectangles (Figure 2.1), distribution of fishing activity is not uniform throughout the rectangles<sup>36</sup> and not all fisheries landings are captured in the FAD<sup>37</sup>. Trawling with bottom contact accounted for 52 percent of the value of landings for the UK fleet from ICES rectangles 29E5 and 29E6 over 2005-8; dredging accounted for a further 17 percent and pots for crustaceans 13 percent (Table C.1). Over this period, scallops accounted for the largest share (17 percent) of the value of the UK fleet's landings from the rectangles, followed by Edible Crab (11 percent) and sole (10 percent) (Table C.2). Vessels 10 to 15 metres long accounted for the largest share (41 percent) of the value of landings by UK vessels from the rectangles; vessels 10 metres and under accounted for 24 percent of the value of landings (Table C.3). Over 2005-8, landings from the rectangles were a significant proportion of the total value of landings for some sections of the UK fleet that fish in the rectangles, including vessels 10 to 15 metres long dredging and trawling with bottom contact and vessels 15 metres and under potting for crustaceans (Table C.4). However, some sections of the fleet fishing in the rectangles also got a significant proportion of their value of landings from elsewhere.

2.1.18 Estimates based on FAD data indicate that the average annual value of landings from the pSAC from 2004 to 2007 for all UK vessels with Vessel Monitoring Systems (VMS)<sup>38</sup> was £0.111m. This has been estimated for the area within the pSAC boundary based on analysis provided by ABPmer (2009) and use of a more refined technique than that used in the consultation IAs (the data and method used are described in Annex 7). For all UK vessels without VMS<sup>39</sup>, estimates based on FAD data indicate average annual value of landings of £0.005m from the site (based on the unlikely but necessary assumption that their value of landings is evenly distributed across the ICES rectangles that contain the site<sup>40</sup>). Combined these provide a rough estimate based on FAD data of average total value of landings from the site of £0.116m per year. This is subject to considerable uncertainty and is likely to be an underestimate<sup>41</sup> for reasons set out in Annex 7 and below. Unfortunately, sufficient alternative audited data are not readily available to provide an alternative estimate. Cornwall Sea Fisheries Committee has indicated<sup>42</sup> that 3 or 4 boats of 7 to 10 metres length fishing in the area have landings of about £250,000.

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<sup>35</sup> Fisheries data in the Fisheries Activity Database is referenced to the rectangles that were introduced by the International Council for the Exploration of the Seas (ICES) to standardise the division of sea areas for use in statistical analysis. Each ICES statistical rectangle is '30 min latitude and 1° longitude in size (approximately 30 nautical miles square depending on its location) and has a unique identifier, such as 34F1 (Source: MFA, 2009).

<sup>36</sup> For example, the inshore area may be associated with smaller rather than larger vessels.

<sup>37</sup> The following may not be captured in the Fishing Activity Database: landings made by fishers operating under 10 metre vessels who process and offer their own fish and shellfish for sale; landings by under 10 metre vessels without shellfish entitlements; landings from Regulating Order Fisheries (in England these are all for bivalves); landings sold to individuals for private consumption (less than 25kg); shellfish that are damaged or die after they are landed (as these are not sold).

<sup>38</sup> In the analysis undertaken by ABPmer (2009b) vessels with VMS were defined as vessels greater than 15 metres in length for landings in 2005-7 and greater than 18 metres for landings in 2004.

<sup>39</sup> Vessels 15 metres or under for landings in 2005-7 and vessels 18 metres or under for landings in 2004.

<sup>40</sup> Distribution of value of landings is not assumed to be the same as for VMS vessels as vessels with VMS are expected to have different fishing patterns to smaller vessels that do not have VMS.

<sup>41</sup> Confirmed by both Devon and Cornwall Sea Fisheries Committees in their consultation responses. The SFC's assessment that estimates provided in the consultation IA are underestimates is also likely to apply here as the method used is the same.

<sup>42</sup> In its consultation response.

Potential environmental impacts if the site is not designated

2.1.19 The impacts of fisheries on interest features over the next ten years if the site is not designated are difficult to predict. This is because of the paucity of information on the likely intensity of fishing over this period and the level of information available on the existing impact of fisheries in the site. If the SAC is not designated, fisheries will not be managed in light of their impact on the interest features in the site. If fishing intensity remains the same (which will not necessarily be the case), fisheries that may be currently detrimentally affecting the condition of interest features in the site may continue to do so. Fisheries that are not impacting on the interest features of the site may continue not to but changes in fishing effort and intensity (for example as a result of changes in technology, displacement and diversification) could result in some of these fisheries having an impact in future. Potential impacts of specific gear types are described in Appendix B at the end of this document.

2.1.20 High intensity of fishing activity in the site could have effects on the ecosystem that are additional to removal of target species. Removal of particular species (such as predatory species) from a marine food web can also have knock on effects on inter-dependent species. For example, if stocks of target species (such as cod, monkfish, plaice, sole, rays, pollack, spurdog, ling, and lobster) are over-exploited then the composition of the species associated with the reef could alter. As some of these species are top predators, their removal (and the consequent reduction in predation pressure) could cause a shift in size in the reef-associated animals. It could lead to greater dominance of smaller mid-water fish and large molluscs and crustaceans such as crabs and alter the overall balance of the ecosystem. The potential impacts of selectively extracting a particular species are complex and little understood at present.

Shipping

*Extent of activity*

2.1.21 The majority of shipping from Devonport and out through Plymouth Sound is naval. Brittany Ferries conduct 500 or so movements a year to and from Associated British Ports Millbay, and fuel and many other cargoes are shipped around the region from the commercial wharves in Cattewater Harbour. The other main port in the vicinity of the pSAC is Salcombe Harbour; its only commercial traffic is fishing vessels. Recent Government forecasts and policy<sup>43</sup> suggest that the ports sector will continue to grow to meet an increasing demand.

2.1.22 SeaZone Hydrosatial data<sup>44</sup> (the source suggested by the Maritime and Coastguard Agency for anchoring areas outside port limits) indicates that there are a number of shipping anchorages within and in the vicinity of this site (Figure 2.2). It is also recognised that smaller vessels (for example local fishing boats) may anchor within the site boundary although to what extent is unknown.

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<sup>43</sup> Department for Transport, 2007 and 2009; Eddington, 2006 and House of Commons Transport Committee, 2007.

<sup>44</sup> The last known update to the data layer that was used occurred on 04/01/2008.

2.1.23 No dredging to maintain shipping channels currently takes place within the site or is planned. A small dredge disposal site (0.04 km<sup>2</sup> in area) that was probably used in the past for small construction projects within the Salcombe Harbour is in the site. No licences for dredge disposal in the site were applied for or consented from 2004 to 2009<sup>45</sup>. There is also a disposal site 6 km to the west of the site.

*Potential environmental impacts if the site is not designated*

2.1.24 Under the current level of operations, the risk is low that non-designation will result in an increase in impacts on interest features through abrasion by vessels and collision of vessels with each other and/or the reefs. There is a medium risk of pollution from shipping in the area outside Plymouth Sound<sup>46</sup>. Ships and local fishing boats could cause significant impacts from inappropriate anchoring on sensitive interest features within the site. Further details of potential impacts are provided in Appendix B at the end of this document.

Recreation

*Extent of activity*

2.1.25 The site is a popular area for diving off boats. Eddystone Reef is particularly well dived and locations along the coastline by Prawle Point are also popular. The Wembury Mewstone is a popular dive and shore diving takes place on a smaller scale all along this section of coast, particularly at Bovisand and Hope Cove (there is a busy dive centre at Fort Bovisand) and to investigate wrecks (discussed under cultural value).

2.1.26 As discussed under shipping, there are a number of marked anchorages within and in the vicinity of the site. The Challaborough Bay slipway (at Bigbury-on-sea), the Beach slip at Sedgewell Cove and the Lifeboat Slip at Inner Hope (at Hope Cove) are adjacent to the site. Within 10 to 15km of the site there are at least five slipways in the Kingsbridge Estuary, one within the Yealm estuary and 16 within the Plymouth Sound/Tamar estuary complex (Figure 2.3). There are seven marinas within 10km of the site (Figure 2.3) and a number of sailing clubs in the vicinity of the site (Figure 2.4).

2.1.27 Recreational angling occurs throughout the site. Eddystone Reef is particularly popular<sup>47</sup> and angling here and around wrecks in the area could increase (areas of wrecks and reefs are naturally good fishing grounds for angling). Species caught include pollack, mackerel, bass, with some conger, wrasse and cod also taken. There is a significant charter angling industry in the area involving commercial (licensed) and non-commercial vessels. For example ten boats work fishing charters from Looe taking an average of ten anglers for 100 trips per year<sup>48</sup>. Spear fishing mainly targeting bass (also pollack) and accessed from the shore takes place on a recreational and small scale throughout the Prawle Point to Plymouth Sound component of the site.

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<sup>45</sup> MFA 2009 data

<sup>46</sup> Safetec, 2000.

<sup>47</sup> Between three and eight vessels angle there in favourable weather (Source: Cornwall Sea Fisheries Committee consultation response).

<sup>48</sup> Source: consultation response.

*Potential environmental impacts if the site is not designated*

2.1.28 Recreational fishing could potentially have a significant impact on the reefs in the site and/or their typical species (details of potential impacts are provided in Appendix B at the end of this document). Further information is required to assess the risk of this impact if the site was not designated.

2.1.29 Anchoring by small vessels could potentially impact on interest features in the site. At the current level of activity, the risk is low that impacts of other recreational activities on interest features would increase if the site was not designated (for further details see Appendix B).

National defence

*Extent of activity*

2.1.30 All of the Eddystone component of the pSAC and about half of the components of the site between Plymouth Sound and Prawle Point overlap with naval training and trials areas. Aircraft fly over the site. The site is near to HMS Cambridge (which is in disposal); the other nearest Ministry of Defence sites are Mount Wise (3km away) and Her Majesty's Naval Base at Devonport (8km away).

*Potential environmental impacts if the site is not designated*

2.1.31 The potential impacts of naval vessels on interest features in the site are the same as those described for shipping (see above and in Appendix B). Firing above water during tests and trials will leave minor amounts of debris on seabed but this is not expected to impact significantly on interest features in the site.

Activities that result in land-based sources of pollution

*Extent*

2.1.32 Toxic and non-toxic pollutants enter the sea from direct point source discharges of effluents or diffuse sources, (such as agricultural run-off via rivers). Discharges can be both continuous and intermittent in nature, but the high dilution that any land-based discharge is likely to receive would reduce the risk of these to interest features in the site. Discharges are controlled through licensing by the Environment Agency.

2.1.33 Assessments made under the Water Framework Directive (WFD) <sup>49</sup> indicate that some coastal waters in and adjacent to the pSAC boundary are at moderate ecological status, but water quality is reported to be of good quality.

*Potential environmental impacts if the site is not designated*

2.1.34 Pollution from the land could potentially lead to changes in the water quality at sea and in turn impact on the resident biology (see Appendix B at the end of this document). However, the WFD will be addressing freshwater and coastal water quality issues and discharges will be controlled under this to meet objectives as specified in the Directive.

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<sup>49</sup> Environment Agency in the South West River Basin Management Plan in 2009.

### Benefits of the interest features

2.1.35 In their current condition a range of benefits are obtained from the reefs and their typical species in the site. If the reefs became degraded or the populations of typical species became depleted as a consequence of not designating the site this could potentially diminish the benefits. Benefits of fisheries and recreation have already been described. Other benefits include:

- **Research and Education:**

- Information on the environment and wildlife is provided at a number of locations in the area with extremely high tourist footfall such as the National Marine Aquarium in Plymouth, the Wembury Voluntary Marine Conservation Area and the South Hams Area of Outstanding Natural Beauty which is active in protecting and interpreting the coastline.
- The area is currently well studied by the Plymouth Marine Science Partnership, which includes collection of long term datasets by the Marine Biological Association, Plymouth University and the Sir Alister Hardy Foundation for Ocean Science.

- **Cultural value:**

- As an island nation, local fishing communities are an important factor in defining an area's character, history and cultural heritage. Currently and in the past the fishing industry and its supporting industries often play a significant role in many small port communities and the surrounding area, contributing towards their cultures and community identities. Family traditions in commercial fishing and the supporting small-scale industries have been passed down over a number of generations and fishers have built up many decades of local knowledge of fishing within their area.
- Wrecks in the site include the Erme Ingot, (Bronze Age Cargo (tin ingots) of a trading vessel, designated for its historical interest) and the Moor Sand (Middle Bronze age (12<sup>th</sup> Century) implements designated for its archaeological significance)<sup>50</sup>. The location of wrecks in the site is shown in Figure 2.3 and details of other wrecks in the site are provided in Appendix D. Though they are generally avoided by fishing vessels, there is some evidence of fishing activity inadvertently damaging wrecks<sup>51</sup>.
- Should cave systems exist in the vicinity of the submerged cliffs off Plymouth Sound and Eddystone reefs these could be of considerable archaeological interest.

- **Option and Non-use Value:** People gain from having the option to benefit in future from interest features in the site even if they do not currently benefit from them. People also benefit from the knowledge that there are good examples of reef habitats in the site.

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<sup>50</sup> Both designated under the Protection of Wrecks Act, 1973. This affords the site with statutory protection from unauthorised access and it is a criminal offence for anyone to do any of the following other than under the authority of a licence: tamper with, damage or remove any part of the wreck, carry out diving or salvage operations or deposit anything that obliterates, obstructs or damages the wreck without first obtaining a licence.

<sup>51</sup> Kingsley, 2009.

## 2.2 Summary of condition of interest features in the baseline

2.2.1 In summary, additional information is needed to assess the impact of commercial and recreational fisheries on the reefs and their typical species. At their current level of activity, there is a low risk that shipping, recreation (other than fisheries), and activities that result in land-based sources of pollution will have impacts on the interest features in the site that increase over the next ten years.

2.2.2 The situation summarised above is reflected in the conservation objectives for the management of Prawle Point to Plymouth Sound and Eddystone pSAC, which are to **maintain** the environmental quality and processes of the reefs and to maintain the extent, physical structure, diversity, community structure and typical species of the inshore and upstanding reefs. This implies that, in general, current activities, plans and projects have not been identified as causing significant damage to the interest features. This could be either because no such damage is occurring or because there is insufficient information on the actual effects of activities on the condition of the interest features.

2.2.3 New activities and changes to current activities are likely to be proposed in the Prawle Point to Plymouth Sound and Eddystone area. These activities could potentially have adverse impacts on the interest features. If the site is not designated, it will be difficult to influence the consenting of plans and projects through, for example, the introduction of effective mitigation measures. The Conservation of Habitats and Species Regulations will not apply as a matter of law to plans or projects that may significantly affect site integrity. For nationally significant infrastructure projects, regulatory authorities would still be required to consult the statutory nature conservation advisers about potentially damaging effects on interest features in the site but less weight would be placed on the assessment of impacts on interest features and securing appropriate mitigation. Also, developers would not be required to demonstrate no adverse effect in the same way (see Annex 3).

2.2.4 Not designating the recommended suite of marine Natura 2000 sites will reduce the likelihood that government will meet its aims for the marine environment. The government would fail to deliver its responsibilities under the EU Birds and Habitats Directives (to maintain or restore Annex I habitats and the populations of Annex I and regularly occurring migratory species).

2.2.5 The recommended suite of sites will form an important component of the UK's MPA network which will make a significant contribution towards maintaining and restoring resilience of the marine ecosystem. A key component of the network will be missing if the sites are not designated. This will increase the risk that the marine ecosystem will undergo irreversible change as a result of natural perturbations and human activities particularly in the face of climate change.

### **3. Costs and benefits of Option 1: Designate the site**

#### **3.1 Approach adopted to assess impacts**

3.1.1 This section describes key features of the approach that has been used to estimate the impacts of the policy option (designate the SAC). It is followed by the hypothetical management measures used for the analysis, estimates of the costs and benefits and a summary of these.

3.1.2 The costs and benefits of the SAC will result from the management measures that are applied to the site. These are not yet known; the process of developing and implementing management measures follows designation of the site. Competent authorities will be required to assess the impacts on interest features in the site of any activity they consent and to review outstanding consents and permissions with a view to achieving the site's conservation objectives (as discussed in Annex 3). Activities that do not result in pressures to which the interest features are sensitive may continue at their current levels of spatial and temporal intensity. The intended outcome of the management measures is to prevent further degradation and help deliver restoration of the interest features in the site where damage to them has occurred.

3.1.3 To estimate the costs of the management measures scenarios have been used for the IA that describe a range of hypothetical management measures (discussed further below).

3.1.4 In future, if new information suggests that the condition of the interest features in the sites has deteriorated, or is unfavourable then restoration will be required; it is likely that more significant restrictions on activities would be needed to achieve this. As the likelihood of these circumstances arising is at present unpredictable, the implications of a 'restore' conservation objective are not analysed further in this IA.

3.1.5 This section estimates the potential costs and benefits of designating the site compared with the baseline (the 'do nothing' option). These are subject to significant uncertainty because:

- there is uncertainty about what fishing activity occurs in the site;
- there is a high degree of uncertainty about the effects of activities on the interest features;
- it is not yet known what management measures will be developed and implemented for the site;
- it is difficult to know how the management measures will impact on operators, how operators will respond, the economic costs of the impacts and what the wider effects will be;
- it is difficult to predict how the condition of the interest features and wider marine environment will change with designation of the SAC;
- there is limited evidence on the benefits that will arise.

### *Hypothetical management measures*

3.1.6 The hypothetical management measures for the SAC developed for the purposes of this analysis are presented below in Table 3.1. Development of these was informed by:

- the sensitivity of interest features (including typical species<sup>52</sup>) in the site to pressures from human activities (Appendix A),
- current and proposed levels of activities in the site (Section 2),
- the potential environmental impacts of those activities if the site was not designated (Appendix B, summarised in Section 2),
- and sector specialists in Natural England who drew on their knowledge of licence conditions for plans and projects.

3.1.7 Because the measures that will apply to the site are not known, a range of plausible hypothetical measures is used for the analysis, described by a minimum and maximum scenario. It is assumed that the true costs of the final management measures that are developed for the site will fall within the range. The management measures that are implemented will be determined by the relevant authorities<sup>53</sup> (as described in Annex 3) and may differ from those used for this analysis.

3.1.8 The minimum scenario involves the smallest change in activities that may plausibly be needed compared with the baseline and therefore presents the minimum potential effect on activities. It assumes that all activities, plans and projects are deemed to have no likely significant effect on interest features in the site with the exception of dredging and trawling with bottom contact which are assumed to impact on the reef.

3.1.9 The maximum scenario is at the other end of the scale: it involves the maximum change in activities that plausibly may be needed. It assumes that activities, plans and projects that could potentially impact on interest features in the site are deemed to have a likely significant effect. Consequently Appropriate Assessment is required for plans and projects and therefore costs for competent authorities are likely to increase (discussed under other costs to the public sector at the end of Section 3.2). The management measures used for this scenario are precautionary to avoid under-estimation of costs. They are used to estimate an upper limit for plausible costs (not the worst case scenario).

3.1.10 The two scenarios are used to reflect the range of management measures that may be required. The benefits are therefore assumed to be the same for both.

3.1.11 The management measures used for the analysis are generic in that they could apply to any site that is being designated for reefs with conservation objectives of 'maintain'. However, they are specified only for activities that are currently known to occur or are expected to occur at a significant level in the site.

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<sup>52</sup> See Annex 9 for the approach adopted in the IA for typical species.

<sup>53</sup> Relevant authorities are statutory bodies with powers or functions that have or that could have an impact on the marine area within or adjacent to the site (for example, local authorities, harbour authorities, the environment agency, SFCs /IFCAs). They have powers to establish a management scheme for marine SACs and SPAs and have a general duty under the Conservation of Habitats and Species Regulations and Offshore Marine Regulations to exercise their functions so as to further the conservation of marine SACs and SPAs. Some relevant authorities are also competent authorities.

<b>Table 3.1 Summary of the “minimum” and “maximum” management scenarios that are used in the analysis for Prawle Point to Plymouth Sound and Eddystone SAC.</b>	
<p><b>“Minimum” scenario:</b>  <i>assumes that aside from the specified exception that all activities, plans and projects have no likely significant effect on interest features in the site.</i></p>	<p><b>“Maximum” scenario:</b>  <i>assumes that the activities, plans and projects listed below are deemed to have a likely significant effect on interest features in the site. Consequently Appropriate Assessment is required for plans and projects.</i></p>
<p><u>Outstanding consents &amp; permissions &amp; existing fisheries:</u></p>	
<p><b>Fisheries (further details are provided in Section 3.2:</b>  <ul style="list-style-type: none"> <li>▪ closure to all dredging and trawling with bottom contact.</li> </ul> </p> <p><b>Sectors other than fisheries:</b>                      No change</p>	<p><b>Fisheries (further details are provided in Section 3.2:</b>                      as for minimum scenario plus:  <ul style="list-style-type: none"> <li>▪ Ban landings of berried lobsters.</li> <li>▪ Minimum and maximum landing size for crustaceans.</li> <li>▪ Limits on effort for specified gear types.</li> </ul> </p> <p><b>Recreational angling:</b>                      If angling is found to significantly impact on interest features in the site, controls may be required.</p> <p><b>All sectors:</b>                      Higher likelihood of prohibition of anchoring over sensitive interest features except in emergency circumstances.</p>
<p><u>New plans or projects:</u></p>	
<p>No change</p>	<ul style="list-style-type: none"> <li>▪ Businesses may face delays to consents if Appropriate Assessment is required and increased cost of additional survey.</li> <li>▪ It is likely that more projects would not pass the hurdle of no ‘adverse effect’.</li> <li>▪ Businesses may make adjustments to projects proposed relative to the baseline to ensure no significant effects.</li> <li>▪ Businesses are also likely to invest more in proposal assessment.</li> </ul>

3.1.12 The sections that follow estimate the economic cost of the impact of the SAC on each sector of human activity in the site in turn, followed by the costs of managing the SAC. The impact of designating the site on existing activities, outstanding consents and permissions (which will be subject to Review of Consents) and proposed projects that are expected to occur over the next ten years (though it is possible that these may not be funded or consented) is assessed. These estimates do not pre-judge Review of Consents, Environmental Impact Assessments or Appropriate Assessments (AAs) (discussed in Annex 3) for individual plans and projects and have been developed drawing on past experience. If Appropriate Assessment is required this could delay consent, but the risk of this is reduced if appropriate consultation<sup>54</sup> is instigated early on. Costs are assessed for known outstanding consents and permissions and known existing fisheries.

<sup>54</sup> Consultation of nature conservation bodies, The Crown Estate, regulatory authorities, non-government organisations and other stakeholders.

3.1.13 An overview of the generic costs that could be incurred is provided in Annexes 3 and 4. The combined and strategic impact on each sector of the suite of proposed marine Natura 2000 sites is considered in Annex 8.

## 3.2 Costs

### Commercial fisheries

3.2.1 The impact of the site on the contribution that fisheries make to the UK economy is estimated here in terms of the impact on gross value added (GVA) for the sector<sup>55</sup>. Ideally this would be estimated as the change in GVA that arises from the impacts of the site on costs and revenue for fishers arising from changes in fishing patterns, steaming time, species targeted, landings, gear types used, and also from vessels leaving the fleet. Displacement of fishing effort is likely to result in impacts on fishers operating outside as well as within the site. Regrettably such detailed analysis was not feasible. Instead the impact on GVA is estimated based on:

- the proportion of the value of landings in the site (by the UK fleet) that could be affected by the hypothetical management measures<sup>56</sup>. For the purpose of the analysis, largely arbitrary hypothetical estimates have been provided of the level of restriction provided (and the value of landings affected) by the hypothetical management measures and are precautionary to avoid under-estimation of the costs. These have been crudely informed by the outcome of previous implementation of similar management measures. The value of landings affected by a measure is estimated based on contribution to value of landings made by the gear type (or landings of species) that the measures aims to restrict. The contribution is calculated using FAD statistics for landings by gear type (Table C.1) and by species (Table C.2) for the ICES rectangles that contain the site. These are very rough estimates as the site only occupies part of the rectangles and fishing is not uniform throughout the rectangles.
- the value of landings in the site (by the UK fleet), presented in Section 2. As discussed in Annex 7 these are rough estimates, not least because as fishing by non-VMS vessels is not distributed evenly throughout the rectangles and the value of shellfish landings by vessels under 10 metres may not be fully reflected in the data.
- estimates of GVA as a proportion of earnings from fisheries for the vessels in the UK fleet.

Finally, potential social impacts are considered.

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<sup>55</sup> GVA measures the contribution to the economy of each individual producer, industry or sector by estimating the value of output (goods or services) less the value of inputs used in that output's production process (Source: Office for National Statistics, <http://www.statistics.gov.uk/cci/nugget.asp?ID=254>). The source that is used here (Anderson & Guillen, 2009) estimates GVA for the UK fleet in terms of the sum of remuneration of labour (crew) and capital (owner), calculated as income minus all expenses (fuel, repairs, variable and fixed costs) except crew cost.

<sup>56</sup> As set out in Section 3.1 a range of theoretical management measures has been used here to so that the potential impacts of the designation can be assessed. This is because the management measures for the site are not yet known; they will be developed by the relevant authorities and may differ from those set out here. The involvement of local fisheries stakeholders in the design of any new management measure for new Natura2000 sites will help ensure compliance and reduce enforcement costs.

3.2.2 The assessment assumes the measures apply to the whole site. In practice, where management measures are needed they may be applied only to interest features for which they are required but the feasibility of doing this depends on enforcement considerations. The cost of the measures estimated here may therefore be overestimated. However, if enforcement capacity is not refined enough to discriminate implementation of measures required only in small areas of the site, those measures may need to be implemented in other areas of the site (where they are not necessary).

3.2.3 The analysis assumes that new management measures are not applied if the necessary controls are already in place. An overview of existing relevant byelaws that apply to the site is provided in Appendix E at the end of this document. If the government decides that national and local management measures are required to protect stocks of brown crab and lobster (which it is currently considering), many (if not all) of the measures suggested below to manage brown crab and lobster fisheries may not be necessary (though additional measures may still need to be sought between 6 and 12 nm where appropriate).

Value of landings affected in the minimum scenario

3.2.4 The following hypothetical management measure is used for the purposes of the analysis to estimate the impact on fisheries in the minimum scenario:

**Measure 1:** *Closure of the site for all towed demersal gear (including rock-hopper, otter, beam and scallop/shellfish dredging and trawling). This aims to prevent damage to the Annex I sea-floor habitats for which the site is designated and stationary species*

3.2.5 The value of landings from trawling with bottom contact as a proportion of total landings within the two rectangles that contain the site (from Table C.1) is multiplied by the value of landings in the site (from Section 2.1) to estimate the level of landings potentially affected by this measure: approximately £0.061m per year. Devon Sea Fisheries Committee (SFC) has indicated that it is likely to be an underestimate; it estimates that £0.109m<sup>57</sup> of landings per year would be affected in the area of the site in Devon alone that was formally consulted on (excluding Eddystone). This information is not used here because the site boundary has subsequently been revised<sup>58</sup>.

3.2.6 The same approach is used for dredging (and to estimate the value of landings affected for each measure); it is estimated that approximately £0.020m per year of landings from dredging could potentially be affected. Information provided by Devon SFC and other fisheries stakeholders indicate that this is likely to be an underestimate. Devon SFC estimates that £0.301m of landings per year<sup>59</sup> for scalloping

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<sup>57</sup>This is based on Devon SFC sightings data which indicates that seven vessels under 10 metres and 13 vessels over ten metres are active within the Devon component of the site. The estimate made by Devon SFC assumes that four under 10 metre boats and six over 10 metre boats spend only 10 percent of their time within the boundary of the site in Devon that was consulted on. The estimate assumes average annual landing values of £53,600 for under 10metre vessels and £146,200 for over 10metre vessels.

<sup>58</sup> In light of new scientific evidence on interest features in the site.

<sup>59</sup> This is based on Devon SFC sightings data which indicates that seven vessels under 10 metres and 13 vessels over ten metres are active within the Devon component of the site for the boundary that was consulted on. The

alone would be affected in only the area of the site in Devon for the boundary that was formally consulted on. Other fisheries stakeholders<sup>60</sup> have indicated that between them, two vessels land £0.132m of scallops per year from the Eddystone component of the site per year. These data have not been used here for the reasons given above.

3.2.7 In total, FAD data indicate that approximately £0.081m of landings per year could be affected by the measure. However, there are byelaws in place (Appendix E) which significantly restrict demersal trawling and scallop dredging from much of the pSAC which further affects the accuracy of this estimate. Also the proportion of trawling with bottom contact occurring at the scale of the ICES rectangles is very unlikely to represent the proportion of trawling within the site as bottom trawling tends to occur further from shore. The estimate is also subject to considerable uncertainty for reasons set out in Section 2.1 and Annex 7. Sea Fisheries Committee data may provide a more accurate indication of the value of landings affected, but unfortunately this was not available for the entire site and could not be obtained within the required time frame for the revised boundary.

#### Value of landings affected in the maximum scenario

3.2.8 The following hypothetical management measures (plus measure 1 above) are used for the purposes of the analysis to estimate the impact on fisheries in the maximum scenario:

**Measure 2:** *Ban landings of berried lobster. This aims to ensure that the reproductive capacity of lobsters is maximised. It aims to protect typical species of the site.*

3.2.9 Landing of berried lobsters is also already banned by byelaws within 6nm which cover most of the site. It is therefore assumed that this measure would have negligible additional effect compared with the baseline.

**Measure 3:** *Cap on the number of pots deployed for crustaceans; reduction by 50 percent. This measure aims to reduce the number of crustaceans taken from the site<sup>61</sup>. It aims to protect typical species of the site.*

3.2.10 A cap reducing the number of pots by 50 percent is assumed to reduce the value of landings from pots by 50 percent and so could potentially affect approximately £0.008m of landings per year. Cornwall and Devon Sea Fisheries Committee has indicated that this is likely to be an underestimate<sup>62</sup>.

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estimate that these boats spend only 10 percent of their time within the Devon component of the site (sightings data indicates that under 10 metre vessels spend 20 percent and over 10metre vessels spend 5 percent of their total fishing time within this area of the site). The estimate assumes average annual landing values of £35,400 for under 10metre vessels and £387,400 for over 10metre vessels.

<sup>60</sup> In their consultation responses.

<sup>61</sup> This is a hypothetical scenario used for the purposes of the Impact Assessment. A more likely management scenario would be a cap on existing potting and netting levels. This scenario would be based on the assumption that if management of the site required reduction in mobile gear activity, a cap on potting and netting levels might be required to limit the impacts of fishers who were trawling/dredging and have diversified to potting (as greater levels of static gear activity could increase impacts on the site's interest features). Such a cap would be accompanied by appropriate monitoring of typical species to adequately ascertain the true impact of these activities upon them.

<sup>62</sup> One the grounds that a single vessel working 670 pots in the Prawle Point to Plymouth area earns £72,000 a year and that Devon SFC survey data indicate that 12 vessels pot within the site boundary that was consulted on.

**Measure 4:** *Cap on landings from all gear with any bottom contact excluding towed demersal gear and potting; landings reduced by 50 percent. This measure (along with Measure 1) aims to prevent damage to the Annex I sea-floor habitats for which the site is designated and stationary species.*

3.2.11 It is assumed that the cap on landings would not exceed 50 percent, reducing landings from netting and lines with bottom contact by a similar amount. This measure is estimated to affect approximately £0.002m of landings per year. Devon SFC has indicated that this is likely to be an underestimate<sup>63</sup>.

**Measure 5:** *Cap on mortality consequent of all gear types without bottom contact to reduce fishing mortality(targeting effort avoids discarding bycatch); mortality reduced by 50 percent. This measure aims to reduce biomass of typical species taken from the site.*

3.2.12 The cap could be up to 50 percent of current landings for all gear without bottom contact, affecting 50 percent of the value of landings for these gears. This could affect approximately £0.007m of landings per year.

**Measure 6:** *Increase minimum landing size and introduce maximum landing size for crustaceans. The minimum landing size aims to help crustaceans reach maturity and breed and the maximum landing size aims to enable presence of larger crustaceans in the site<sup>64</sup> and therefore protect typical species of the site.*

3.2.13 Crustaceans may have a functional role in an ecosystem to the extent that they determine the community of plants and animals. An example of this is the predation of sea urchins by lobsters; where lobster populations are reduced, sea urchins proliferate and kelp can be overgrazed<sup>65</sup>. Evidence from North Eastern Sea Fisheries Committee suggests that where landings of lobsters are high, as is the case in this site, there is a low abundance of lobsters that are bigger than the minimum landing size<sup>66</sup>. As the largest lobsters and crabs, at an individual level, can make the greatest contribution to the function of the ecosystem, these size classes should be represented within a healthy community.

3.2.14 The existing minimum landing size for crustaceans that applies to areas in the site within 6nm would be increased by this measure. The maximum landing size would be likely to be variable and it is not currently known what size would be appropriate. It is estimated for the purposes of this analysis that the combination of these measures might affect 25 percent<sup>67</sup> of landings of crustaceans, approximately

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<sup>63</sup> On the grounds that one over 10 metre vessel working within the Prawle Point to Plymouth area lands £20,490 of fish from netting and a vessel under 10 metres lands £6000 of fish and there are ten vessels working within the boundary of the site in this area that was consulted on.

<sup>64</sup> Cornwall SFC evidence indicates that larger shellfish are found offshore suggesting the modal size of crustaceans can differ within a small area, potentially irrespective of fishing pressure.

<sup>65</sup> Breen & Mann, 1976.

<sup>66</sup> Bannister, 1999.

<sup>67</sup> As with all other estimates of reductions to landings, this reduction is currently largely arbitrary, as until a detailed understanding of the size structure of the lobster population and subsequent effect of a defined maximum size is gained, it is not possible to accurately quantify the consequent reduction in landings. Devon SFC has indicated that an introduction of a maximum lobster landing size of 125mm would lead to a 5% reduction in landings to a value of £269,700 for the site boundary that was consulted on (calculation details were not provided).

£0.004m per year. Devon SFC has indicated that this is likely to be an underestimate<sup>68</sup>.

**Application of all measures:**

**Table 3.2 Estimated value of landings by UK vessels affected by application of all hypothetical management measures (assuming average value of landings from the site of £116k)\***

Category of gear type	Landings for each gear type as a percentage of value of landings by UK vessels (a)**	Management measures that affect landings	Percentage of value of landings by UK vessels affected by application of all measures		Value of landings affected (£m per year) ***
			Landings by that gear type (b)	Landings by all vessels fishing in the site (a x b)	
<b>Minimum scenario</b>					
Trawling with bottom contact	52%	1	100%	52%	0.061
Dredging	17%	1	100%	17%	0.200
Total				70%	0.081
<b>Maximum scenario:</b>					
Trawling with bottom contact	52%	1	100%	52%	0.061
Dredging	17%	1	100%	17%	0.200
Trawling with no bottom contact	7%	5	50%	4%	0.004
Netting with bottom contact	2%	4	50%	1%	0.001
Netting with no bottom contact	5%	5	50%	2%	0.003
Lines with bottom contact	1%	4	50%	1%	0.001
Lines with no bottom contact	0%	5	50%	0%	0
Pots (Crustacean)	13%	2, 3 & 6	50%	7%	0.008
Other pots		-	0%		0
Other		-	0%		0
Total for all gear types	97%			84%	0.098

\* For details see Section 2.1. Note that figures in this table are rounded so may not add up to the total.

\*\* For vessels fishing in the ICES rectangles that contains the site (Average for 2005-8. Source: Fishing Activity Database, data supplied by the MFA. For details see Table C.1).

\*\*\* Calculated as a x b x £116.045k.

3.2.15 The impact of applying all of the hypothetical management measures is not the sum of the impacts of the individual measures estimated above because some of the measures overlap. It is assumed that if the control that is sought by one measure (for example restrictions on potting under measure 6) is being achieved by another measure (such as the restriction on potting sought under measure 3), the control is not increased further. However, for controls that are not duplicated (for example,

<sup>68</sup> On the grounds that there are 12 vessels fishing crab pots within the site boundary in the Prawle Point to Plymouth area that was consulted on. These have an average annual landings value of £59,944 per vessel. This information is not used here because the site boundary has subsequently been significantly revised.

controls for different fisheries) the effects of all measures are assumed to be additive. For each gear type, the impact of combined application of all of the measures in the maximum scenario is set out in Table 3.2. This indicates the measures that restrict each gear type and estimates the percentage of the total value of landings by that gear type that would be affected and the value of landings by that gear type (and by all gear types) that would be affected.

3.2.16 The sum of the percentage of value of landings affected by each gear type in Table 3.2 gives the total percentage affected in the minimum and maximum scenarios: 70 percent and 84 percent respectively. It is estimated based on FAD data, that approximately £0.081m per year could be affected in the minimum scenario and £0.098m in the maximum scenario if the hypothetical management measures were all implemented. Note that this is subject to considerable uncertainty and may be an underestimate for reasons set out in Section 2.1 and Annex 7.

### Impact on the fishing sector

3.2.17 Fishing businesses would adapt to any additional management measures in different ways and it is difficult to predict whether and to what extent the above estimates of landings potentially affected would translate into a net reduction in income to the fishing sector. This section considers the potential for businesses to adapt and estimates the direct impact of the measures on the fishing sector. Further details on the potential impacts are provided in Appendix G at the end of this document.

3.2.18 It is assumed here that the hypothetical management measures used for the analysis may reduce the contribution that fisheries in the area make to the UK economy to some extent. In the absence of more detailed information on the impacts that would arise it is assumed that the entire value of landings affected is lost and not replaced. Consequently the impact on the economy is the loss in GVA from these landings. Landings from outside the site for vessels that fish in the site are not assumed to be lost as well as it is assumed that other fishing businesses would make these landings.

3.2.19 The average GVA for the UK national fleet is estimated to have been 40% of total fleet earnings for 2005-7 inclusive<sup>69</sup>. A figure for the national fleet is used here because of the high margin of error involved in the estimates that are being used<sup>70</sup>. Using this, Table 3.3 estimates the cost of the impact of the site on fisheries based on the impact on GVA.

3.2.20 The economic costs of impacts of the SAC on fisheries are roughly estimated to have a present value<sup>71</sup> in the range of £0.282m to £0.340m over the 10 year assessment period (for details see Table 3.3). There may be additional costs relating to impacts on landings and on the fishing industry not captured in the data used for

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<sup>69</sup> Source: EC Annual Economic Report on the European Fishing Fleet (Anderson & Guillen (2009).

<sup>70</sup> Estimates of GVA as a percentage of earnings can be estimated for a number (but not all) segments of the UK fleet using data from Curtis *et al.* (2010).

<sup>71</sup> This is the total value of all the costs over the 10 year assessment period (2010 – 2019) adjusted for the timing of their incidence because as a whole, society prefers to defer costs to future generations (and to receive goods and services sooner rather than later). This adjustment is achieved through discounting (using a discount rate of 3.5%).

the analysis. Once the fisheries management measures that will be adopted for the site are known, advice will be sought from SFCs / Inshore Fisheries and Conservation Authorities (IFCAs)<sup>72</sup> and the Marine Management Organisation (MMO) on the estimated loss of GVA that will arise from the impact on fisheries and potential social impacts<sup>73</sup>. This will result in a better informed assessment than it has been possible to provide here.

<b>Table 3.3 Estimated economic costs of impacts of the SAC on fisheries</b>		
<i>"Minimum" scenario:</i>	<i>Assumptions</i>	<i>Costs</i>
<u>Existing activities</u> <ul style="list-style-type: none"> <li>▪ Closure to dredging and trawling with bottom contact.</li> </ul>	Assumptions set out in text above. Loss of GVA is estimated as 40% of the value of landings affected (£0.081m per year) plus impacts on fisheries' contribution to the economy that are not included in the estimate.	£0.033m per year plus unknown costs.
<i>"Maximum" scenario:</i>		
<u>Existing activities</u> <ul style="list-style-type: none"> <li>▪ Impacts from a collection of management measures</li> </ul>	Assumptions set out in text above. Loss of GVA is estimated as 40% of the value of landings affected (£0.098m per year) plus impacts on fisheries' contribution to the economy that are not included in the estimate.	£0.039m per year plus unknown costs.

Potential social impacts and impacts on the local and regional economy

3.2.21 In both the minimum and maximum scenarios the estimated reduction in income to fishing businesses could potentially result in negative social impacts and impacts on the local and regional economy. Fisheries stakeholders have indicated<sup>74</sup> that if the management measures used in the IA were applied, fishing trips would need to become longer. This could negatively impact on quality of life for fishers and their families and could have implications for crew safety particularly if small inshore boats respond by fishing beyond 6nm. Fisheries stakeholders are also concerned that the SAC could impact on vessels with mobile gear that currently use a corridor of shallow inshore waters in the area to fix stuck gear (that cannot be hauled). The impacts of the site on fishing businesses could reduce demand for services such as fish processing, packaging, storage and transport, as well as demand for supplemental services such as vessel and gear maintenance. Some ports could be affected by reduction in landings and a decrease in income from fisheries. Ports that could be affected are listed in Section 2.1.

3.2.22 Fisheries stakeholders<sup>75</sup> indicated that the majority of vessel earnings from the ports of Looe, Plymouth, Polperro, Fowey, Megavissey are from the pSAC area. They

<sup>72</sup> Sea Fisheries Committees will be replaced with Inshore Fisheries Conservation Authorities (IFCAs) in April 2011. The limits of the jurisdiction for IFCAs have not yet been decided.

<sup>73</sup> This could potentially be informed by research funded by Defra, due to be completed in May 2010, that will provide more detailed information on fishing effort by under 15 metre vessels within 6nm.

<sup>74</sup> In consultation responses and discussions with Natural England.

<sup>75</sup> In their consultation responses.

indicated that the hypothetical management measures could significantly impact on these boats and their crew and affect associated businesses including fish markets, harbours, fish merchants, boat engineers, chandlers, fishing gear riggers and diesel suppliers. Devon SFC estimates that the measures could result in 80 job losses in the area. Under the maximum scenario it has been suggested that the brown crab industry would become economically unviable, with knock on effects on the export industry for brown crab to Europe and China.

### Shipping

3.2.23 No additional measures for vessels passing through the site are likely to be required for the current level of shipping movements and vessel sizes<sup>76</sup>. Restrictions may need to be introduced to ships anchoring within the site (these would not apply in emergency circumstances) if anchoring is demonstrated to be impacting on the interest features. If anchoring sites are changed this may bring the vessels closer to or further away from the coast depending on where the present anchoring areas are situated. This could impact on steaming times.

### Recreation

3.2.24 Hypothetical management measures for recreational sea angling are not suggested here because of insufficient information on its impact on interest features in the site. If angling is found to be significantly impacting on fish typical of the reefs controls such as bag limits that restrict the number and size of fish extracted by recreational anglers might need to be introduced. If they were required, these measures could lead to a reduction in sea angling activity at the site and associated economic activity. However, there is so much uncertainty about whether they would be required and the net impact that they would have on angling in the area that this is not investigated further at this stage.

3.2.25 As discussed for shipping, if anchoring by recreational vessels is found to be impacting on interest features in the site, restrictions on anchoring may need to be introduced (these would not apply in emergency circumstances). Additional management measures for other recreational activities are unlikely to be necessary due to the fairly low impacts of these activities.

### National defence

3.2.26 As for shipping, no additional measures are likely to be required to manage naval vessels transiting through the site given the current level of vessel movements and vessel sizes. If anchoring by naval vessels is found to significantly impact on the reefs and their typical species, restrictions may be required (these would not apply in emergency circumstances).

### Activities that result in land-based sources of pollution

3.2.27 The Environment Agency's ongoing Review of Consents that may have a likely significant effect on existing SACs and SPAs<sup>77</sup> will need to include consents that may

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<sup>76</sup> Designation of this site is not likely to significantly impact on a ships right of innocent passage and freedom of navigation in seas around the UK. Equipment carried and used by ships for the safe navigation (such as echo sounders) would not be affected by the site designation.

<sup>77</sup> Mostly inland or extending to estuaries and some coastal waters including the nearby Plymouth Sound and Estuaries SAC, and the Tamar Estuaries Complex SPA.

affect Prawle Point to Plymouth Sound and Eddystone SAC. The results of this review could lead to further costs to industry to address any impacts from discharges (which could include capital costs associated with improved effluent treatment and increases in operational costs<sup>78</sup>). It is unlikely that action on discharges will be required to protect interest features in the site. Current coastal water quality as reported in the Environment Agency River Basin Management Plans should be sufficient to support conservation objectives for the interest features designated in the site.

### Costs of managing the SAC

3.2.28 For the purposes of this analysis it is assumed that a management group (comprising representatives from relevant authorities) will be established for the site<sup>79</sup>. Once the site is designated, the management group would be responsible for establishing operations that may cause deterioration to interest features in the site (based on advice from the statutory nature conservation advisers) and evaluating current use against the conservation objectives. From this it would develop an action plan with targets for management of the site then implement this through agreements, working practices and byelaws, for example. It would also establish and carry out a monitoring plan for periodic assessment and review of the site (which will consider requirements for base line data, compliance monitoring and condition monitoring) in consultation with the statutory nature conservation advisers.

3.2.29 The management group would probably meet twice a year and its members would also provide advice during the year on management measures that might be needed, surveillance, the annual review, plans and projects and report any damaging activities. It should<sup>80</sup> also meet periodically to consult with representatives from the advisory groups and interest groups. Full public consultation should be undertaken on any proposals for managing the site and wide publicity should be given at appropriate stages<sup>81</sup>. It is assumed for the purposes of the analysis that an advisory group (of representatives of other stakeholders including local interests, user groups and conservation groups) would also be formed (though again, this is not required).

3.2.30 The organisations involved will incur costs from the contributions that they make to the management group and advisory group. Based on inputs made for the Wash and North Norfolk Coast SAC it is estimated that input to the management group costs the member organisations (from the public sector) in the region of £47,000 per year<sup>82</sup>. The costs are estimated to be treble this for the first year after the site is designated whilst the management scheme for the site is developed and the advisory group established, and double in the second year whilst development of the

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<sup>78</sup> For example, in its consultation response South West Water indicated that additional treatment (nutrient stripping) at five Sewage Treatment Works in the South West would cost approximately £25m.

<sup>79</sup> The Conservation of Habitats and Species Regulations imply (but do not require) that the relevant authorities should work together, ideally within a management group, to develop a suitable management scheme for an SAC. The level of human activity in the site is likely to determine whether a group is formed.

<sup>80</sup> Based on the guidance in DETR and the Welsh Office (1998).

<sup>81</sup> The management schemes for existing English marine Natura 2000 sites were developed with participation of user groups and extensive consultation. Many of these sites are located in estuaries or on the coast and have strong links with adjacent terrestrial protected sites (such as the New Forest SPA and Solent and Southampton Water SPA).

<sup>82</sup> Input to the management group for each of the relevant authorities (of which there could be about twenty) is estimated here to cost about £2,000 per year (in staff time and travel costs), a total cost of £40,000 per year. The cost to the lead authority of hosting the group is estimated at about £7,000 per year (in staff time for participating in the group, arranging meetings, taking minutes amongst other things).

management scheme continues. The cost to stakeholder groups of participating in the advisory group is estimated at around £13,500 per year<sup>83</sup>. Though this is an annual cost that will be incurred by the private sector it is not an administrative cost<sup>84</sup> as defined by the government's Simplification Programme. The total cost of inputs to the management and advisory group are estimated at £60,500 per year plus in the first year, an additional £94,000 for the management group and in the second year an additional £47,000 for the management group and £13,500 for the advisory group (for developing the management scheme)<sup>85</sup>.

3.2.31 Further input of staff resource to managing the site is also likely to be required. For the purposes of the analysis it is assumed that this staff resource is provided by Natural England, though this will not necessarily be the case. It is estimated that in the first two years the equivalent of half of the time of a full time member of staff in Natural England will be helping establish and organise the work of the site's management group and advisory group and helping develop the site's management scheme and conservation objectives. It is estimated that thereafter, the equivalent of half of the time of a full time member of staff in Natural England will be making input to management of the SAC. These costs are estimated for the IA pro rata based on a full cost of employing a full time member of staff of approximately £31,000 per year.

3.2.32 Competent authorities will be responsible for 'compliance' monitoring in the site, to check that no unconsented activities, plans or projects are taking place and activities that do occur are undertaken in accordance with the management scheme to avoid damage to interest features in the site. The costs of enforcing fisheries management measures will be largely affected by the measures that are developed for the site and so are currently subject to considerable uncertainty. The Marine and Fisheries Agency<sup>86</sup> (unless specified otherwise) has provided the following rough estimates of the additional annual costs that may be incurred to effectively enforce additional fisheries management measures that are required for the site: one day of Royal Navy surveillance time (cost £8,850 per day), joint patrols by the MMO and SFCs/IFCAs (cost £20,000 per year<sup>87</sup>), 2 hours air surveillance (cost £2,114 per hour) and perhaps 1 prosecution case (cost £10,375 per case). This is estimated to cost approximately £0.043m per year, and is assumed to start in 2010. It is assumed that administration of records and other activities is carried out as part of existing duties. The requirement for patrols could decrease if VMS technology is fitted on more fishing vessels (though this uptake will incur set up and running costs for fishers and increase VMS monitoring costs). In the unlikely event that management of the site requires new regulations for migratory fish (specifically salmon, sea trout, eel, lamprey and smelt) in tidal waters and to 6nm, this would result in costs for the Environment Agency<sup>88</sup>. Due to the low likelihood, these costs are not estimated here. In the

<sup>83</sup> Input to the advisory group for each of the stakeholder groups (of which there could be about fifteen) is estimated here to cost about £900 per year (in staff time and travel costs), a total cost of £40,000 per year.

<sup>84</sup> Under the Simplification Programme, administrative costs arise from regulatory obligations for the private sector to provide information and data to the public sector (Better Regulation Executive, 2005).

<sup>85</sup> Estimates based on experience with the Wash and North Norfolk Coast SAC.

<sup>86</sup> J. Hatchman, personal communication, 15/07/09. The functions of the MFA have since been absorbed by the MMO.

<sup>87</sup> Estimated by Devon SFC based on the cost of an additional one hour of work per patrol for 100 patrols per year for at least the first two years (assumed to apply over the ten year period for purposes of the analysis).

<sup>88</sup> Costs would arise from amending or implementing new regulations (byelaws or net limitations), the additional assessments required for any new projects or plans affecting the site, additional compliance monitoring and additional fish population studies.

absence of more refined estimates, the analysis makes the simplistic assumption that the costs of enforcement are the same for both the minimum and maximum scenarios.

3.2.33 Natural England will face survey costs to assess the condition of interest features in the site. These are provisionally estimated (subject to considerable uncertainty) as initial costs of £70,000 for a survey conducted in the first three years (assumed to occur in 2010/11) and a survey costing £70,000 every three years over the following six years. In addition, further survey or research may be required by relevant authorities (perhaps including conservation advisors) in order to inform any appropriate changes or additions to existing fisheries management measures.

3.2.34 The present value of the total quantified costs arising from managing the SAC, monitoring and enforcement (summarised in Table 3.5) is estimated at £1.367m.

<b>Table 3.4 Summary of costs of managing, enforcing and monitoring the site in both the minimum and maximum scenario</b>	
	<i>Cost</i>
Managing the SAC	Total over 10 years (not discounted): £0.915m comprising: <ul style="list-style-type: none"> <li>▪ £0.047m per year for the management group and £0.014m per year for the advisory group (total of £0.061m per year).</li> <li>▪ Plus additional £0.094m for the management group in the first year (2010/11) to develop the management scheme and establish the advisory group</li> <li>▪ Plus an additional £0.047m for the management group and an additional £0.014m for the advisory group in the second year (2011/12) to develop the management scheme (total of £0.061m).</li> <li>▪ £0.016m per year for other staff to site management (equivalent to half the time of a full time member of staff).</li> </ul>
Enforcing fisheries management measures	£0.043m per year
Surveys to assess condition of interest features	Total over 10 years (not discounted): £0.210m comprising: <ul style="list-style-type: none"> <li>▪ £0.070m for surveys in the first 3 years (assumed to occur in 2010).</li> <li>▪ £0.070m in the following 3 years (assumed to occur in 2014).</li> <li>▪ £0.070m in the following 3 years (assumed to occur in 2017).</li> </ul>

#### Other costs to the public sector

3.2.35 The following costs to the public sector (which cannot be quantified) will also be incurred as a result of the SAC:

- Informing users of the marine environment about the sites and any management measures that are required for the sites. This will include addition of the sites to charts by the UK Hydrographic Office and communication through Notice to Mariners.
- Review by competent authorities (with advice from statutory nature conservation advisors) of outstanding permissions and consents and other existing activities that may have impacts on the designated site.
- Lead competent authorities will need to undertake Appropriate Assessment when necessary for new plans or projects that are likely to have a significant effect<sup>89</sup> on the SAC. The statutory nature conservation advisors advise when Appropriate

<sup>89</sup> A 'significant' effect is one that brings a significant risk of not achieving the designated site's conservation objectives. Assessment of significance in this respect is established on a case by case basis.

Assessment is required (as described in Section 1.3 and Annex 3). It may involve significant work for the competent authority and the appropriate statutory nature conservation adviser(s).

### Administrative costs

3.2.36 This IA has not identified any administrative costs (as defined under the government's Simplification Programme<sup>90</sup>) that will arise from designation of the site.

## **3.3 Benefits of designating the site**

3.3.1 The benefits of designating the site are considered below in terms of the conservation of habitats and species and the economic benefits.

### Conservation of habitats and species

3.3.2 The Habitats Directive aims to promote the maintenance of biodiversity through conservation of natural habitats, wild animals and plants in Member States. SACs protect types of habitat and species that have been identified as in danger of disappearance, having a small natural range, or that are outstanding examples of typical habitats or species. The aim of designating an SAC is neither predominantly nor specifically to deliver economic benefits<sup>91</sup>. The Directive and the legislation implementing it demonstrate that society in the UK and in the EU seek to conserve habitats and species; this could reflect a range of values such as social, political, moral as well as economic. The Marine Strategy Framework Directive and UK Marine and Coastal Access Act (2009) indicate that they seek to conserve marine habitats and species. Consultation responses provided evidence that the conservation of marine habitats and species is important to people in the UK. The Directives and legislation recognise that the natural environment has intrinsic value<sup>92</sup> (which means that it has value 'in itself' or 'for its own sake', independent of other things, including people) and seek to maintain or improve the environment's status. However, because intrinsic value is neither known nor knowable to people it cannot be used to inform this assessment.

3.3.3 Designation of the sites will reduce the risk that the environmental quality and processes of reef habitats in the sites will diminish over time and the risk that the extent, physical structure, diversity, community structure and typical species of the habitats will diminish. If the site is not designated there is a risk that new human activities and changes to existing activities could have an adverse effect on the habitats and species (as described in Section 2.2). It will also be difficult to influence the consenting of activities through, for example, the introduction of effective mitigation measures. Current activities have not been identified as causing significant damage to the interest features. This is either because no damage is occurring or because there is insufficient information on the effects. However, it is unknown whether and to what extent, any adverse impact on the habitats and species will arise in future.

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<sup>90</sup> Better Regulation Executive, 2005.

<sup>91</sup> Neither economic benefits that are traded nor economic benefits that are not traded.

<sup>92</sup> As is explained in Defra (2007) "While it is recognised that the natural environment has intrinsic value i.e. is valuable in its own right, such non-anthropocentric value is, by definition, beyond any human knowledge".

3.3.4 The site will conserve about 8,974 ha of reef habitat. A brief description of species in the site is provided in Section 1.4<sup>93</sup>. Reefs support a wide variety and abundance of marine life. Forests of the tree-like kelp provide the food source for most of the animals in the surrounding area as well as within them<sup>94</sup>. Most reef communities comprise a large proportion of long-lived and slow-growing organisms with a high degree of interdependence and habitat complexity. By conserving this diversity of habitats and species, not only can diverse communities be protected but the support mechanism for many higher species, such as crustaceans, fish, sea birds and sea mammals can be secured.

#### Economic benefits

3.3.5 In addition to being a desirable outcome to society in itself, conservation of habitats and species in the site will also provide economic benefits. These are discussed here from an ecosystem services perspective (as described in Annex 4). The benefits of the site compared with the baseline of not designating the site are assessed qualitatively (summarised in Table 3.5). It has not been possible to quantify or value the benefits because the impacts cannot be readily quantified (and there is considerable uncertainty about the impacts) and most of the services are not traded (described in further detail in Annex 4).

#### Fish, shellfish and other crustaceans for human consumption

3.3.6 Extraction of fish and shellfish that are both targeted by fisheries and caught as bycatch may be affected by designation, with the potential for both positive and negative effects. On the one hand, if additional fisheries management measures are required this could reduce the amount of demersal fish, crustaceans and scallops caught from the site. These controls would contribute to sustainable management of fish stocks at the site and as a result, the abundance of fish may increase<sup>95</sup>. On the other hand, controls could cause fishing effort to be displaced to other areas outside of the site, increasing pressure on the stocks in these areas.

3.3.7 The control of commercial fishing on the site may extend the longevity of shellfish such as lobsters, and there may be greater numbers of larger individuals that can produce more young. This may contribute to a potentially larger population of fish in the future.

3.3.8 With a reduction in demersal fishing, there should be a concurrent reduction in habitat damage. The use of heavy bottom gear (for example commercial otter and beam trawls) causes significant damage by removing/damaging long-lived and slow-growing animals and plants that characterise reef communities. This leads to a long-term change in community structure towards short-lived and fast-growing organisms such as polychaetes and small crustaceans. Although these species are good food for fish, they do not provide the habitat complexity important for settlement and growth of a wide range of species, including ones of commercial significance such as scallops.

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<sup>93</sup> And in further detail in Natural England (2010b).

<sup>94</sup> The material that is continually being lost from the kelp plants feeds into a complex recycling system of animals and bacteria, all of which form part of an immense web of interacting species of plants and animals that extend the influence of kelp forests far beyond the habitat of the kelp plants themselves (Birkett *et al.*, 1998).

<sup>95</sup> Examples of benefits to fisheries of marine protected areas are provided in Natural England (2009b).

3.3.9 More specifically, research has shown that the erect, sedentary species associated with reefs provide a surface for settlement of juvenile scallops as well as other species and provide crucial nursery and feeding areas for fish. If activities that damage these plants and animals cease following designation of the site this is likely to benefit fish and shellfish populations.

3.3.10 Positive impacts on fish, shellfish and crustacean stocks will benefit human consumption only if landings of fish, shellfish and crustaceans for consumption (from within or outside the site) are improved as a result of designating the site. This benefit will not be realised if fisheries management measures required for the site prevent improvements (in composition, quality, and/or quantity) in landings within and/or outside the site.

### Recreation

3.3.11 If fish populations increase or the size of fish increase as a result of controls on some commercial fishing activities in the site, anglers fishing in the area could potentially benefit from an improved sea angling experience. However, these benefits may not be realised if it transpires that additional controls on angling are required.

3.3.12 The site is also popular for diving. Reduction in damage from towed demersal fishing gear is likely to result in an increase in the variety of habitat as the fragile and often slow-growing species recover. The growth of these species increases habitat diversity (through the alteration of a largely planar surface) which provides further opportunities for other species to settle. The recreational divers who do use the site could benefit from a maintained or improved diving experience as a result of the protection of animals provided by the SAC. If the area acquires an enhanced reputation as a rich dive site, existing diving activity, particularly operating from Plymouth and the surrounding area, could potentially expand. Devon Seasearch<sup>96</sup> anticipates that the SAC will increase diving interest in the region, benefiting the local economy (a similar effect to that demonstrated by designation of the Lundy Marine Nature Reserve).

3.3.13 Designation of the site could provide the stimulus for provision of facilities for remote viewing of the site particularly associated with existing onshore facilities such as the National Marine Aquarium. Calmer waters make on-site subsurface cameras a possibility for viewing the reefs and their typical species on-shore. If designation of the site increases numbers of charismatic species in the site, this could potentially increase wildlife viewing in the area and numbers of tourists.

### Research and education

3.3.14 Designation of the site could potentially promote research into the presence of caves in locations in the site that may be of archaeological interest<sup>97</sup>. The baseline data collected by the various marine science institutions that have studied the site will enable detailed assessment of the impacts of protecting the site. There is potential to increase research use of the site by building on previous research and data sets even if research institutions are not currently focussing their research on the area.

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<sup>96</sup> Source: consultation response.

<sup>97</sup> Source: English Heritage consultation response.

3.3.15 Designation could provide a stimulus for expansion of information on the environment and wildlife for visitors to the area to include information on marine protected areas, the reefs and their typical species. There could be opportunities to do this at locations with extremely high visitor footfall where interpretation is already provided (see Section 2.3). There are also interpretation opportunities on adjacent land owned by the National Trust and on the South West Coastal Path. This would build on Natural England's ongoing communication with the public about the pSAC, the marine environment and its conservation. Examples include Natural England's participation in events in the Region (including the Fossil Festival, the Blue Mile and the Sea Festival in Torquay), its work with the media and open drop-in meetings that it held during the formal consultation.

3.3.16 Treating the site, the existing Plymouth Sound and Estuaries SAC and Tamar SPA all as one management unit offers significant opportunities for linking cutting edge marine research, education and interpretation. This could build on the area's already internationally significant reputation for marine science. The educational value of these sites is particularly significant because of ease of access as well as their importance at the European level.

#### Cultural heritage

3.3.17 If protection of the reefs from damage caused by certain kinds of mobile fishing gear is required this may provide additional protection to maritime heritage from some inadvertent damage. The benefits of this would probably be minimal as vessels normally attempt to avoid wrecks. If caves that are of archaeological interest are identified in the site, designation of the site could promote responsible diving to support investigation of archaeological interests in the caves.

#### Option values

3.3.18 People will gain from having the option to benefit in future from conservation of interest features in the site, even if they do not currently plan to benefit from them (option value). This arises because if the site is not protected now there may not be good examples still available to conserve in future. Also, people will gain from the knowledge that the reefs and their typical species are conserved in case future information reveals that these provide important benefits that we are not currently aware of (quasi-option value).

#### Non-use values

3.3.19 People will gain satisfaction from knowing that good examples of reef habitats and their typical species are being conserved. Most of the people who benefit from knowing the site is being conserved are unlikely to use it or get tangible benefits from it. This is known as the existence value of conserving the site. Some people will also gain satisfaction from knowing that the reefs are being conserved for others in the current generation (altruistic value), and for future generations (bequest value).

3.3.20 There is reliable evidence that the general population in the UK has significant positive combined<sup>98</sup> use and non-use values associated with conserving the marine environment. McVittie and Moran (2008) found that households in the UK were willing to pay a total of between £0.48 – 1.17 billion per year for a UK network of marine protected areas<sup>99</sup>. Based on households' willingness to pay, Beaumont et al (2006) estimate the non-use value of maintaining sea mammals in the UK marine environment at £0.5-1.1 billion per year to the UK population. In a recent survey<sup>100</sup> 80 percent of the adult population in England stated that a healthy marine environment was important to them.

#### Summary of economic benefits

3.3.21 The level and value of the ecosystem services under the baseline scenario (if the site is not designated) and for the scenario where the site is designated (option 1) are summarised in Table 3.5. The value of these benefits is described followed by an assessment of the potential for designation of the site to increase the level of service provision. This has been assessed subjectively based on a combination of the scale of any increase in service provision (assessed on a subjective scale of the level of benefits that could be delivered by a marine protected area in the UK) and the number of beneficiaries. The final column indicates the level of confidence in the assessments. In summary, designation of the site will provide a low to moderate level of benefits. The beneficiaries include the relatively low number of direct and indirect users of the sites and all members of the society. The economic benefits are estimated to arise mainly through increased provision of the following ecosystem services: fisheries, recreational angling, diving, research, education, cultural heritage and through non-use and option values

#### Other benefits

3.3.22 Designation of the proposed suite of marine Natura 2000 sites may aid marine spatial planning and more strategic consideration of available resources by sectors that use the marine environment. These sectors will be able to undertake future plans and applications for their operations (for example applications for licenses) with the better knowledge of the nature conservation significance of different parts of the marine environment and of the added costs for making an application within or adjacent to a Natura 2000 site boundary as opposed to outside it.

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<sup>98</sup> Even if people do not currently use the marine environment, it is likely that their responses to surveys will be influenced by motives to maintain the option for future use so will include a component of use value.

<sup>99</sup> These findings of this study cannot be used to indicate willingness to pay for groups of sites or individual sites within this network. They apply only to an entire network of sites in UK (not just English) waters that will conserve numerous interest features.

<sup>100</sup> Undertaken in July 2009 with 898 individuals as part of Natural England's Monitor of Engagement with Natural Environment (MENE) omnibus survey.

<b>Table 3.5 Estimated economic benefits of Prawle Point to Plymouth Sound and Eddystone SAC</b>					
<b>Ecosystem service</b>	<b>Relevance and value of service in the site</b>	<b>Level of service provision in baseline</b>	<b>Level of service provision if the site is designated</b>	<b>Increment in service provision if the site is designated</b>	<b>Level of confidence</b>
<i>Fish, shellfish and other crustaceans for human consumption</i>	<b>High relevance, low to moderate value.</b> There are habitats for several commercially significant fish and shellfish species in the site.	<b>Moderate, could decrease.</b> Continued demersal fishing could (but may not necessarily) impact on the reef habitat	<b>Moderate, could decrease.</b> Protection of the reef habitat may increase populations of some commercially significant species. Migration in/out of the site will impact on the benefit to some fisheries. Service provision could be restricted by additional controls on fisheries. Displacement of fishing effort may result in negative impacts off site.	<b>Low to moderate increase in value to a low number of beneficiaries (consumers of fish and shell fish from the site).</b> Any increase in landings may be offset to some extent by the impacts of displacement of fishing effort to areas outside the site.	<b>Low to moderate.</b> The net impact on the service is difficult to predict.
<i>Recreation</i>	<b>High relevance and value.</b> Site is currently popular for recreational angling and diving.	<b>Moderate, could decrease.</b> Angling and diving are associated with biodiversity and size of populations in the site, which may decline without designation.	<b>Moderate.</b> Protection of the reef habitat is likely to maintain or could increase diversity of species and size of certain populations, which could maintain or improve recreational experiences and could attract more recreational users.	<b>Low to moderate increase in value for a relatively small number of anglers and divers.</b> Although the site is popular, substitute sites could replace some of the lost recreational value if this site not designated.	<b>Low to moderate.</b> Difficult to predict impact on recreation due to scope for substitution.
<i>Research and Education</i>	<b>High relevance and value.</b> Areas of the site are subject to ongoing research. There is significant opportunity for educational initiatives.	<b>Moderate, could decrease.</b> Possible degradation could reduce scientific and educational value.	<b>Moderate.</b> Designation will prevent possible degradation of the research and educational resource. It could also stimulate increased research and educational use.	<b>Low to moderate increase in value that the whole of society could potentially benefit from in the long term.</b> Location of site makes it well situated for research and education.	<b>High.</b>

*Continued overleaf*

Ecosystem services	Relevance and value of service in the site	Level of service provision in baseline	Level of service provision if the site is designated	Increment in service provision if the site is designated	Level of confidence
<i>Cultural Heritage</i>	<b>Moderate to high relevance and value.</b> There are many submerged wrecks in the site and caves that may be of archaeological interest.	<b>Moderate, could decrease.</b> Demersal gear can inadvertently damage wreck sites.	<b>Moderate.</b> Protection from demersal gear will help protect wrecks, but benefits of this will be low. Potential for increased investigation of cultural heritage if caves of archaeological interest are found in the site.	<b>Low to moderate increase in value for the whole of society.</b>	<b>High</b> (in mapping of wrecks).
<i>Non-use and option values of natural environment</i>	<b>Moderate relevance and value.</b> Evidence public has preferences for a healthy marine environment and conservation of habitats and species.	<b>Moderate, could decrease.</b> Possible degradation could impact on the habitats and species but may not have further adverse effect on non-use and option values	<b>Moderate.</b> Designation will prevent degradation of habitats and populations of species in the site.	<b>Low to moderate increase in value for all members of society who gain from knowing that a good example of reef habitat is being conserved.</b>	<b>Moderate.</b>
<b>Total value of changes in ecosystem services</b>				<b>Low to moderate increase in value. Beneficiaries include the low number of direct and indirect users of the site and all members of the society</b>	<b>Moderate to High</b>

### 3.4 Summary of Costs and Benefits

3.4.1 On the pages that follow, Table 3.6 summarises the potential costs and benefits of the site identified in Sections 3.2 and 3.3 and Table 3.7 summarises the total quantified costs. In the analysis, minimum and maximum scenarios have been used to present the range of management measures that may be required for the site given that these are currently unknown; they are not alternatives. As has been indicated in the IA, the estimates made are subject to considerable uncertainty. Costs and benefits are likely to occur beyond the ten year time frame for the analysis but these are subject to even greater uncertainty.

<b>Table 3.5 Summary of estimated costs and benefits for Option 1: Designate the site</b>			
<b>Sector</b>	<i>Minimum Scenario Costs</i>	<i>Maximum Scenario Costs</i>	<i>Benefits</i>
<i>Commercial fisheries</i>	£0.033m per year loss in gross value added plus unknown costs listed for maximum scenario.	£0.039m per year loss in gross value added. Also: <ul style="list-style-type: none"> <li>▪ loss of gross value added not captured in estimate;</li> <li>▪ social impact and impact on local and regional economy of effect on fishing industry.</li> </ul>	Conservation of habitats (9,000 ha of reef) and species.
<i>Shipping</i>	£0	Unknown costs of potential restrictions on anchoring (except in emergency).	
<i>Recreation</i>	£0	Unknown costs of controls on recreational fisheries and anchoring if required.	
<i>All sectors</i>		Also: <ul style="list-style-type: none"> <li>▪ higher likelihood new developments are not permitted;</li> <li>▪ costs from delay of consents if Appropriate Assessment is required;</li> <li>▪ higher likelihood of restrictions on anchoring in areas with sensitive interest features (except in emergency circumstances);</li> <li>▪ cumulative costs of suite of Natura 2000 sites.</li> </ul>	Low to moderate increases in value of ecosystem services, benefiting the low number of direct and indirect users of the site and all of society.
<i>Managing the SAC</i>	Participation in the management group (by public sector bodies) and advisory group (by private sector bodies) for the site: £0.061 per year plus £0.094m in 2010/11 and £0.061m in 2011/12. £0.016m per year other staff input to site management. Enforcement: £0.043m per year. Surveys (cost to public sector): £0.070m in 2010, £0.070m in 2014 and £0.070m in 2017.		Also benefits outside the site.
<i>Other costs to public sector</i>	<ul style="list-style-type: none"> <li>▪ Cost of informing users of the site about the sites and any management measures that are required;</li> <li>▪ cost of incorporating the sites onto nautical charts and into relevant publications;</li> <li>▪ other costs to competent and relevant authorities.</li> </ul>		

3.4.2 The aim of designating the site is to contribute to maintaining biodiversity through conserving natural habitats and species; the legislation indicates that this is an outcome that is sought by society (not necessarily for economic reasons). Though the aim is not specifically to deliver economic benefits, designation of the site will deliver benefits through improved delivery of some ecosystem services and the satisfaction people gain from knowing the site is being conserved. It has not been feasible to quantify these benefits though they are estimated qualitatively.

<b>Table 3.6 Summary of quantified costs (£m) for Option 1: designate the site</b>			
	<i>Minimum scenario</i>	<i>Maximum scenario</i>	<i>Midpoint*</i>
<i>Total one-off</i>	0.365	0.365	0.365
<i>Average Annual Costs</i>	0.152	0.159	0.156
<i>Total (PV)</i>	1.648	1.706	1.677

3.4.3 Details of calculation of the total present value are provided in Appendix H at the end of this document. The impact tests are presented in Appendix I.

#### Risk of Unintended Consequences

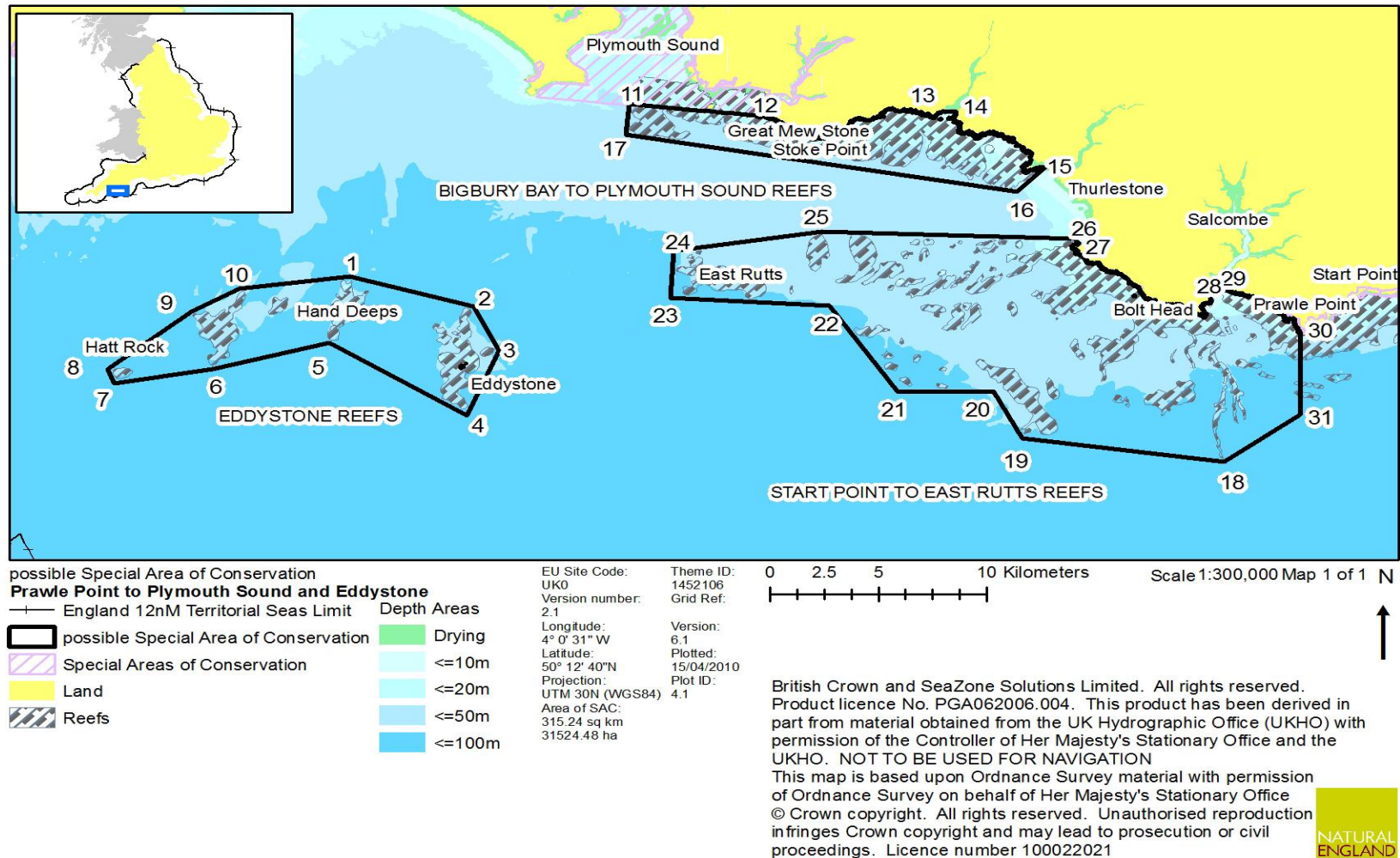
3.4.4 The main risks of unintended consequences are assessed to be the following:

- In practice, some of the fishing businesses that are affected by fisheries management measures for the site may continue to fish but operate in alternative grounds and / or switch to using different gear<sup>101</sup>. This could impact on other fishers and other users of the marine environment. Displacement of fishing activity may also put greater pressure on stocks outside of the sites and could result in overfishing or increased overfishing in some cases.
- If enforcement efforts at sea are not successful due to uncontrollable circumstances, the conservation objectives for the site may not be achieved.
- If the suite of pSACs that Natural England is recommending is not put forward to the EC as candidate SACs or eventually designated there is a high risk of infraction from the EC and legal challenge from non-governmental organisations. This was indicated at a 'moderation' meeting of the EC and Member States<sup>102</sup>. The costs of infraction can be significant for a Member State. They involve the potential legal costs of dealing with the situation and a potential fine from the EC.

<sup>101</sup> As discussed in Appendix G. This is an alternative scenario to that used for calculation of costs in the IA, which assumes that the entire value of landings that would be affected is lost.

<sup>102</sup> for the Atlantic biogeographic region, held in Galway 24-25 March 2009.

#### 4. Figures



**Figure 1** Chart showing Prawle Point to Plymouth Sound and Eddystone pSAC

Prawle Point to Plymouth Sound and Eddystone SAC Final IA, 20.7.2010, Figures

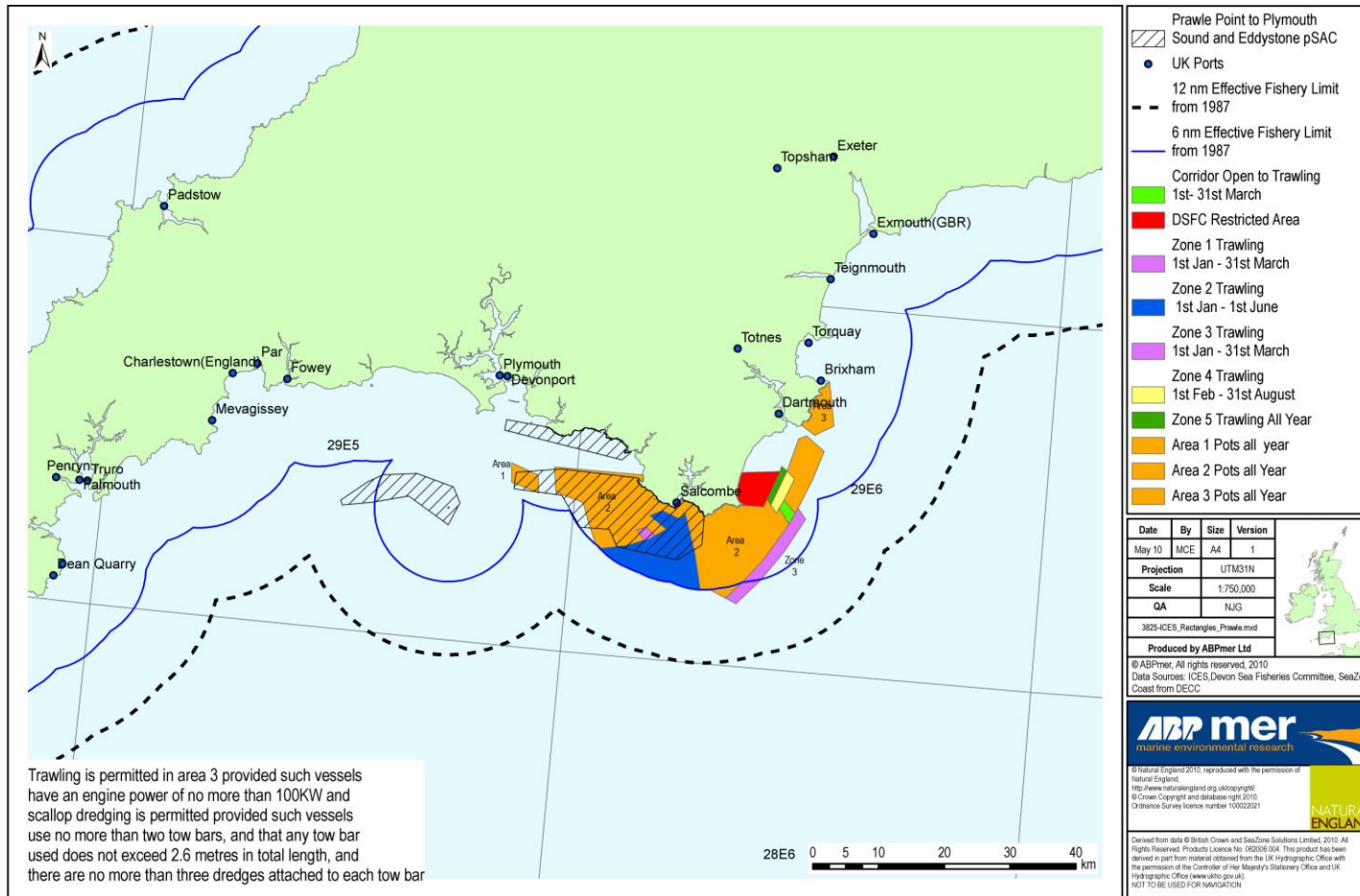
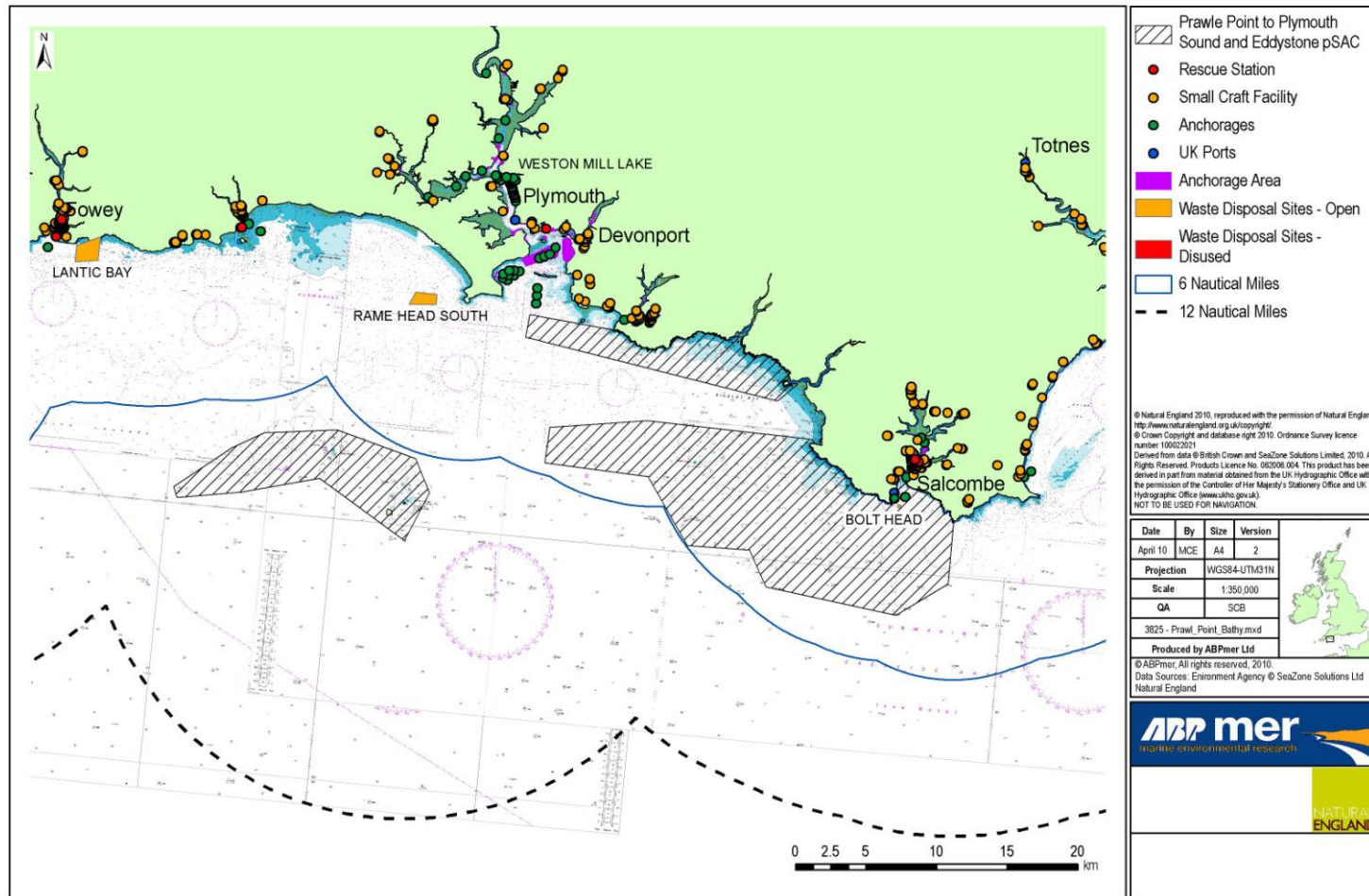
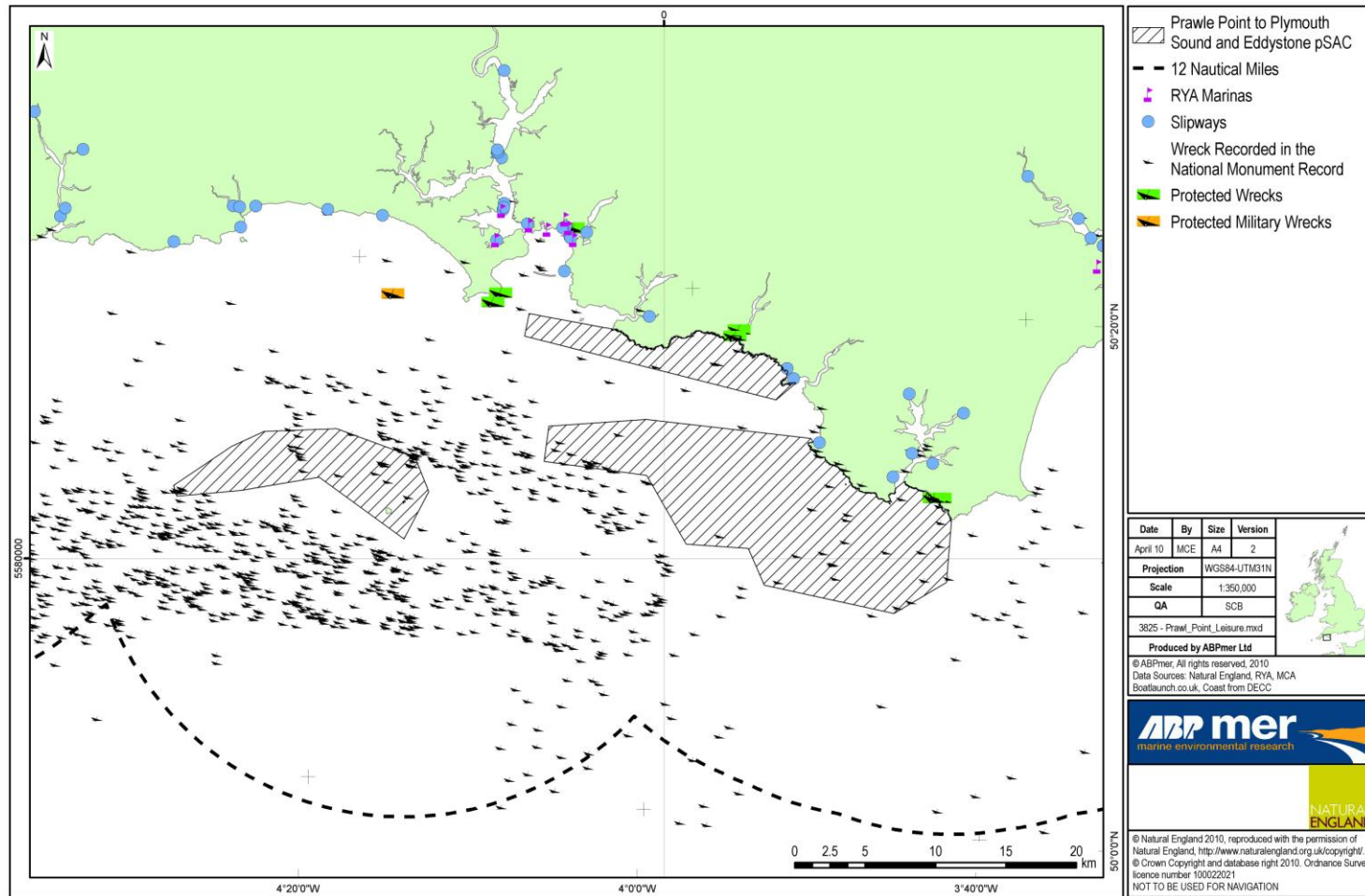


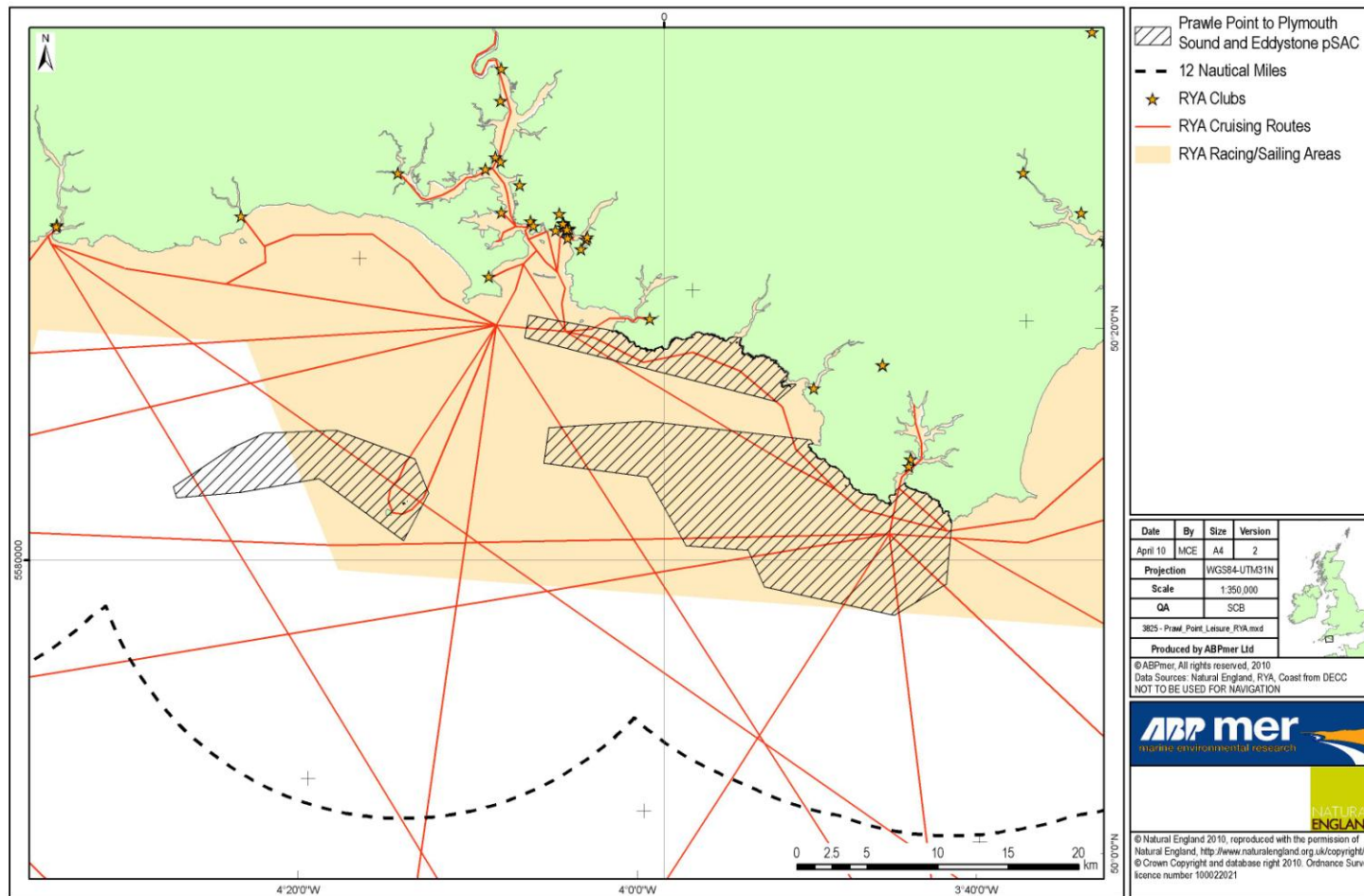
Figure 2.1 Chart showing ICES rectangles that contain the pSAC (29E5 & 29E6), ports and effective fisheries limits from 1987.



**Figure 2.2** Chart showing information concerning shipping in the area of the Prawle Point to Plymouth Sound & Eddystone pSAC



**Figure 2.3** Chart showing recreational resources in the area of the Prawle Point to Plymouth Sound and Eddystone pSAC



**Figure 2.4** Chart showing Recreational Boating activity in the area of the Prawle Point to Plymouth Sound and Eddystone pSAC

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## APPENDICES

### A. Vulnerability of the site's interest features

The table below summarises initial assessment of the vulnerability of interest features in the site to pressures from human activities. This is reproduced here from the Draft Conservation Objectives and Advice on Operations for the site<sup>103</sup>. These were provided as supplementary information in the public consultation and will be revised following designation of the site. The information on operations that may cause deterioration of the site's interest features is based on the statutory nature conservation adviser's knowledge of current activities and patterns of use at the site. This is likely to be refined during development of the management scheme for the site and through discussion with the relevant and competent authorities. In contrast, the information on sensitivity of the interest features is relatively stable and will only change as a result of an improvement in scientific knowledge<sup>104</sup>.

Vulnerability of the site's interest features to human activities is determined by the features' sensitivity to the specified impacts and the potential exposure to those impacts. Only if an interest feature is both sensitive and exposed to a human activity is it considered vulnerable. The scores of relative sensitivity, exposure and vulnerability have been derived using best available scientific information and expert judgement.

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<sup>103</sup> Natural England, 2009a.




<sup>104</sup> For further details see Natural England (2009a).

**Table A.1 The relative vulnerability of interest features and sub-features of the Prawle Point to Plymouth Sound and Eddystone pSAC to operations**

Key:

Sensitivity	
None	-
Low	•
Moderate	••
High	•••

Exposure	
None	-
Low	+
Medium	++
High	+++

Vulnerability	
None detectable	
Low	
Moderate	
High	

Operations which may cause deterioration or disturbance	Annex I Reefs					
	Inshore upstanding reef			Offshore upstanding reef		
	Sensitivity	Exposure	Vulnerability	Sensitivity	Exposure	Vulnerability
<b>Physical loss</b>						
Removal (e.g. harvesting, coastal development)	•••	+	Moderate	•••	+	Moderate
Smothering (e.g. by artificial structures, disposal of dredge spoil)	••	+	Low	••	+	Low
<b>Physical damage</b>						
Siltation (e.g. run-off, channel dredging, outfalls)	•	+	Low	•	-	-
Abrasion (e.g. boating, anchoring, trampling)	•••	+	Moderate	•••	+	Moderate
Selective extraction (e.g. aggregate dredging)	-	-	-	-	-	-
<b>Non-physical disturbance</b>						
Noise (e.g. boat activity)	-	+	-	-	+	-
Visual (e.g. recreational activity)	-	+	-	-	+	-
<b>Toxic contamination</b>						
Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs)	•	+	Low	•	+	Low
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	•	+	Low	•	+	Low
Introduction of radionuclides	Insufficient information	-	-	Insufficient information	-	
<b>Non-toxic contamination</b>						

Operations which may cause deterioration or disturbance	Annex I Reefs					
	Inshore upstanding reef			Offshore upstanding reef		
	Sensitivity	Exposure	Vulnerability	Sensitivity	Exposure	Vulnerability
Changes in nutrient loading (e.g. agricultural run-off, outfalls)	••	+	Low	••	-	-
Changes in organic loading (e.g. mariculture, outfalls)	•••	+	Moderate	•••	-	-
Changes in thermal regime (e.g. power stations)	••	-	-	••	-	-
Changes in turbidity (e.g. run-off, dredging)	•	+	Low	•	-	-
Changes in salinity (e.g. water abstraction, outfalls)	•••	-		•••	-	-
<b>Biological disturbance</b>						
Introduction of microbial pathogens	•	-	-	•	-	-
Introduction of non-native species and translocation	•	+	Low	•	-	-
Selective extraction of species (e.g. bait digging, wildfowling, commercial & recreational fishing)	•••	++	High	•••	++	High

## **B. Potential impacts on interest features in the baseline**

The following sections provide detailed information on the potential impacts of human activities on reefs in the site and their typical species in the baseline (if the site is not designated). A general description of regulation of human activities to manage impacts on the marine environment is provided in Annex 3, along with further detail for some of the sectors listed below.

### **Commercial fisheries**

The approach to regulating environmental impacts is described in the fisheries section in Annex 3. The potential environmental impacts of the main types of gear used in the site are discussed below.

#### *Scallop dredging*

Scallop dredging has been shown to have significant impacts on seabed habitats, including where it coincides with stable low-lying reefs. The dredges scrape over the seabed surface, removing or damaging upstanding species such as corals and sponges, which results in a reduction in species biodiversity and abundance. Over time, scallop dredging can also break down some types of reef structure to create a homogenous seabed. This results in a reduction in habitat complexity which further contributes to lower biodiversity (in addition to the loss of species directly damaged or killed by the passage of the dredge) as some animals and plants are unable to recolonise the altered habitats. Recovery of some species affected by scallop dredging may be slow.

In this area dredging is unlikely to take place over areas of upstanding reef, due to the risk of fishing gear becoming stuck. However, areas of lower lying reef around the site edges may be subject to dredging.

#### *Bottom trawling*

Bottom trawling is acknowledged to have a potentially high impact on seabed habitats and associated plants and animals. The extent to which the seabed and associated plants and animals are affected depends on the type of fishing gear used, the substrate and its physical characteristics. Bottom trawling disturbs the seabed, reducing species abundance and number and impacting on reef structure through abrasion and sedimentation. Bottom trawling impacts on animals largely through abrasion which can damage or kill a range of species which causes a reduction in diversity. Some types of bottom trawling, may also result in a significant bycatch of non-target species being caught.

Otter trawls may have a (comparatively) reduced impact on the seabed compared with beam trawls as they have a reduced 'footprint' of contact with the seabed, though the 'otter' boards and foot ropes potentially damage erect animal life such as sponges. Like beam trawling, most demersal otter trawling takes place over flat seabed, primarily on sediments, and is unlikely to take place over

much of the reef area. The use of rockhopper gear potentially allows reef fringe areas to be targeted and is likely to cause greater damage to reef plants and animals.

#### *Mid-water trawling*

Mid-water trawling gear does not make contact with the seabed therefore it is unlikely to impact on the reefs themselves, though it could potentially have an impact on species typical of reefs if these are target species or significant numbers are caught as bycatch.

#### *Drift, gill, tangle and trammel netting*

Drifts nets are usually set to avoid contact with the seabed, so they would impact on the reefs only through incorrectly set gear or lost nets that snag on the seabed. However, the fisheries could potentially impact on species typical of reefs. Gill and tangle nets can be set to touch the seabed, so they can potentially impact on the reef if the net snags upstanding species such as branching sponges and sea fans. Such impacts may frequently be insignificant.

There is additional potential risk from lost nets which snag on the seabed but continue fishing and entangle marine life; this is known as ghost fishing.

#### *Potting*

Potting has the potential to damage some of the species living on reefs through abrasion (although impacts in many cases may be limited). It could potentially significantly reduce the numbers of species typical of reefs, such as crabs and lobsters.

#### *Long Lines*

Line-fishing does not affect reefs directly. There may be some direct or indirect impacts (as the result of lost gear entangling some species) to the typical species of the reefs as the result of the extraction of target species.

#### *Angling*

This method of fishing could potentially impact on the site through lost gear entangling seabed animals such as pink sea fans and erect sponges. This is unlikely to impact at the site level, although some individual areas of the site could be detrimentally affected. There may be a minor potential impact on typical species of reefs through extraction.

### **Shipping**

Shipping could potentially affect the reefs in the site through abrasion and collision of vessels with each other and/or the reefs but impacts from ships en-route through the site are unlikely.

### *Risk of pollution*

The risk of oil pollution from ships at this site remains. If an oil spill occurs there is a likelihood that this high energy area will help to break up and disperse the oil slick. However, if the slick moves over the reef or towards the coastline, there may be a call to use dispersants to stop the slick from impacting the coastline or possibly favoured fishing areas. The use of dispersants will break a large slick into smaller slicks and will also distribute the oil particles into the water column from the water surface. Generally, oil spills have the greatest impacts on the plants and animals near shore and shallow environments such as reef and rocky areas. Before dispersants are used Natural England would be asked for an opinion on their use and it would consider the impacts of dispersants on the reef and its associated plants and animals before agreeing to use dispersants.

There is also always a risk that toxic and non toxic contamination and nutrient and organic enrichment of sediment and the water column may occur due to accidental spillage of cargo or the release of sewage and rubbish by shipping, or very rarely the purposeful release of “tank washings” from vessels. MARPOL contains substantial quantities of internationally agreed design and operational requirements for ships which have been instrumental as a preventative instrument for reducing marine pollution. MARPOL also provides for implementation of controls to address marine pollution incidents. Oil spill response plans exist for all local authorities in adjacent areas and well developed emergency plans are in place for major incidents

### *Anchoring*

If ships anchor over reefs the potential impacts include;

- Direct damage to the reef from an anchor dropping onto the reef;
- Abrasion from the anchor and anchor chain on the reef itself;
- A circular area of damage to the reef and its associated communities (plants and animals) due to the ship revolving around the anchor as a result of wind, waves, tide and current action.

Anchoring could break off sections of the reef and dislodge plants and animals from the reef. Recovery time is not known for areas of reef.

### *Non-native invasive species*

Through ballast water discharge, shipping may be a key vector for the introduction and dispersal of non-native invasive species. There are many non-native invasive species found along the South West River Basin District.

Once the International Maritime Organisation’s Ballast Water Management Convention enters into force the risk of non-native invasive species from shipping is likely to be reduced.

## **Recreation**

Recreational fishing could potentially have a significant impact on the populations of fish, shell fish and other crustaceans that are typical of the reefs. Further information is required to assess the risk of this impact if the site was not designated. SCUBA diving could potentially damage the site through abrasion and the removal of animals but the potential impacts are thought to be low.

Anchoring could potentially cause physical damage to the reefs and fuel spills or discharges could potentially lead to toxic or non-toxic contamination of the sediment or water column. The risks of these causing a significant impacts on interest features in the site if it was not designated are thought to be low under current levels of activity.

## **Activities that result in land-based sources of pollution**

Discharges of pollution from the land could potentially impact on interest features in the site by causing changes in physico-chemical conditions of the overlying water, such as changes in temperature, turbidity, salinity, and increases in nutrient and organic matter. However, the high dilution that any land-based discharge is likely to receive would reduce the risk of these having an impact.

### C. Fisheries in ICES rectangles that contain the site

The tables below present statistics for 2005-8 calculated using FAD data kindly supplied by the Marine and Fisheries Agency (MFA)<sup>105</sup>. These statistics are for fisheries in the entire rectangles that contain the site and are not estimates of fisheries for only the area within the site.

Based on FAD data, Table C.1 indicates average annual landings from the rectangles for each gear type for both the UK fleet and foreign vessels. Table C.2 indicates average annual landings according to species and Table C.3 presents landings according to vessel length category (both for the UK fleet). Table C.4 indicates the significance (in terms of value of landings) of landings from the rectangles that contain the site for UK vessels that fished within those rectangles. It presents the percentage of landings that vessels fishing in the rectangles obtained from the rectangles, and the percentage they obtained elsewhere.

<b>Table C.1 Average annual landings by gear type in the ICES rectangles (29E5 and 29E6) that contain the site (2005-2008)</b>				
<i>Category of gear type</i>	<i>UK Vessels</i>			<i>Foreign vessels</i>
	<i>Live weight landed (tonnes p.a.)</i>	<i>Value of landings (£k p.a.)</i>	<i>Percentage of value of landings by UK vessels</i>	<i>Value of landings (£k p.a.)</i>
Trawling with bottom contact	5,484	10,560	52%	43
Dredging	2,199	3,477	17%	17
Trawling with no bottom contact	4,422	1,499	7%	2
Netting with bottom contact	232	438	2%	
Netting with no bottom contact	518	925	5%	1
Lines with bottom contact	219	258	1%	0.4
Lines with no bottom contact	17	49	0.2%	0.3
Pots (Crustacean)	1,792	2,628	13%	0.3
Other pots	417	270	1%	
Other	40	41	0.2%	
<b>Total for all gear types</b>	<b>15,340</b>	<b>20,146</b>	<b>100%</b>	<b>64</b>

Note that most figures in this table are rounded to the nearest integer so may not add up to the total.

Source: Fishing Activity Database, data supplied by the MFA.

<sup>105</sup> The functions of the MFA have since been absorbed by the MMO.

<b>Table C.2 Average annual UK fleet landings by species in the ICES rectangles (29E5 and 29E6) that contain the site (2005-2008)</b>			
<i>Species</i>	<i>Live weight of landings (tonnes p.a.)</i>	<i>Value of landings (£k p.a.)</i>	<i>Percentage of value of landings by UK fleet</i>
Anchovy	225	398	2%
Bass	77	506	3%
Brill	59	362	2%
Cuttlefish	1,287	1,770	9%
Edible Crab	1,617	2,123	11%
Horse Mackerel	1,446	501	2%
John Dory	56	246	1%
Lemon Sole	397	1,778	9%
Lobsters	37	420	2%
Mackerel	314	288	1%
Monks or Anglers	399	1,024	5%
Pilchards	1,608	535	3%
Plaice	483	806	4%
Pollack	251	391	2%
Red Mullet	67	212	1%
Scallops	2,230	3,348	17%
Skates and Rays	166	210	1%
Sole	233	2,012	10%
Sprats	2,175	395	2%
Squid	216	961	5%
Turbot	51	467	2%
Whelks	471	278	1%
Whiting	320	207	1%
Other	1,156	907	5%
<b>Total</b>	<b>15,340</b>	<b>20,146</b>	<b>100%</b>

Note that figures in this table are rounded to the nearest integer so may not add up to the total.  
Source: Fishing Activity Database, data supplied by the MFA.

<b>Table C.3 Average percentage of UK vessel landings by vessel length in the ICES rectangles (29E5 and 29E6) that contain the site (2005-2008)</b>	
<i>Category of Vessel Length</i>	<i>Percentage of Value of Landings</i>
10 metres and under	24%
10.01 to 15 metres	41%
Over 15 metres	35%
<b>Total</b>	100%

Note that figures in this table are rounded to the nearest integer so may not add up to the total.  
 Source: Fishing Activity Database, data supplied by the MFA.

<b>Table C.4 Average contribution that landings from ICES rectangles 29E5 and 29E6 made to total value of landings of UK vessels that fish in the rectangles (2005-2008)</b>			
<i>Category of gear type</i>	Category of Vessel Length	Percentage of landings for UK vessels fishing in ICES rectangles 29E5 & 29E6	
		From ICES rectangles 29E5 & 29E6	From elsewhere
Trawling with bottom contact	10 m* and under	65%	35%
	10.01 to 15 m	71%	29%
	Over 15 m	24%	76%
Dredging	10 m and under	49%	51%
	10.01 to 15 m	65%	35%
	Over 15 m	12%	88%
Trawling with no bottom contact	10 m and under	100%	0%
	10.01 to 15 m	84%	16%
	Over 15 m	5%	95%
Netting with bottom contact	10 m and under	65%	35%
	10.01 to 15 m	20%	80%
	Over 15 m	2%	98%
Netting with no bottom contact	10 m and under	63%	37%
	10.01 to 15 m	39%	61%
	Over 15 m	7%	93%
Lines with bottom contact	10 m and under	51%	49%
	10.01 to 15 m	99.7%	0.3%
	Over 15 m	39%	61%
Lines with no bottom contact	10 m and under	95%	5%
	10.01 to 15 m	50%	50%
Pots (Crustacean)	10 m and under	72%	28%
	10.01 to 15 m	58%	42%
	Over 15 m	18%	82%
Other pots	10 m and under	39%	61%
	10.01 to 15 m	50%	50%
Other	10 m and under	34%	66%
<b>Total</b>		28%	72%

Source: Fishing Activity Database, data supplied by the MFA.

\* Throughout this table 'm' is used to refer to metres.

## D. Wrecks in the site

The following wrecks that are protected under the under the Protection of Wrecks Act (1973) have been identified in the site using data from English Heritage. There are also many wrecks that are not protected under the Act in the site.

<b>Name</b>	<b>Location</b>		<b>Latitude</b>	<b>Longitude</b>
Erme Estuary wreck	Erme Estuary	partially within the site	50.307429	-3.954298
Erme Ingot	Erme Estuary	within the site	50.303096	-3.957964
Moor Sand	Prawle Point	within the site	50.212276	-3.740041
Salcombe Cannon	Nr Prawle Point	within the site	50.212209	-3.745802

## E. Relevant existing fisheries byelaws

Fisheries in the components of the site between Plymouth Sound and Prawle Point are controlled by the Devon Sea Fisheries Committee (SFC). Fisheries in the area of the Eddystone Reef component of the site that is within 6nm fall under the jurisdiction of Cornwall Sea Fisheries Committee (SFC). The Sea Fisheries Committees put in place byelaws to control fishing activity either through seasonal closures, permanent closures, or restrictions on the type of fishing activity that can take place. The following byelaws are relevant to the control that may be required to protect interest features in the site within 6nm. The South Devon Trawling and Crabbing Agreement (shown in Figure 2.1) overlaps with the east of the site.

<b>Byelaw no.</b>	<b>Overview of Devon SFC bye-laws</b>
3	Closed season on harvesting of scallops during the months of July, August & September.
4	Scallop dredges must be fitted with certain equipment and total number of dredges used by any one vessel must not exceed 12.
7	No removal of any scallop less than 100mm across.
8	Shellfish removed from a prohibited fishery must be re-deposited in the same condition as they were taken, without injury, as near as possible to the place from which they were taken.
9	Temporary closure of shellfish beds (mussels, clams, oysters & periwinkles) in the event that they become severely depleted.
10	No removal of any winkle that can pass through a 16mm square gauge.
11	Minimum size for removing edible crab ( <i>Cancer pagurus</i> ), 140mm for female and 160mm for male.
18	Vessel size for fishing is limited to 15.24 metres maximum overall length except in certain areas.
21	No removal of any part of an edible crab which is detached from the carapace of the crab.
22	Pots must conform to certain regulations and be fitted with an escape gap.
26	V-Notched or mutilated lobsters must not be removed from any fishery.
27	A ban on the landing of berried lobsters.

Source: Devon Sea Fisheries Committee website (<http://www.devonsfc.co.uk/byelaw.html>)

<b>Overview of Cornwall SFC bye-laws that may overlap with the hypothetical management measures</b>
No vessel greater than 16.46m to be used for shellfish fishing.
Dredges must be fitted with certain equipment and total number of dredges towed by any one vessel should not exceed 12.
No towed net allowed that exceeds 18.28m overall length or 221 kW engine power for use in fishing for any sea fish.
No use of any purse seine, ring net, or similar net, for taking sea fish by encircling.
No removal of any berried lobster ( <i>Homarus gammarus</i> ) or berried crawfish ( <i>Palinurus elephas</i> ).
No removal of King Scallops ( <i>Pecten maximus</i> ) detached from shells.
No removal of any lobster ( <i>Homarus gammarus</i> ) which has a carapace length less than 90mm.
No removal of any crawfish ( <i>Palinurus elephas</i> ) less than 110mm in length or any detached part of the crawfish.
No removal of any detached part from an edible crab ( <i>Cancer pagurus</i> ) or a spider crab ( <i>Maia squinado</i> ).
No removal of any edible crab ( <i>Cancer pagurus</i> ) which has a carapace length less than 150mm for females and 160mm for males.
Size restrictions for removal from the fishery for conger eel, hake, grey mullet, red mullet, red seabream, black seabream, witch flounder, dab, lemon sole, flounder, megrim, brill and turbot.
No removal of any v-notched or mutilated lobster ( <i>Homarus gammarus</i> ).

Source: Cornwall Sea Fisheries Committee website  
 (<http://www.cornwall.gov.uk/default.aspx?page=12448>)

## F. Fisheries landings affected by each management measure

<b>Table E Estimated value of landings by UK vessels affected by each of the hypothetical management measures when applied alone (not in combination) (assuming average value of landings from the site of £116k per year)*</b>					
<i>Hypothetical management measure</i>	<i>Category of gear type or species affected</i>	<i>Percentage of value of landings accounted for by the gear type category or species** (a)</i>	<i>Percentage of value of landings that the measure affects</i>		<i>Value of landings affected (£m p.a.)***</i>
			<i>for the category of gear type or species (b)</i>	<i>for all UK vessels fishing in the site (a x b)</i>	
1	Trawling with bottom contact	52%	100%	52%	0.081
	Dredging	17%	100%	17%	
	Total	70%		70%	
2	Lobster landings	2%	25%	1%	0.001
3	Pots (Crustacean)	13%	50%	7%	0.008
4	Netting with bottom contact	2%	50%	1%	0.002
	Lines with bottom contact	1.28%	50%	1%	
	Total	3.28		2%	
5	Trawling with no bottom contact	7.44%	50%	4%	0.007
	Netting with no bottom contact	5%	50%	2%	
	Lines with no bottom contact	0.24	50%	0%	
	Total	12.68%		6%	
6	Pots (Crustaceans)	13%	25%	3%	0.004

\* For details see Section 2.1. Note that figures in this table are rounded to the nearest integer so may not add up to the total.

\*\* For vessels fishing in the ICES rectangles that contain the site (Average for 2005-8. Source: Source: Fishing Activity Database, data supplied by the MFA. For details see Table C.1).

\*\*\* Calculated as a x b x £116.045k.

## **G. Impact of maximum scenario on the fishing sector**

If the hypothetical management measures used for this analysis were applied, fishing businesses might adapt. However, their capacity to adapt will be subject to constraints, which are considered below. Vessels could potentially be changed from towed gear methods to fixed gear methods to avoid the impact of management measures. Fisheries stakeholders have indicated this could double the amount of static gear within the site increasing pressure and conflicts within this area. Switching gear can involve considerable cost<sup>106</sup>. A fisheries stakeholder indicated that should scalloping be prevented with the Eddystone component of the site then vessels would be adapted for potting and netting which would cost about £3000 (excluding the cost of the static gear). It may not be feasible to switch gear where vessels are incapable of being used for other methods of fishing and vessels that do not have the necessary licence consents cannot be adapted. Devon SFC has indicated that the knock-on financial effects of purchasing a shellfish permit could prevent fishers from changing gear<sup>107</sup>. Further, if a fishing vessel does not have a track record in an alternative fishery then opportunities to diversify are not available, for example where a vessel has only fished for scallops within the last three years, there is no entitlement to fish for quota species other than as bycatch.

In light of the challenges to changing gear type some vessels would need to displace their effort to alternative grounds to retain levels of effort. Whether fishers were able to do so would depend on a number of considerations:

- availability of suitable grounds, which may be limited by the existing presence of larger boats, other fisheries and existing seasonal closures. Cornwall SFC has indicated that displacement of towed effort from the site would immediately result in gear conflicts with the static gear fleet, particularly to the south of Eddystone.
- whether boats have capacity to reach alternative grounds which could have implications for vessel safety. Smaller vessels may not have the capacity to go further out from the shore or to deeper grounds. Weather is the biggest constraint to small inshore vessels.
- There may also be other seasonal constraints to moving to alternative areas.

For businesses that respond by fishing alternative grounds this could have implications for costs and profitability. If the grounds were further afield this would increase fuel and labour costs (potentially reducing crew shares if an additional person was employed), a higher proportion of time would be spent steaming rather than fishing and so profitability could be reduced. A fisheries stakeholder has indicated<sup>108</sup> that should demersal trawling be banned, costs to a four-a-side

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<sup>106</sup> For example from the purchase of fixed gear haulers, changes and removal of deck machinery and alterations to stowage for gear.

<sup>107</sup> A shellfish permit would need to be purchased (unless the skipper already has a full shellfish entitlement) which would simultaneously reduce the value of a boat able to fish with mobile gear/permit and increase the value of a vessel with a full shellfish permit.

<sup>108</sup> In their consultation response.

scalloper would increase by up to £150 a day for fuel to reach the limit of travel (Falmouth Bay) feasible for a small boat. Another stakeholder indicated additional fuel costs of £10,000 a year to reach Falmouth Bay. Alternative grounds might also be less productive, particularly if fishing pressure was concentrated in a smaller area, therefore reducing profitability of days spent fishing. Vessels based at ports that are tidal or that are launched from the beach may have restricted access to grounds further away from their home port. If access to the vessel's berth is subject to tidal restrictions this will limit the amount of time the vessel can stay out at sea.

In some cases, particularly where moving to an alternative ground would be unprofitable, individual fishers may stop fishing. Depending on the type and main target species of the vessel leaving the industry, this may not alter the income from the commercial fishing fleet in the area. Should a vessel that is part of the under 10 metre fleet or that is classed as being 'non-sector' leave the industry, the quota that it would have landed will be taken up by other vessels remaining in the industry, as these types of vessel do not own the quota<sup>109</sup>. Should a 'sector vessel'<sup>110</sup> leave the industry then there is a possibility that the value of its landings would be lost to the area. Should a vessel fishing for shellfish such as crab and lobster (which are not subject to European quota restrictions) leave the industry, the MMO would determine whether its licence could be transferred to another vessel. The shellfish licensing scheme restricts the number of vessels allowed to land these species. In the event that other businesses do not meet the shortfall of landings that arise from a vessel leaving the industry (as a result of designating the site), the contribution to the economy from the vessels landings from both within and outside the site are lost.

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<sup>109</sup> Vessels that are part of the under 10 metre fleet or are classed as being 'non-sector' have quota allocated to them by the MMO on a monthly basis.

<sup>110</sup> Sector vessels are generally over 10 metres in length and have their quota managed by a producer organisation; the quota can be individually owned by the vessel.

## H. Spreadsheet calculating total present value

The tables below shows the quantified costs identified for each sector in Section 3.2. The costs that are not quantified are listed in Section 3.2 and are not repeated here.

The left half of the table identifies the one-off and annual costs for each of the minimum and maximum scenarios. These are given as current costs in 2010 prices. Administrative costs (as defined by the government's Simplification Programme<sup>111</sup>) and policy costs are presented separately and the timing of the costs is specified. These costs are summed at the bottom of the left half of the table to give the total one-off costs and the total annual costs for each sector in current prices. The total of these costs for all the sectors is shown in the summary sheets of the IA and in the summary table in Section 3.4 of the IA.

In the right half of the table, the discount factor (for a discount rate of 3.5%<sup>112</sup>) in the top row is used to calculate the present value<sup>113</sup> of each of the costs for each of the 10 years (2010 – 2019) of the analysis. The right half of the table presents the present values of all of the costs for all of the years and the total present value of the administrative and policy costs. The present value of a cost in year 1 is the cost discounted by 3.5% (calculated by multiplying it by  $(1 - 1/(1+3.5\%))$  or by 99.6% as shown in the top row of the right hand side of the table). The discount factor builds up year on year, so the present value of the cost in year 2 is the cost multiplied by the discount factor from year 1 (99.6%) discounted by 3.5% (again multiplied by  $(1 - 1/(1+3.5\%))$ ), giving a discount factor of 93.4%.

The present values of the costs are used to calculate the following:

- The present value for the total costs of each item (the first column in the tables in the right). These are the present value figures reported for each sector in Section 3.2.
- The present value of the total costs for all sectors shown in the summary sheets of the IA.

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<sup>111</sup> Better Regulation Executive, 2005.

<sup>112</sup> As specified in H.M. Treasury (2007).

<sup>113</sup> This is the total value of all the costs over the 10 year assessment period (2010 – 2019) discounted at a rate of 3.5% to reflect society's preference to defer costs to future generations (and to receive goods and services sooner rather than later).

**The present value and time profile of the total costs shown in the summary sheets of the IA.**

Fisheries							Discount Factor	100.0%	96.6%	93.4%	90.2%	87.1%	84.2%	81.4%	78.6%	75.9%	73.4%	
Description		One-off Cost		Annual Cost			Year of Analysis	0	1	2	3	4	5	6	7	8	9	
Scenario	Cost Item	Type	Cost £k	Year Experienced	Cost £k	Year Commencing	Average	Present Value of Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>MINIMUM</b>	Loss of GVA from impact on fisheries landings	Policy			32.72	2010	32.72											
<b>Total</b>		<b>Admin</b>	0		0		-	<b>Admin</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		<b>Policy</b>	0		32.72		32.72	<b>Policy</b>	281.61	32.72	31.61	30.54	29.51	28.51	27.55	26.61	25.71	24.85
		<b>Both</b>	0		32.72		32.72	<b>Both</b>	281.61	32.72	31.61	30.54	29.51	28.51	27.55	26.61	25.71	24.85
								<b>Present Value of Cost</b>										
<b>MAXIMUM</b>	Loss of GVA from impact on fisheries landings	Policy			39.47	2010	39.47											
<b>Total</b>		<b>Admin</b>	0		0		-	<b>Admin</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		<b>Policy</b>	0		39.47		39.47	<b>Policy</b>	339.76	39.47	38.14	36.85	35.60	34.40	33.23	32.11	31.02	29.98
		<b>Both</b>	0		39.47		39.47	<b>Both</b>	339.76	39.47	38.14	36.85	35.60	34.40	33.23	32.11	31.02	29.98

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Managing the SAC							Discount Factor	100.0%	96.6%	93.4%	90.2%	87.1%	84.2%	81.4%	78.6%	75.9%	73.4%				
Description							One-off Cost	Annual Cost			Year of Analysis	0	1	2	3	4	5	6	7	8	9
Scenario	Cost Item	Type	Cost £k	Year Experienced	Cost £k	Year Commencing	Average	Cost £k	Present Value of Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
MINIMUM	Management & advisory groups	Policy	94	2010	60.5	2010	60.50	614.77	154.50	58.45	56.48	54.57	52.72	50.94	49.22	47.55	45.94	44.39			
	Management & advisory groups	Policy	60.5	2011				58.45	0.00	58.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Staff input to management	Policy			15.5	2010	15.50	133.42	15.50	14.98	14.47	13.98	13.51	13.05	12.61	12.18	11.77	11.37			
	Enforcement	Policy			43.45	2010	43.45	374.03	43.45	41.98	40.56	39.19	37.87	36.59	35.35	34.15	33.00	31.88			
	Survey	Policy	70	2010				70.00	70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Survey	Policy	70	2014				61.00	0.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Survey	Policy	70	2017			-	55.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.02	0.00	0.00		
Total	Admin		0		0		-	Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Policy		364.5		119.5		119.45	Policy	1366.69	283.45	173.87	111.51	107.74	165.10	100.58	97.18	148.91	90.71	87.65		
	Both		364.5		119.5		119.45	Both	1366.69	283.45	173.87	111.51	107.74	165.10	100.58	97.18	148.91	90.71	87.65		
								Present Value of Cost	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
MAXIMUM	Management & advisory groups	Policy	94	2010	60.5	2010	60.50	614.77	154.50	58.45	56.48	54.57	52.72	50.94	49.22	47.55	45.94	44.39			
	Management & advisory groups	Policy	60.5	2011				58.45	0.00	58.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	Staff input to management	Policy			15.5	2010	15.50	133.42	15.50	14.98	14.47	13.98	13.51	13.05	12.61	12.18	11.77	11.37			
	Enforcement	Policy			43.45	2010	43.45	374.03	43.45	41.98	40.56	39.19	37.87	36.59	35.35	34.15	33.00	31.88			
	Survey	Policy	70	2010				70.00	70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
	Survey	Policy	70	2014				61.00	0.00	0.00	0.00	0.00	61.00	0.00	0.00	0.00	0.00	0.00			
	Survey	Policy	70	2017			-	55.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.02	0.00	0.00		
Total	Admin		0		0		-	Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	Policy		364.5		119.5		119.45	Policy	1366.69	283.45	173.87	111.51	107.74	165.10	100.58	97.18	148.91	90.71	87.65		
	Both		364.5		119.5		119.45	Both	1366.69	283.45	173.87	111.51	107.74	165.10	100.58	97.18	148.91	90.71	87.65		

Time profile of total costs (not discounted, £m, Y= Year)

	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
Transition costs	0.16	0.06	-	-	0.07	-	-	0.07	-	-
Annual recurring cost	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Total annual costs	0.32	0.22	0.16	0.16	0.23	0.16	0.16	0.23	0.16	0.16

## I. Impact Tests

Consideration has been given within the main body of the assessment to relevant and identifiable environmental impacts and effects on sustainable development. The further specific tests specified by the IA guidance are considered here.

### Competition Assessment

Designation of the SAC is not expected to have a significant impact on competition. Assessment of the impact, shown in the table below (in the format specified in the Office of Fair Trading Guideline (2007)), is restricted to the impacts of designating Prawle Point to Plymouth Sound and Eddystone SAC. The table presents the impact of the hypothetical management measures for the maximum scenario as this scenario is likely to involve larger effects on competition than the minimum scenario. In addition to these effects, the cumulative impacts of marine conservation under EU legislation, through designation of Natura 2000 sites in the marine environment, could have more significant effects on competition in some sectors.

<b>Table I.1</b> Competition assessment for hypothetical management measures for the maximum scenario for Prawle Point to Plymouth Sound and Eddystone SAC	
<i>Would the proposal:</i>	<i>Commercial fisheries</i>
<i>1. Directly limit the number or range of suppliers?</i>	Possible local impact, no effect at UK and England Level.
<i>2. Indirectly limit the number or range of suppliers?</i>	No.
<i>3. Limit the ability of suppliers to compete?</i>	Possible local impact, no effect at UK and England Level.
<i>4. Reduce suppliers' incentives to compete vigorously?</i>	No.

### Small Firms Impact Test

Small and Medium Enterprises (SMEs) are considered for these purposes to be those with fewer than 250 employees. The only industry potentially affected by the designation with a significant number of SMEs is fishing.

In the fishing industry it is likely that the fishing vessels that may be impacted on by any additional management measures would be owned by SMEs. Under the maximum scenario, the profitability of some small fishing businesses could potentially be affected. For example, their adaptation to the management measures for the site may increase costs, reduce value of landings or both.

Down-stream and up-stream effects in other sectors could also impact on SMEs, but impacted activities are likely to be displaced, at least partly to other locations in the UK economy, limiting the overall impact on SMEs in the UK. For example,

there are a number of SMEs which are directly and indirectly connected to the fishing sector, which could potentially be impacted on by designation. These include, the retail trade (fish mongers, markets) fish processing plants, ship builders and diesel suppliers.

#### Greenhouse Gas Assessment

The impact of designating the site on greenhouse gas (GHG) emissions is unknown but not expected to be significant. If fishing vessels have to travel longer distances to access alternative fishing grounds this would increase emissions depending on vessel size and whether they already operate over a variety of fishing grounds. If anchoring restrictions are implemented they will have the potential to increase or decrease GHG emissions depending on if the anchorages are moved inshore or offshore from their current location.

Another potential impact arises if any increase in operations and therefore emissions is required at sewage treatment works for nutrient removal. However, this can be offset by using renewable sources of energy and more sustainable technologies at the nutrient source.

#### Health and well being

Well being of UK society is expected to benefit through the satisfaction people gain from the knowledge that habitats and species in the site are being conserved.

#### Human rights

The designation will have the effects set out in section 1.3 and may have the effects, or some of them, set out in section 3.2. The effect of designating the site on Human Rights has been considered and it is thought that this designation, balancing the public and the private interests, justifies any interference with property rights that it may have under Protocol 1 Article 1 of the European Convention on Human Rights and is compatible with the Convention rights.

#### Rural proofing

Some of the potential economic costs identified in relation to fisheries may occur in remote coastal communities in predominantly rural areas of the UK. Due to the less diversified nature of their local economies, the potential impacts may be relatively more important as a proportion of economic activity in these locations.

#### Other Impact Tests

The effect of designating the site on statutory equality duties and the justice system has been considered and it is not thought to have an impact. Consequently these impact tests are not examined further here.