Start Point to Plymouth Sound and Eddystone candidate Special Area of Conservation

Formal advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended)

Version 1.5 (January 2013)

Document version control

Version	Author	Amendments made	Issued to and date
1.5	Andrew Knights	Minor amendments following QA by Caroline Cotterell	Caroline Cotterell, (SRO Conservation Advice) 07/01/2013
1.4	Louisa Knights	Minor amendments following QA by Mark Duffy	Chris Davis, Senior Adviser (Reg 35 Conservation Advice) 20/09/12
1.3	Louisa Knights	Update references to Habitats Regulations throughout to reflect recent Amendment of Regulation; addition of text explaining review process; amendments to standard text throughout. Minor revision of site specific text.	Mark Duffy, Principle Specialist, 11/09/2012
1.2	Louisa Knights	Amendments following technical QA panel review.	Chris Davis, Senior Adviser (Reg 35 Conservation Advice) 22/08/12
1.1	Louisa Knights	Checked against protocol, and minor amendments made to section 4 (advice on operations) text.	Sam King, Senior Adviser (Reg 35 Conservation Advice), Aug 2012
1.0	Louisa Knights	Amended from Prawle Point to Plymouth Sound and Eddystone Version 3.1, to incorporate the Start Point to Prawle Point addition	Paul Duncan, Senior Adviser (Reg 35 Conservation Advice), June 2012

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Formal advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended) (S.I., 2012)[1]

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[1] http://www.legislation.gov.uk/uksi/2012/1927/made

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1. Introduction

This document contains Natural England's formal advice for the Start Point to Plymouth Sound and Eddystone candidate Special Area of Conservation (cSAC) given under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended). The Start Point to Plymouth Sound and Eddystone cSAC is a site that combines two previous sites - Start Point to Prawle Point possible SAC (pSAC) and Prawle Point to Plymouth Sound and Eddystone cSAC. All conservation advice documentation for the two earlier sites is no longer relevant and is superseded by this Regulation 35 document.

Start Point to Plymouth Sound and Eddystone was formally submitted by the Government to the European Commission as an amendment to the Prawle Point to Plymouth Sound and Eddystone cSAC on 5th September 2011. Start Point to Plymouth Sound and Eddystone cSAC is with the European Commission awaiting 'moderation' (that is an assessment alongside all the other sites submitted by other Member States) for inclusion in the Natura 2000 network. If the European Commission approves the site, it will become a Site of Community Importance and Government then has six years to designate it as a SAC.

The cSAC is subject to full protection under the Habitats Directive[2] (transposed through The Conservation of Habitats and Species Regulations 2010 (as amended)[3] and the Offshore Marine Conservation Regulations (Natural Habitats, &c.) [Amendment] Regulations 2012 (herein referred to as the 'Habitats Regulations'). Amongst other things, the Habitats Regulations place an obligation on relevant authorities[4] to put in place measures to protect sites from damage or deterioration.

This document fulfils Natural England's duty under Regulation 35(3)[5] of The Habitats Regulations, to advise relevant authorities as to (a) the conservation objectives for Start Point to Plymouth Sound and Eddystone cSAC; and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which Start Point to Plymouth Sound and Eddystone cSAC has been designated.

The advice is based on best available information at the time of writing and will be reviewed to take account of new information.

This formal conservation advice constitutes one element of our advisory role in relation to this site. Relevant authorities can use the current information to explore and put in place management measures (if required) and competent authorities[6] can fulfil their duties under the Habitats Regulations in making the necessary determinations on the impact of activities on the site. If relevant authorities or competent authorities require any further advice, they are not limited to taking account of Natural England's formal conservation advice contained here, and would be expected to make further enquiries as required in order to make determinations or implement management measures. Further information/reference should

[2] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora
[3] http://www.legislation.gov.uk/uksi/2012/1927/introduction/made
[4] as defined under Regulation 6 of The Conservation of Habitats and Species Regulations 2010 (as amended)
[5] http://www.legislation.gov.uk/uksi/2010/490/regulation/35/made
[6] as defined under Regulation 7 of The Conservation of Habitats and Species Regulations 2010

be made to the Selection Assessment Document[7] which captures data and information used to identify the site.

An independent review[8] of Natural England's marine SAC selection process carried out in 2011 made a number of recommendations as to how Defra and Natural England should modify their approach to future evidence based work. This resulted in Natural England adopting the Government Chief Scientific Adviser's (GCSA) guidelines[9] on using evidence, through the development of a suite of Evidence Standards[10]. Implementation of these standards has included Natural England working with JNCC to develop a protocol[11], which has been subject to independent expert review, setting out the processes and requirements for the development of conservation advice packages, to ensure that these fully comply with the GCSA's guidelines. Whilst the conservation advice provided here was developed prior to the finalisation of the protocol, it has been assessed for compliance with the protocol and a detailed report can be found on our website[12].

During 2011/12 Government instigated a review of the implementation of the Habitats and Wild Birds Directive. The review concluded that all conservation objectives (marine and terrestrial) should be up-to date, accessible and allow applicants to assess the impact of their proposed development against them. The report[13] requested Natural England with the Joint Nature Conservation Committee (JNCC) to develop a new approach to improve the information contained in conservation objectives. Natural England has committed to review and update its conservation objectives for all European Marine Sites to make them more definitive and explicit. We will be consulting with stakeholders on the approach, as well as how we can make the formal conservation advice we provide under Regulation 35 more accessible and easier to use. The review of conservation advice will then begin in 2013 on a prioritised basis. We will use this review to update the advice contained within this document, to take account of new evidence that subsequently becomes available, and improved scientific understanding.

2. Roles and responsibilities

2.1 Natural England's role

The Habitats Regulations transpose the Habitats and Birds Directive into law in England and Wales. They give Natural England a statutory responsibility to advise relevant authorities as to the conservation objectives for cSACs, SACs and Special Protection Areas (SPAs) in English territorial waters (0-12nm) and to advise relevant authorities as to operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the sites have been designated.

[7] http://www.naturalengland.org.uk/Images/start-plymouth-eddystone-SAD_tcm6-27677.pdf
[8] http://www.defra.gov.uk/publications/files/pb13598-graham-bryce-independent-review-marine-sacs-110713.pdf
[9] http://www.bis.gov.uk/assets/goscience/docs/g/10-669-gcsa-guidelines-scientific-engineering-advice-policy-making.pdf
[10] http://www.naturalengland.org.uk/ourwork/research/default.aspx
[11] http://www.naturalengland.org.uk/Images/R35ConservationAdvicePackageProtocol_tcm6-33228.pdf
[12] http://www.naturalengland.org.uk/ourwork/marine/mpa/ems/submitted.aspx
[13] http://www.defra.gov.uk/publications/2012/03/22/pb13724-habitats-wild-birds-directives/

Natural England will provide additional advice as required for each site to relevant and competent authorities in order for them to fulfil their duties under the Habitats Regulations, such as a competent authority assessing the implications of any plans or projects on a cSAC, SAC or SPA.

2.2 The role of relevant and competent authorities

A **competent** authority is any statutory body or public office that exercises legislative powers on land or sea. All competent authorities must have regard for the requirements of the Habitats Directive in the exercise of their functions (regulation 9(3)).

Competent authorities have specific duties and powers under the Habitats Regulations. Where a decision is being considered within or affecting a Natura 2000[14] site, then the competent authority must follow the procedures in Regulations 61 and 62. Competent authorities also have duties under Regulations 69 and 70 for the review of decisions that have already been made. These Regulations refer back to the procedures set out in Regulation 61.

A **relevant** authority is a competent authority whose powers and functions have, or could have, an impact on the Natura 2000series. The Habitats Regulations require relevant authorities to exercise their functions so as to secure compliance with the Habitats Directive. Relevant authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on interest features of the site. This may include consideration of issues outside the boundary of the site.

The relevant authority is responsible for determining whether a plan or project is likely to have a significant effect on a site, and carrying out an appropriate assessment. Regulation 61(2) makes it clear that the *applicant* has to supply the necessary information for the relevant authority to make the assessment. When carrying out the assessment, the relevant authority **must** consult Natural England in accordance with the Habitats Regulations.

Regulation 36[15] of the Habitats Regulations, permits relevant authorities to develop management schemes for sites. This should be based on the advice in this package.

Nothing within a Regulation 35 package will require relevant authorities to undertake any actions or ameliorate changes in the condition of interest features if it is shown that the changes result wholly from natural causes. Having issued Regulation 35 advice for this site, Natural England will work with relevant authorities and others to agree, within a defined time frame, a protocol for evaluating observed changes to baselines and to develop an understanding of natural change and provide further guidance as appropriate and possible. This does not, however, preclude relevant authorities from taking any appropriate action to prevent deterioration to the interest features, and indeed such actions should be undertaken when required.

2.3 Role of conservation objectives

The conservation objectives set out what needs to be achieved for the interest feature to be contributing effectively to Favourable Conservation Status of the interest feature across the Natura 2000 network.

[14] SACs and SPAs are together referred to as Natura 2000 sites or (in the marine environment) European Marine Sites.

[15] http://www.legislation.gov.uk/uksi/2010/490/regulation/36/made

Conservation objectives are the starting point from which management schemes and monitoring programmes may be developed as they provide the basis for determining what is currently causing or may cause a significant effect, and they inform the scope of appropriate assessments.

Conservation objectives also inform the scope and nature of any appropriate assessment which the Directive requires to be undertaken for plans and projects (Regulations 61 and 63 and by Natural England under Regulation 21 of the Habitats Regulations).

2.4 Role of advice on operations

The advice on operations set out in Section 5 of this document provides the basis for discussion about the nature and extent of the operations taking place within or close to the site and which may have an impact on its interest features. The advice should also be used to help identify the extent to which existing measures of control, management and forms of use are, or can be made, consistent with the site's conservation objectives, and thereby focus the attention of relevant authorities and surveillance to areas that may need management measures.

This advice on operations may need to be supplemented through further discussions with the relevant authorities and any advisory groups formed for the site.

2.5 Precautionary principle

All forms of environmental risk should be tested against the precautionary principle; this means that where there are real risks to the site, lack of full scientific certainty should not be used as a reason for postponing measures that are likely to be cost effective in preventing such damage. It does not imply that the suggested cause of such damage must be eradicated unless proved to be harmless and it cannot be used as a licence to invent hypothetical consequences. Moreover, it is important, when considering whether the information available is sufficient, to take account of the associated balance of likely costs, including environmental costs, and benefits (DETR & the Welsh Office, 1998).

3. Conservation objectives

3.1 Background to conservation objectives

The conservation objectives and definitions of favourable condition for features on the site may inform the scope and nature of any appropriate assessment under the Habitats Regulations[16]. An appropriate assessment will also require consideration of issues specific to the individual plan or project.

The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed plan or project. Natural England will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in paragraph 20 of ODPM Circular 06/2005 (DEFRA Circular 01/2005)[17] as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The

[16] Regulation 61 and 63 by a competent authority and Regulation 21 by Natural England
[17] http://www.communities.gov.uk/documents/planningandbuilding/pdf/147570.pdf

determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition, at least in the short term.

The conservation objectives for this site are provided in accordance with paragraph 17 of ODPM Circular 06/2005 (DEFRA Circular 01/2005) which outlines the appropriate assessment process. The entry on the Register of European Sites gives the reasons for which a site was classified or designated.

3.2 Start Point to Plymouth Sound and Eddystone cSAC conservation objectives

The formal conservation objectives for the Start Point to Plymouth Sound and Eddystone cSAC interest feature (reef) are provided below. These are high-level objectives for the site feature, and Natural England may refine them in the future as our understanding of this feature improves and further information becomes available, such as new survey work. They should be read in the context of other advice given, particularly:

- the Selection Assessment Document[7] which provides more detailed information about the site and evaluates its interest feature according to the Habitats Directive selection criteria and guiding principles;

- the favourable condition table (Appendix A) providing information on how to recognise favourable condition for this feature and which will act as a basis from which the monitoring programme will be developed; and

- the attached maps (Appendix B) which show the known locations of the interest feature.

3.2.1 Reefs

Definition

Reefs are structures that rise from the seabed and can be formed of either biogenic concretions (i.e. a structure created by the animals themselves, such as mussels), or of geogenic origin (i.e. where animal or plant communities grow on raised or protruding rock). They are predominantly subtidal, but may extend as an unbroken transition into the intertidal (littoral) zone, where they are exposed to the air at low tide. A variety of subtidal seafloor features may be included in the reef habitat complex, such as hydrothermal vent habitats, sea mounts, vertical rock walls, horizontal ledges, overhangs, pinnacles, gullies, ridges, sloping or flat bedrock, broken rock and boulder and cobble fields. Reefs may support a zonation of seafloor communities of algae and animal species. Only a few invertebrate species are able to develop biogenic reefs, which are therefore restricted in distribution and extent (Brown et al., 1997).

Rocky reef types are extremely variable, both in structure and in the communities they support. The specific communities that occur vary according to a number of factors. Exposure to wave action has a major effect on community structure, as does rock type with communities on the granite reefs being markedly different to those occurring on chalk reefs. Light intensity, which varies with depth, also has a major effect on community structure. Consequently, shallow water communities are dominated by seaweeds, whilst deeper rock surfaces are colonised purely by attached animals. Another major factor affecting reef communities is the turbidity of the water. In turbid waters, light penetration is low and algae

can occur only in shallow depths or in the intertidal zone. In such conditions animals have a plentiful supply of suspended food and filter-feeding species may be abundant. In addition, in the UK there is a marked geographical trend in species composition related to seawater temperature, with warm, temperate species such as the sea fan *Eunicella verrucosa* and the corals *Leptopsammia pruvoti* (both found within Start Point to Plymouth Sound and Eddystone cSAC (Axelsson *et* al, 2006; Royal Haskoning, 2008; University of Plymouth, 2011)) only occurring in southern waters.

There are three main types of Annex I reef: bedrock reef; stony reef[18]; and biogenic reef. Current evidence shows bedrock reef to be present within Start Point to Plymouth Sound and Eddystone cSAC (Royal Haskoning,2008); University of Plymouth, 2011)).

3.2.2 Key reef sub-features of Start Point to Plymouth Sound and Eddystone cSAC

One sub-feature (bedrock reef) has been identified based on the reports of Royal Haskoning, 2008 and the University of Plymouth, 2011.

Bedrock reef communities

Bedrock reef communities are areas of protruding rock, colonised by a suite of flora and fauna. A transition of communities can occur from the near surface sunlit zone, dominated by plants, such as kelp forests and red seaweeds, to the deeper waters where a variety of fauna inhabit the reef, including echinoderms, sponges, corals, anemones, bryozoans and crustaceans. Bedrock reef communities are dominant throughout the Start Point to Plymouth Sound and Eddystone cSAC, being present in all three areas of the site in a variety of geographically complex forms including; limestone reefs and outcrops, siltstone, schist, shale reef, rocky gullies, fissures, crevices, pinnacles, boulder fields, outcropping bedrock, and flat faced angular vertical cliffs and overhangs (BGS, 1996; Irving, 1996; Royal Haskoning, 2008; University of Plymouth, 2011).

3.2.3 Importance of features

The reefs within this site are some of the most biologically diverse in the country and play an important role in supporting species that are considered rare or are occurring at the limit of their biogeographical distribution.

The Start Point to Plymouth Sound and Eddystone cSAC comprises a mosaic of three sections (see map in Appendix B):

- Area A - The Eddystone reefs (i.e. Eddystone to Hatt Rock);
- Area B - Bigbury Bay to Plymouth Sound reefs; and
- Area C - Start Point to West Rutts reefs

For the purpose of the conservation objectives the Start Point to West Rutts reefs and the Bigbury Bay to Plymouth Sound reefs (i.e. Areas B and C) are referred to as “inshore reef” and the Eddystone reefs (Area A) are referred to as “offshore reef”. The site boundary

[18] To qualify as a stony reef, 10% or more of the seabed substratum should be composed of particles greater than 64mm across, i.e. cobbles and boulders. The remaining supporting ‘matrix’ could be of smaller sized material. The reef may be consistent in its coverage or it may form patches with intervening areas of finer sediment. Stony reefs are dominated by epifaunal communities rather than infaunal species and are elevated from the seabed and stable (IRVING, 2009). By its nature, stony reef is more vulnerable to being moved than bedrock reef, but due to the interstitial spaces and hard surfaces of coarse particles, is capable of harbouring a rich variety of species, including corals, anemones, and sponges.

encloses 34,076.13 hectares (ha), comprising an area of Annex I reef habitat of approximately 12,106.86 ha, which is 36% of the total site area (see Appendix B).

Inshore reefs (Area B and Area C)

The inshore reefs comprise coastal reef associated with the extension of the exposed terrestrial geology out into the sublittoral zone and large areas of outcropping bedrock, boulders and cobbles in the offshore extents of the area.

The reefs between Start Point and Salcombe have a high topographic complexity and around Start Point they consist of slate bedrock reef and steep cliff faces. This part of the cSAC has higher numbers of antenna hydroids and erect branching bryozoans than the inshore reefs further east, and records of the rosy feather star, *Antedon bifida*, *Lithophyllum species* (an encrusting coralline algae), and the plumose anemone, *Metridium senile*, have recently been recorded between Start Point and Prawle Point (University of Plymouth, 2011). The reefs between Salcombe and Prawle Point mainly comprise outcropping bedrock characterised by boulders and rocky gullies, fissures and crevices. The inshore reefs here support large kelp forests and a variety of other algal species, whilst the file shell (*Limaria hians*), which is unusual in south-west Britain, is found in areas further offshore. Blackstone Point is especially important for nationally scarce brown seaweed (*Carpomitra costata*) and Stoke Point has a rich community of branching sponges, including a nationally rare species (*Adreus fascicularis*) (Royal Haskoning, 2008).

The Bigbury Bay to Plymouth Sound reef area is an extensive area of outcropping bedrock reef characterised by rugged inclines, steep faces, slate ridges and overhangs. Shallow parts of these reefs are dominated by algae including extensive kelp forests whilst, below a depth of about 20m, faunal communities predominate, including a range of animal communities such as starfish (*Marthasteria glacialis*), pink sea fans (*Eunicella verrucosa*), soft corals (*Alcyonium digitatum*), sponges (*Cliona celata, Raspailia ramosa, Axinella dissimilis, Esperiopsis fucorum*), sea urchins (*Echinus esculentus*), tube worms (*Phyllochaetopterus anglicus, Pomatoceros triqueter*), and bryozoans (*Cellaria sp., Scryoicekkaruam Bugula, Securiflustra securifrons, Alcyonidium diaphanum*) (Royal Haskoning, 2008). Reefs here are fragmented, with shale reefs especially having extensive overhangs. In the area between Plymouth Sound and Prawle Point, "The Drop-off", a submerged cliff line between about 25m and 35m below chart datum and about 2km south of the Plymouth Sound breakwater, is a geological feature and an important habitat for many rare and scarce species including the football seasquirt (*Diazona violacea*), trumpet anemone (*Parazoanthus axinellae*), Weymouth carpet coral (*Hoplangia durotrix*), large populations of the nationally rare sunset cup coral (*Leptopsammia pruvoti*) (Hiscock & Breckels, 2007) and extensive and dense beds of the pink sea fan (*Eunicella verrucosa*). The Bigbury Bay to Plymouth Sound reefs exhibit similar topographic complexity to that seen near the coast, with pinnacles, boulder fields and complex broken geological features being frequently recorded.

Offshore reefs (Area A)

The Eddystone Reefs, which lie 20 km south off Plymouth Sound (Davies, 1998), are Devonian in age and consist of schist, siltstone and limestone (BGS, 1996) with flat-faced, angular vertical cliffs and overhangs (Irving, 1996). The Eddystone and surrounding reefs represent unusual features within the study area in that they lie in deep water and rise steeply, and in the case of the Eddystone, break the water's surface. These host a rich biological community that exhibit classic rocky zonation from deep to shallow water. A wide

range of species are found here including soft corals (e.g. *Alcyonium digitatum*), sea cucumbers (*Holothurian forskali*), sea urchins (*Echinus esculentus*), sponges (e.g. *Cliona celata, Polymastia boletiformis*), jewel anemones (*Corynactis viridis*), sea squirts (*Diazona violacea*) and kelp forests. The sea fan anemone (*Amphianthus dohrnii*) and sunset cup coral (*Leptopsammia pruvoti*) (both nationally rare species) and the pink sea fan (*Eunicella verrucosa*) have been observed (Axelsson *et* al, 2006; Royal Haskoning, 2008; University of Plymouth, 2011). The area has been subject to detailed investigations commissioned by Natural England in 2005, with a view to assessing the sites potential for supporting Annex I reef habitat as defined by the Habitats Regulations (see section 3.2.2). Results from such investigations show the reef habitat to be fragmented, consisting of five distinct reefs (Eddystone reef, Hand Deeps, Middle Rock, Phillips Rocks and Hatt Rock (Axlesson et al., 2006). Hatt Rock attracts deeper water species such as the cushion star (*Porania pulvillus*), as well as other species such as the slipper lobster (*Scyllarus arctus*), the sea fan anemone (*Amphianthus dohrnii*), and parchment tube worms (*Phyllochaetopterus anglicus*) (Royal Haskoning, 2008). Although the individual reefs are relatively small (both on a national and local scale), they are ecologically diverse and represent a locally significant area (in terms of their size) of permanently submerged, offshore reef habitat.

3.2.4 The conservation objectives for Start Point to Plymouth Sound and Eddystone cSAC Annex I Reefs:

Subject to natural change[19], **maintain**[20] the **reefs** in favourable condition[21], in particular the sub-feature:

- Bedrock reef

Favourable condition of the reefs will be determined through assessment that the following are maintained in the long term in the site:

1. Extent of the habitat;
2. Diversity of the habitat and it's component species;
3. Community structure of the habitat (e.g. population structure of individual notable species and their contribution to the functioning of the ecosystem);
4. Natural environmental quality (e.g. water quality, suspended sediment levels, etc);
5. Natural environmental processes (e.g. biological and physical processes that occur naturally in the environment, such as water circulation and sediment deposition should not deviate from baseline at time of designation).

[19] **Natural change** refers to changes in the habitat which are not a result of human influences. Human influence on the interest features is acceptable provided that it is proved to be/can be established to be compatible with the achievement of the conditions set out under the definition of favourable condition for each interest feature. A failure to meet these conditions, which is entirely a result of natural process will not constitute unfavourable condition, but may trigger a review of the definition of favourable condition. Features should not necessarily be considered in unfavourable condition when caused by the short term disappearance of a particular community due to natural processes.

[20] **Maintain** implies that existing evidence suggests the feature to be in favourable condition and will, subject to natural change, remain at its condition at designation. Existing activities are therefore generally considered to be sustainable and be unlikely to adversely affect the condition of the feature *if current practices are continued at current levels.* However, it must be borne in mind that gradually damaging activities can take time to show their effects. If evidence later shows an activity to be negatively affecting the conservation objectives of the site, then the site will be deemed to be in unfavourable condition and restorative action will needed.

[21] **Favourable condition** relates to the maintenance of the structure, function, and typical species for that feature within the site.

The favourable condition table (Appendix A) further defines favourable condition for the interest feature of this site.

The site survey commissioned in 2007 to identify Annex I features did not find any evidence of anthropogenic or natural disturbance, or damage to the structures of the habitats identified (Royal Haskoning, 2008), and the more recent surveys by the University of Plymouth found only a few instances of minor anthropogenic impacts (University of Plymouth, 2011). The site therefore currently has a conservation objective of 'maintain' rather than 'restore'[22].

3.3 Background to favourable condition tables

The favourable condition table is the principle source of information that Natural England will use to assess the condition of an interest feature and as such comprises indicators of condition. The favourable condition table can be found at Appendix A.

On many terrestrial European sites, we know sufficient about the required condition of qualifying habitats to be able to define favourable condition with confidence. In contrast, understanding the functioning of large, varied, dynamic marine and estuarine sites, which experience a variety of pressures resulting from historic and current activities, is much more difficult, and it is consequently much harder to define favourable condition so precisely in such sites. It must be borne in mind that gradually damaging activities can take time to show their effects. If evidence later shows an activity to be negatively affecting the conservation objectives of the site, then the site will be reassessed in light of this new information and restorative action put in place if needed.

Where there are more than one year's observations on the condition of marine habitats, all available information will need to be analysed to determine, where possible, any natural environmental trends at the site. This will provide the basis for judgements of favourable condition to be determined in the context of natural change. Where it becomes clear that certain attributes may indicate a cause for concern, and if further investigation indicates this is justified, restorative management actions will need to be taken. The aim of such action would be to return the interest feature to favourable condition from any unfavourable state. This document will be revised in light of ongoing and future monitoring of the condition of the designated feature within the site. This will be linked with any developments in our understanding of the structure and functioning of the reefs and the pressures they are exposed to.

This advice also provides the basis for discussions with relevant authorities, and as such the attributes and associated measures and targets may be modified over time. The aim is to have a single agreed set of attributes that will be used as a basis for monitoring in order to report on the condition of features. Condition monitoring of the attributes may be of fairly coarse methodology, underpinned by more rigorous methods on specific areas within the site. Common Standards Monitoring (JNCC, 2004) requires mandatory monitoring of some attributes of a designated feature, while other attributes are considered discretionary (or site specific) and are incorporated to highlight local distinctiveness. Priority will be given to measuring attributes that are at risk from anthropogenic pressure and for which changes in management may be necessary. This information may be generated by Natural England or collected by other organisations through agreements.

[22] **Restore** implies that the feature is degraded to some degree and that activities will have to be managed to reduce or eliminate negative impact(s). Restoration in the marine environment generally refers to natural recovery through the removal of unsustainable physical, chemical and biological pressures, rather than intervention (as is possible with terrestrial features).

Whilst the favourable condition table is the key source of information of condition for the site feature, additional sources of information may also be selected to inform our view about the integrity and condition of the site. For example, a part of risk based monitoring activity data (as collected by the relevant authorities) will give an indication as to the levels of pressure that may impact on the site feature.

The condition monitoring programme will be developed through discussion with the relevant / competent authorities and other interested parties, ideally as part of the management scheme process. Natural England will be responsible for collating the information required to assess condition, and will form a judgement on the condition of the reef feature within the site. The condition assessment will take into account all available information, including other data on site integrity / condition that has been gathered by others for purposes such as appropriate assessment, licence applications etc. using the favourable condition table to guide the process.

4. Advice on operations

4.1 Background

Natural England has a duty under Regulation 35(3)(b) of the Habitats Regulations (S.I., 2010) to advise other relevant authorities as to any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated.

As part of its advice on operations Natural England has considered the pressures that may be caused by activities and the vulnerability of the site's interest feature to those pressures.

The following sections provide information to help relate general advice to the specific interest feature for the Start Point to Plymouth Sound and Eddystone cSAC to current levels of human usage. This is aimed at being a broad assessment of pressures and the vulnerability of the feature.

This advice relates to the vulnerability of the bedrock reef within the Start Point to Plymouth Sound and Eddystone cSAC. The process of deriving and scoring relative vulnerability is provided at Appendix C. A summary of the operations which may cause deterioration or disturbance is given at Appendix D, and detailed in Appendix E. Further explanation of the sensitivity of the interest feature or sub-feature follows with examples of the exposure and therefore vulnerability to damage or disturbance from the listed categories of pressures. This enables links to be made between the categories of pressure and the ecological requirements of the feature.

4.2 Purpose of advice

The aim of this advice is to enable all relevant authorities to direct and prioritise their work on the management of activities that pose the greatest potential threat to the favourable condition of the interest feature in Start Point to Plymouth Sound and Eddystone cSAC. The advice is linked to the conservation objectives for the reef interest feature and will help provide the basis for detailed discussions between relevant authorities enabling them to formulate and agree a management scheme for the site should one be deemed necessary.

The advice given here will inform, but is given without prejudice to, any advice provided under Regulation 61 or Regulation 63 on operations that qualify as plans or projects within the meaning of Article 6 of the Habitats Directive.

4.3 Methods for assessment

To develop this advice on operations Natural England has used a three step process involving:

- an assessment of the **sensitivity** of the interest features or their component sub-features to operations;
- an assessment of the **exposure** of each interest feature or their component sub-features to operations; and
- a final assessment of **current vulnerability** of interest features or their component sub-features to operations.

This three step process builds up a level of information necessary to manage activities in and around the site in an effective manner. Through a consistent approach, this process enables Natural England to both explain the reasoning behind our advice and identify to competent and relevant authorities those operations which pose the most current threats to the favourable condition of the interest features on the site.

A number of different biotopes and species are present within the site. However, for the purpose of assessment, site-specific data on biotopes and species associated with the Annex I feature or sub-feature were used, according to best available site-specific information at the time of writing (Appendix F).

4.3.1 Sensitivity assessment

The sensitivity assessment used is an assessment of the relative sensitivity of the interest sub-feature (i.e. bedrock reef) to the broad categories of human activities.

In relation to this assessment, sensitivity has been defined as the intolerance of a habitat, community or individual (or individual colony) of a species to damage, or death, from an external factor (Hiscock, 1996). Sensitivity is dependent on the intolerance of a species or habitat to damage from an external factor and the time taken for its subsequent recovery. For example, a very sensitive species or habitat is one that may be killed or destroyed, and/or takes a very long time to recover.

The sensitivity of the interest feature was based on the sensitivities of the component biotopes and species, where sensitivity assessments were available (Appendix F). Biotope and species sensitivities were derived from the Marine Life Information Network (MarLIN) biology and sensitivity database (Tyler-Walters & Hiscock, 2003). Biotope and species sensitivities were assessed using the MarLIN approach (Hiscock & Tyler-Walters, 2006; Tyler-Walters & Hiscock, 2005; Tyler-Walters et al., 2001). Sensitivities are available from the MarLIN website[23].

4.3.2 Exposure assessment

This has been undertaken for Start Point to Plymouth Sound and Eddystone cSAC by assessing the relative exposure of the sub-feature (bedrock reef) to the effects of broad categories of human activities currently occurring on the site. These assessments were made on the basis of the best available information and advice.

[23] www.marlin.ac.uk

Appendix E shows the relative exposure of the Start Point to Plymouth Sound and Eddystone cSAC's sub-feature to physical, chemical and biological pressures. This assessment is based on known human activities operating in or adjacent to the site, and the anticipated pressures associated with these activities.

4.3.3 Vulnerability assessment

The third step in the process is to determine the vulnerability of interest features or their component sub-features to operations. This is an integration of sensitivity and exposure. Only if a feature is both sensitive and exposed to a human activity will it be considered vulnerable. In this context therefore, 'vulnerability' has been defined as the exposure of a habitat, community or individual (or individual colony) of a species to an external factor to which it is sensitive (Hiscock, 1996).

4.4 Format of advice

The advice is provided within six broad categories of operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species. This approach therefore:

- enables links to be made between human activities and the ecological requirements of the habitats or species, as required under Article 6 of the Habitats Directive;

- provides a consistent framework to enable relevant authorities in England to assess the effects of activities and identify priorities for management within their areas of responsibility; and

- is appropriately robust to take into account the development of novel activities or operations which may cause deterioration or disturbance to the interest features of the site and should have sufficient stability to need only infrequent review and updating by Natural England.

These broad categories provide a clear framework against which relevant authorities can assess activities under their responsibility.

4.5 Update and review of advice

Information as to the operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated, is provided in light of what Natural England knows about current and recent activities and patterns of usage at Start Point to Plymouth Sound and Eddystone cSAC. Natural England expects that the information on activities and patterns of usage will be refined and updated through the process of developing management measures and through discussion with the relevant authorities. As part of this process the option of identifying a number of spatial zones with different activity levels may be appropriate. It is important that consideration of this advice by relevant authorities and others takes account of up to date information and any changes in the usage patterns that have occurred at the site, since this advice was provided. In contrast, the information provided in this advice on the sensitivity of the interest sub-feature (bedrock reef) is relatively stable and will only change as a result of an improvement in our scientific knowledge, which will be a relatively long term process. Advice for sites will be kept under review and will be periodically updated through discussions with relevant authorities and others to reflect significant changes in our understanding of sensitivity together with the potential effects of plans and projects on the marine environment.

5. Specific advice on operations for Start Point to Plymouth Sound and Eddystone cSAC

The following sections provide information to help relate general advice to the reef interest feature for Start Point to Plymouth Sound and Eddystone cSAC.

This advice relates to the vulnerability of the bedrock reef within the Start Point to Plymouth Sound and Eddystone cSAC as summarised in Appendix D and detailed in Appendix E. Further explanation of the sensitivity of the interest feature follows with examples of its exposure and therefore vulnerability to damage or disturbance from the listed categories of operations. This enables links to be made between the categories of operation and the ecological requirements of the feature.

This advice relates to the vulnerability of the bedrock reef within the Start Point to Plymouth Sound and Eddystone cSAC to current levels of human usage.

5.1 Reefs

5.1.1 Physical loss

Both of the reef locations (inshore and offshore reef) are highly sensitive to loss through direct removal or smothering (Hiscock & Tyler-Walters, 2006). The loss of any of the reef communities would be of concern due to their ecological importance within the reef habitat and their long recovery times to this form of disturbance. Many communities that use the reef habitats are interdependent upon the ecological functioning of others (for example, invertebrate communities and fish) and it is important that this potential indirect effect is considered when the effects of removal or smothering are assessed.

Physical removal or smothering has the potential to affect the reef at this site, due in part to fishing activity within the site. Mobile fishing gear (including scallop dredging and trawling) is known to be used within the site boundary in relatively close proximity to both the inshore and the offshore reefs. Despite this likelihood of direct physical loss of the fringes of the reef, the topographic complexity of the reefs prevent the use of many types of towed bottom gear over the more upstanding reef areas. There are no direct inputs from disposal of dredged sediment within the site, although a dredge disposal site off Rame Head which has been used for many decades for the disposal of dredged material from the Port of Plymouth, lies a few kilometres away from the Eddystone Reefs area. There is no evidence of long-term accumulation of dredged material within the disposal site itself or in the adjacent marine environment (CEFAS, 2005). Overall, taking account of all activities, exposure to physical loss is considered to be low.

Overall the **vulnerability of the bedrock reefs** within the Start Point to Plymouth Sound and Eddystone cSAC to **physical loss** is considered to be **moderate**.

5.1.2 Physical damage

The bedrock reefs are sensitive to physical damage from abrasion (Hiscock & Tyler-Walters, 2006), which may result from shipping activities such as anchoring, as well as from a variety of fishing techniques. The key indicative bedrock reef species are commonly delicate slow growing species that rely on recruitment from the immediate surrounding waters. Any direct disturbance to an area may not only result in direct mortality but also impact on the success of the surrounding population. Therefore, the bedrock reef communities are considered

highly sensitive to siltation, abrasion and selective extraction (Hiscock & Tyler-Walters, 2006).

Mobile fishing gear sometimes encounters reefs and may cause damage to attached species, such as the pink sea fan *Eunicella verrucosa*. However, records of actual damage are few in this site, and given the high diversity of species consistently found throughout the area it is suggested that the structure has not been notably affected by these activities (Royal Haskoning, 2008). Static gear fishing does occur in the area, although, based on the information gathered to date, this does not appear to have significantly damaged the structure of the reef feature in this area (Royal Haskoning, 2008). Some of the area is protected from mobile fishing gear by the South Devon Trawling & Crabbing Chart (also known locally as the Inshore Potting Agreement or IPA). Thus exposure to physical damage is considered to be low or nil for both the inshore and the offshore reefs areas.

Overall the vulnerability of the inshore reefs within the Start Point to Plymouth Sound and Eddystone cSAC to physical damage from siltation and abrasion is considered to be moderate. The vulnerability of the offshore reefs is considered to be moderate for abrasion, however the offshore reefs are not considered vulnerable currently to siltation. Neither the inshore nor the offshore reefs are considered vulnerable to physical damage from selective extraction, as there is no exposure to activities such as aggregate dredging.

Overall the **vulnerability of the bedrock reefs** within the Start Point to Plymouth Sound and Eddystone cSAC to **physical damage** is considered to be **not vulnerable-moderate**.

5.1.3 Non-Physical damage

The bedrock reefs are not considered to be sensitive to non-physical disturbance through noise, however one of the species (*Cancer pagurus*) recorded in the inshore reef areas has a low level sensitivity to visual disturbance (MarLIN, 2013a). All reef areas (inshore and offshore) are thought to be exposed to low levels of this pressure.

Overall the **vulnerability of the reef** within the Start Point to Plymouth Sound and Eddystone cSAC to **non-physical disturbance** is considered to be **none-low**.

5.1.4 Toxic contamination

The dominant reef biotopes are likely to be of intermediate intolerance to chemical contamination and recover relatively quickly once the contamination is removed. However, where red algae dominated communities occur, sensitivity is likely to be higher as red algae are known to be sensitive to chemical contamination (MarLIN, 2013b). Although the kelp *Laminaria hyperborea* is relatively tolerant, the sensitivity suggested reflects the intolerance of the red algae, and is therefore considered to be moderate for non-synthetic compounds. The sensitivity of some species (e.g. *Lithophyllum sp*) to the introduction of synthetic compounds, is high, although the exposure to this is low.

Shipping accidents still occur leading to pollution and physical wreckage. Given the amount of shipping in the vicinity of the site boundary, potential exposure to toxic contamination from shipping is considered to be low, although it is an ongoing threat.

Overall the **vulnerability of the bedrock reefs** within the Start Point to Plymouth Sound and Eddystone cSAC to **toxic contamination** is considered to be **not vulnerable-moderate**.

5.1.5 Non-Toxic contamination

Discharges of pollution from the land could potentially impact on the interest feature in the site by causing changes in physio-chemical conditions of the overlying water, such as changes in temperature, turbidity, salinity, and increases in nutrient and organic matter.

The dominant biotopes and species are likely to be of moderate sensitivity to nutrient enrichment but where red algae dominated communities occur on the bedrock and boulder reefs, sensitivity is likely to be higher. Some biotopes within the sub-feature are sensitive to increases in turbidity (loss of light) caused by inputs from land, or dredge spoil dumping. The dominant kelp communities are unlikely to be particularly sensitive, except where faunal and algal turfs occur sensitivity is likely to be higher. The *Laminaria hyperborea* dominated biotopes are likely to be of moderate sensitivity to increases in turbidity. The long-lived, fragile species of the bedrock reef are intolerant of reduced oxygenation due to organic enrichment and are therefore considered highly sensitive to non-toxic contamination. The reef biotopes and species are considered highly sensitive to both changes in thermal regime and changes in salinity (Hiscock & Tyler-Walters, 2006).

Due to the proximity of the inshore reefs to the coast, they are currently exposed to low levels of non-toxic contamination from land based discharges (changes in nutrient loading, changes in organic loading, and changes in turbidity). The offshore reefs are not currently exposed to any forms of non-toxic contamination and are therefore not considered vulnerable to it.

Overall the **vulnerability of the bedrock reefs** within the Start Point to Plymouth Sound and Eddystone cSAC to **non-toxic contamination** is considered to be **not vulnerable to moderate**.

5.1.6 Biological disturbance

Biological disturbance includes the introduction of microbial pathogens or non-native species as well as selective extraction of species from the ecosystem. Echinoderm populations have been reported to be adversely affected by diseases, although no reports of mass mortality have been recorded in the UK (MarLIN, 2011). A precautionary sensitivity of low-moderate has been suggested for the introduction of microbial pathogens, however within this site there is little / no exposure to this factor. Vulnerability is therefore considered to be nil for both inshore and offshore reefs.

The sensitivity of the reef communities to the introduction of non-natives species is low-moderate within the Start Point to Plymouth Sound and Eddystone cSAC. Concern has increased over recent years about the potential impacts of the invasive non-native sea squirt *Didemnum vexillum*, which can overgrow most hard substrata in the sub-tidal zone and can include bedrock, pebbles, cobbles, gravel, boulders, biogenic reef and other hard bodied sessile animals and plants. Main transport pathways of *Didemnum vexillum* include recreational boating and aquaculture (Laing et al., 2010). Due to the relative proximity of the inshore reefs around Start Point to the Dart estuary (a recreational boating and aquaculture area), an exposure assessment of low has been given for the reefs in this area, however the offshore reefs are considered to be not exposed to the introduction of non-native species. The vulnerability of the reefs to the introduction of non-native species is nil (offshore reefs) to low (inshore reefs).

Selective extraction refers to the removal of the species or community. This includes either the removal of a specific species/community/keystone species in a biotope, or the removal of a required host or prey for the species under consideration. Any effects of the extraction process on the habitat itself are addressed under other factors, e.g. displacement, abrasion and physical disturbance, and substratum loss. *Eunicella verrucosa* is considered highly

sensitive to selective extraction, due to its slow growth and low recovery rates. This species is not known to be specifically targeted for extraction in the site.

Removal of fish species and larger molluscs and crustaceans can have significant impacts on the structure and functioning of benthic communities over and above the physical effects of fishing methods. Sensitivity of bedrock reef to selective extraction of species is considered to be high (Hiscock & Tyler-Walters, 2006). The cSAC is actively used for fishing and moderate levels of mobile and static gear fishing occurs within the area (Walmsley & Pawson, 2007), therefore exposure to biological disturbance through selective extraction of species is considered to be moderate.

Overall the **vulnerability of the bedrock reef** within the Start Point to Plymouth Sound and Eddystone cSAC to **biological disturbance** is considered to be **not vulnerable** (e.g.to the introduction of microbial pathogens) **- high** (to selective extraction).

6. References

AXELSSON, M., DEWEY, S., CHADDOCK, S., & DUKE, S., 2006. Survey of the reef habitat around Eddystone Rocks, Plymouth. Seastar Survey Ltd. Report for English Nature.

BGS, 1996. Offshore geology. Chaper 2.2 in, BARNE, J. H., ROBSON, C. F., KAZNOVSKA, S. S., DOODY, J. P., DAVIDSON, N. C., & BUCK, A. L., (eds). 1996. Coasts and seas of the United Kingdom. Region 10 South-west England: Seaton to the Roseland Peninsula. Peterborough, Joint Nature Conservation Committee. BROWN, A.E., BURN, A. J., HOPKINS, J. J., & WAY, S. F., 1997. The Habitats Directive: selection of Special Areas of Conservation in the UK. *JNCC Report,* No. 270.

BROWN, A. E., BURN, A. J., HOPKINS, J. J., & WAY, S. F., (eds), 1997. The Habitats Directive: selection of Special Areas of Conservation in the UK. Joint Nature Conservation Committee Report 270, Peterborough, 295pp.

CEFAS, 2005. Environmental impacts resulting from disposal of dredged material at the Rame Head disposal site, S.W. England: An analysis of existing data and implications for environmental management. A CEFAS Multi-disciplinary Project Team. Work performed under CEFAS Contract BA004. Version 2nd June 2005

DAVIES J, 1998. Western Channel (Durlston Head to Cape Cornwall, including the Isle of Scilly) (MNCR sector 8). In, Marine Nature Conservation Review. Benthic ecosystems of Great Britain and the north-east Atlantic, edited by K. Hiscock, 219-229. Peterborough, Joint Nature Conservation Committee (Coasts and seas of the United Kingdom, MNCR series).

DETR & THE WELSH OFFICE. 1998. *European Marine Sites in England & Wales* - A guide to the Conservation (Natural Habitats &c.) Regulations 1994 and to the Preparation and Application of Management Schemes. London: DETR.

HISCOCK, K. 1996. Marine Nature Conservation Review: rationale and methods. *Peterborough, JNCC*.

HISCOCK, K. & TYLER-WALTERS, H., 2006. Assessing the sensitivity of seabed species and biotopes - the Marine Life Information Network (*MarLIN***)**. *Hydrobiologia*, 555, 309-320.

HISCOCK, K. & BRECKELS, M. 2007. Marine Biodiversity Hotspots in the UK. A report identifying and protecting areas for marine biodiversity. *WWF*.

IRVING, R., 1996. The sea bed. Chapter 4.2 in, BARNE J H, ROBSON C F, KAZNOVSKA S S, DOODY J P, DAVIDSON N C and BUCK A L (eds), 1996. Coasts and seas of the United Kingdom. Region 10 South-west England: Seaton to the Roseland Peninsula. Peterborough, Joint Nature Conservation Committee.

IRVING, R., 2009. The identification of the main characteristics of stony reef habitats under the habitats Directive. Summary report of an inter-agency workshop 26-27 March 2008. *JNCC Report* No. 432

JNCC, 2004. Common Standards Monitoring Guidance for Marine, Version August 2004, ISSN 1743-8160.

LAING, I., BUSSELL, J., & SOMERWILL, K., 2010. Project report: Assessment of the impacts of *Didemnum vexillum* and options for the management of the species in England. Report to DEFRA.

MarLIN, 2011. Marine Life Information Network (MarLIN) assessment for *Laminaria hyperborea*. Available online from http://www.marlin.ac.uk/speciesbenchmarks.php?speciesID=3614#other_species (retrieved 21/04/2011).

MarLIN, 2013a. Marine Life Information Network (MarLIN) assessment for *Cancer pagurus*. Available online from http://www.marlin.ac.uk/speciesbenchmarks.php?speciesID=2872#visual_presence (retrieved 7/01/2013)

MarLIN, 2013b. Marine Life Information Network (MarLIN) assessment for *Palmaria palmata*. Available online from http://www.marlin.ac.uk/speciesbenchmarks.php?speciesID=4028#synthetic_chemicals (retrieved 7/01/2013)

NATURAL ENGLAND, 2010. Inshore Special Area of Conservation (SAC): Prawle Point to Plymouth Sound & Eddystone SAC Selection Assessment Document Version 2.4

NATURAL ENGLAND, 2011. Inshore Special Area of Conservation (SAC): Start Point to Plymouth Sound & Eddystone (incorporating Prawle Point to Plymouth Sound & Eddystone cSAC and Prawle Point to Start Point cSAC) SAC Selection Assessment Document. Version 3.7

ODPM, 2005. Government Circular: Biodiversity and Geological conservation – Statutory obligations and their impact within the planning system. Office of the Deputy Prime Minister. ODPM Circular 06/2005 (Defra Circular 01/2005).

ROYAL HASKONING, 2008. Site Selection Report for the Inshore Marine SACs Project. Salcombe to Yealm & Eddystone Site Selection. Report No. 9SO282/SSR/Salcombe/01

S.I., 2010. Statutory Instrument 2010, No. 490. The Conservation of Habitats and Species Regulations 2010. Crown Copyright.

TYLER-WALTERS, H., HISCOCK, K., LEAR, D.B. & JACKSON, A., 2001. Identifying species and ecosystem sensitivities**.** *Report to the Department for Environment, Food and Rural Affairs from the Marine Life Information Network (MarLIN), Marine Biological Association of the United Kingdom, Plymouth.* Contract CW0826.

TYLER-WALTERS, H. & HISCOCK, K., 2003**.** A biotope sensitivity database to underpin delivery of the Habitats Directive and Biodiversity Action Plan in the seas around England and Scotland. *Report to English Nature and Scottish Natural Heritage from the Marine Life Information Network (MarLIN). Plymouth: Marine Biological Association of the UK.* [*English Nature Research Reports*, ENRR No. 499.]

TYLER-WALTERS, H. & HISCOCK, K., 2005. Impact of human activities on benthic biotopes and species. *Report to Department for Environment, Food and Rural Affairs from the Marine Life Information Network* (*MarLIN*). Plymouth: Marine Biological Association of the UK. [Contract no. CDEP 84/5/244]

UNIVERSITY OF PLYMOUTH, 2011. South Devon reef video baseline surveys for the Prawle Point to Plymouth Sound & Eddystone cSAC and surrounding areas. May, 2011.

WALMSLEY, S.A. & PAWSON, M.G., 2007.The coastal fisheries of England and Wales, Part V: a review of their status 2005–6. *Science Series Technical Reports*. Cefas Lowestoft, 140: 83pp.

Appendix A

Favourable Condition Table (FCT) for Start Point to Plymouth Sound and Eddystone cSAC

Common Standards Monitoring (CSM) attributes of the bedrock reef sub-feature were selected from JNCC, 2004. Additional attributes were selected on a discretionary basis.

Feature: Reefs (bedrock)
Area: All

Attribute	Measure	Target	Comments
Extent of reefs (Mandatory CSM attribute)	Overall area (ha) of reefs (bedrock) measured periodically throughout the reporting cycle.	No decrease in extent from established baseline, subject to natural change. *Baseline established by Natural England, 2010, and supplemented by CEFAS and MCA 2011/2012 acoustic data.*	Extent of reef is a reporting requirement of the Habitats Directive. While changes in extent may be unlikely due to removal of the rock reef itself, loss of extent may occur due to excessive smothering by sediment as part of natural coastal processes or anthropogenic activity.
Water Clarity (Discretionary CSM attribute)	Average light attenuation measured periodically throughout the reporting cycle.	Average light attenuation should not deviate significantly from an established baseline, subject to natural change. *Baseline to be established. Data from EA may assist.*	Water clarity is a key process influencing algal/plant dominated biotopes. Changes in water clarity could be caused, for example, by an increase in suspended material due to organic enrichment.
Water Density (Discretionary CSM attribute)	Average temperature and salinity measured periodically in the subtidal, throughout the reporting cycle.	Average temperature and salinity should not deviate significantly from an established baseline, subject to natural change. *Baseline to be established. Data from EA may assist.*	Temperature and salinity are characteristic of the overall hydrography of the area, indicating predominance of coastal or oceanic water. Changes in temperature and salinity may influence the presence and distribution of species (along with recruitment processes and spawning behaviour) particularly those species at the edge of their geographic ranges.

Attribute	Measure	Target	Comments
			Where changes in temperature or salinity through adverse impacts e.g. thermal discharge plumes, industrial discharges, water abstraction etc. cause a severe loss or shift in community structure such that the conservation interest is adversely affected then condition should be judged as unfavourable. Where changes in temperature or salinity are due to natural processes such as severe winter temperatures, then this will be an acceptable change to the feature.
Sedimentation rate (Discretionary CSM attribute)	Average sedimentation rate measured periodically in the subtidal, throughout the reporting cycle	Average sedimentation rate should not deviate significantly from an established baseline, subject to natural change. *Baseline to be established.*	Where adverse anthropogenic impacts such as dredging, disposal of dredge spoil or changed water flows due to artificial structures cause a change in sedimentation rate leading to severe smothering of the rock habitat, or an adverse shift in community structure, then condition should be judged as unfavourable. Where changes in sedimentation rate are attributable to natural processes such as storm events, changed tidal movements or dynamics, or natural erosion, then this may be an acceptable change to the feature.

Feature: Reefs (bedrock)

Area: Inshore reefs (Area B and Area C)

Attribute	Measure	Target	Comments
Biotope composition of bedrock reefs (Mandatory CSM attribute)	Presence and/or abundance of a variety of bedrock reef biotopes (from Table 1) at specified locations throughout the site, measured once during summer, within the reporting cycle.	Maintain a variety of biotopes identified for the site using an established baseline, subject to natural change. *Biotopes identified by Royal Haskoning (2008) and University of Plymouth (2011).*	This attribute aims to measure the overall variety of communities throughout the site. It will be anticipated to find a large proportion of target biotopes within the combined results of the survey for the site. Absence of biotopes from the subset may result in an unfavourable assessment for the feature. Measuring biotope composition throughout the whole site is challenging. It is therefore appropriate to measure the presence of the biotopes at a number of specified known locations throughout the site. Where changes in biotope composition are known to be attributable to natural processes (e.g. winter storm events, changes in supporting processes or mass recruitment or dieback of characterising species) then the target value should accommodate this variability. Where a change in biotope composition occurs outside the expected variation, or a loss of the conservation interest of the site is identified, then condition should be considered unfavourable.
Distribution and spatial pattern of bedrock reef biotopes (Mandatory CSM attribute)	Distribution and spatial arrangement of selected bedrock reef biotopes (from Table 1) at specified locations. Measure during summer, once during	Maintain the distribution and spatial pattern of bedrock reef biotopes identified for the site, to an established baseline, allowing for	The distribution and spatial pattern of biotopes at specified locations is an essential component of the feature, representing the structure and

Attribute	Measure	Target	Comments
	reporting cycle.	natural change. *Biotopes identified by Royal Haskoning (2008) and University of Plymouth (2011).*	particularly the function of the reef. Distribution refers to the geographic location of biotopes throughout the feature. Spatial pattern refers to the local zonation or juxtaposition of biotopes at specified locations. This attribute complements an assessment of the 'biotope composition' attribute by ensuring that the distribution of the conservation interest is maintained throughout the feature. Unlike *Biotope Composition* this attribute is concerned with the presence or absence of biotopes at specific locations and their spatial relationship to one another. Measuring the full distribution and spatial pattern of the biotopes is challenging. It is therefore appropriate to measure the presence of the biotopes at a number of specified known locations throughout the site. Changes in the distribution and spatial arrangement may indicate long-term changes in the prevailing physical conditions at the site. Where changes in distribution/spatial pattern are known to be clearly attributable to cyclical succession or an expected shift in distribution then the target value should accommodate this variability. Where a change in biotope distribution/spatial pattern occurs outside the expected variation or a

Attribute	Measure	Target	Comments
			loss of the conservation interest of the site is identified, condition should be considered unfavourable.
Extent of representative / notable bedrock reef biotopes (Discretionary CSM attribute)	Extent of representative/notable bedrock reef biotopes, including CR.HCR.XFa.ByErSp.Eun and CR.FCR.Cv.SpCup, measured once during summer, within the reporting cycle.	No / little change in the extent of representative / notable bedrock reef biotopes, from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008) and University of Plymouth (2011).*	The extent of the representative / notable biotopes listed is an important structural aspect of the sub-feature and therefore the bedrock reef habitat. Changes in extent and distribution may indicate long-term changes in the physical conditions at the site. Notable biotopes selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. Where a change in extent outside the expected variation occurs or a change in the structure of the biotope leading to a loss of the conservation interest of the site is identified, then condition should be considered unfavourable.
Presence of representative / notable bedrock reef biotopes (Discretionary CSM attribute)	Presence and/or abundance of representative/notable bedrock reef biotopes, including CR.HCR.XFa.ByErSp.Eun and CR.FCR.Cv.SpCup, measured once during summer, within the reporting cycle.	Presence of biotopes at specified locations should not deviate significantly from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008) and University of Plymouth (2011).*	Notable biotopes selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. CR.FCR.Cv.SpCup and CR.HCR.XFa.ByErSp.Eun are both nationally significant and potentially sensitive to abrasion or changes in physical conditions. Where a biotope is lost from a baseline known area of presence (outside expected natural variation),

Attribute	Measure	Target	Comments
			leading to a loss of the conservation interest of the site, then condition should be considered unfavourable.
Species composition of representative or notable bedrock reef biotopes (Discretionary CSM attribute)	Frequency and occurrence of component species of representative or notable bedrock biotopes including: CR.HCR.XFa.ByErSp.Eun and CR.FCR.Cv.SpCup, measured once, during summer, within the reporting cycle.	No decline in bedrock reef biotope quality due to change in species composition or loss of notable species, from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008) and University of Plymouth (2011).*	Notable biotopes selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. Species composition is an important contributor to the structure of a biotope and therefore the reef as a whole. The presence and abundance of a characterising species gives an indication of the quality of a biotope, and any change in composition may indicate a cyclic change or trend in the reef community. Where changes in species composition are known to be clearly attributable to natural succession, known cyclical change or mass recruitment or dieback of characterising species, then the target value should accommodate this variability. Where there is a change in biotope quality outside the expected variation or a loss of the conservation interest of the site, then condition should be considered unfavourable.
Presence and/or abundance of specified bedrock reef species (Discretionary CSM attribute)	Bedrock species may include: *Amphianthus dohrnii ,Axinella infundibuliformis, Axinella dissimilis, Cliona celata, Caryophyllia smithii, Leptopsamnia pruvoti, Pentapora fascialis, Alcyonium digitatum, Urticina felina, Laminaria hyperborea*	Maintain presence and/or abundance of a variety of species from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008) and University of*	Changes in presence and/or abundance of a species can critically affect the physical and functional nature of the habitat, leading to unfavourable condition. The species selected should serve an important role in the structure and function of

Attribute	Measure	Target	Comments
	and *Eunicella verrucosa*, or other species from Table 1. Measured once, during summer, within the reporting cycle.	*Plymouth (2011).*	the biological community. Where the field assessment judges changes in the presence and/or abundance of specified species to be unfavourable, and subsequent investigation reveals the cause is clearly attributable to natural succession and known cyclical change (such as mass recruitment and dieback of characterising species), the final assessment will require expert judgement to determine the reported condition of the feature. The feature's condition could be declared favourable where the expert judgement by Natural England advisers is certain that the conservation interest of the feature is not compromised by the failure of this attribute to meet its target condition. Where there is a change outside the expected variation or a loss of the conservation interest of the site, (e.g. due to anthropogenic activities or unrecoverable natural losses) then condition should be considered unfavourable.

Feature: Reefs (bedrock)
Area: Offshore reefs (Area A)

Attribute	Measure	Target	Comments
Biotope composition of bedrock reefs (Mandatory CSM attribute)	Presence and/or abundance of a variety of bedrock reef biotopes (Table 2) at specified locations throughout the site, measured once during summer, within the reporting cycle.	Maintain a variety of biotopes identified for the site to an established baseline, subject to natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	This attribute aims to measure the overall variety of communities throughout the site. It will be anticipated to find the suite of target biotopes within the combined results of the survey for the site. Absence of a biotope from the subset may result in an unfavourable assessment for the feature. Measuring biotope composition throughout the whole site is challenging. It is therefore appropriate to measure the presence of the biotopes at a number of specified known locations throughout the site. Where changes in biotope composition are known to be attributable to natural processes (e.g. winter storm events, changes in supporting processes or mass recruitment or dieback of characterising species) then the target value should accommodate this variability. Where a change in biotope composition occurs outside the expected variation, or a loss of the conservation interest of the site is identified, then condition should be considered unfavourable.
Distribution and spatial pattern of bedrock reef biotopes (Mandatory CSM attribute)	Distribution and spatial arrangement of selected bedrock reef biotopes (from Table 2) at specified locations. Measure once, during summer,	Maintain the distribution and spatial pattern of bedrock reef biotopes identified for the site, to an established baseline, allowing for	The distribution and spatial pattern of biotopes at specified locations is an essential component of the feature, representing the structure and

Attribute	Measure	Target	Comments
	within the reporting cycle.	natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	particularly the function of the reef. Distribution refers to the geographic location of biotopes throughout the feature. Spatial pattern refers to the local zonation or juxtaposition of biotopes at specified locations. This attribute complements an assessment of the 'biotope composition' attribute by ensuring that the distribution of the conservation interest is maintained throughout the feature. Unlike *Biotope Composition* this attribute is concerned with the presence or absence of biotopes at specific locations and their spatial relationship to one another. Measuring the full distribution and spatial pattern of the biotopes is challenging. It is therefore appropriate to measure the presence of the biotopes at a number of specified known locations throughout the site. Changes in the distribution and spatial arrangement may indicate long-term changes in the prevailing physical conditions at the site. Where changes in distribution/spatial pattern are known to be clearly attributable to cyclical succession or an expected shift in distribution then the target value should accommodate this variability. Where a change in biotope distribution/spatial pattern occurs

Attribute	Measure	Target	Comments
			outside the expected variation or a loss of the conservation interest of the site is identified, then condition should be considered unfavourable.
Extent of representative / notable bedrock reef biotopes (Discretionary CSM attribute)	Extent of representative/notable bedrock reef biotopes, including: CR.HCR.XFa.ByErSp.Eun, CR.HCR.Xfa.CvirCri, and IR.HIR.Ksed.LsacSac, measured once during summer, within the reporting cycle.	No / little change in the extent of representative / notable bedrock reef biotopes, from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	The extent of the representative / notable biotopes listed is an important structural aspect of the sub-feature and therefore the bedrock reef habitat. Changes in extent and distribution may indicate long-term changes in the physical conditions at the site. Notable biotopes selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. Where a change in extent outside the expected variation occurs or a change in the structure of the biotope leading to a loss of the conservation interest of the site is identified, then condition should be considered unfavourable.
Presence of representative / notable bedrock reef biotopes (Discretionary CSM attribute)	Presence and/or abundance of representative/notable bedrock reef biotopes, including: CR.HCR.XFa.ByErSp.Eun, CR.HCR.Xfa.CvirCri, and IR.HIR.Ksed.LsacSac at specified locations. Measured once during summer, within the reporting cycle.	Presence of biotopes at specified locations, should not deviate significantly from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	Notable biotopes selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. IR.HIR.Ksed.LsacSac is a representative biotope of the infralittoral and supports species rich communities. CR.HCR.XFa.ByErSp.Eun is nationally significant and potentially sensitive to abrasion or changes in

Attribute	Measure	Target	Comments
			physical conditions. Where a biotope is lost from a baseline known area of presence (outside expected natural variation), leading to a loss of the conservation interest of the site, then condition should be considered unfavourable.
Species composition of representative or notable bedrock reef biotopes (Discretionary CSM attribute)	Frequency and occurrence of component species of representative or notable bedrock biotopes including: CR.HCR.XFa.ByErSp.Eun, CR.HCR.Xfa.CvirCri, and IR.HIR.Ksed.LsacSac, measured once during summer, within the reporting cycle.	No decline in bedrock reef biotope quality due to change in species composition or loss of notable species, from an established baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	Notable biotopes selected owing to their national significance, sensitivity, and representativity as a typical biotope for the biological zone. Species composition is an important contributor to the structure of a biotope and therefore the reef as a whole. The presence and abundance of a characterising species gives an indication of the quality of a biotope, and any change in composition may indicate a cyclic change or trend in the reef community. Where changes in species composition are known to be clearly attributable to natural succession, known cyclical change or mass recruitment or dieback of characterising species, then the target value should accommodate this variability. Where there is a change in biotope quality outside the expected variation or a loss of the conservation interest of the site, then condition should be considered unfavourable.
Presence and/or abundance of specified bedrock reef species	Bedrock species may include: *Amphianthus dohrnii, Alcyonium*	Maintain presence and/or abundance of species from an established	Changes in presence and/or abundance of a species can critically

Attribute	Measure	Target	Comments
(Discretionary CSM attribute)	*glomeratum, Cliona celata, Corynactis viridis, Caryophyllia smithii, Leptopsamnia pruvoti, Pentapora fascialis, Alcyonium digitatum, Laminaria saccharina, Sacchorhiza polyschides,* and *Eunicella verrucosa*, or other species from Table 2. Measure once, during summer, within the reporting cycle.	baseline, allowing for natural change. *Biotopes identified by Royal Haskoning (2008), Axelsson et al. (2006) and University of Plymouth (2011).*	affect the physical and functional nature of the habitat, leading to unfavourable condition. The species selected should serve an important role in the structure and function of the biological community. Where the field assessment judges changes in the presence and/or abundance of specified species to be unfavourable, and subsequent investigation reveals the cause is clearly attributable to natural succession and known cyclical change (such as mass recruitment and dieback of characterising species), the final assessment will require expert judgement to determine the reported condition of the feature. The feature's condition could be declared favourable where the expert judgement by Natural England advisers is certain that the conservation interest of the feature is not compromised by the failure of this attribute to meet its target condition. Where there is a change outside the expected variation or a loss of the conservation interest of the site, (e.g. due to anthropogenic activities or unrecoverable natural losses) then condition should be considered unfavourable.

Table 1

Start Point to Plymouth Sound and Eddystone cSAC Inshore (Areas B and C) Reef Communities

Inshore Reef Communities (Areas B and C) Sources: Royal Haskoning (2008); University of Plymouth (2011)	
Key Biotopes	**Definition**
CR.HCR.Xfa	Mixed Faunal turf communities on circalittoral rock
CR.MCR.EcCr.UrtScr	*Urticina felina* and sand-tolerant fauna on sand-scoured or covered circalittoral rock
CR.FCR.Cv.SpCup	Sponges, cup corals and anthozoans on shaded or overhanging circalittoral rock
CR.HCR.Xfa.ByErSp.Eun	*Eunicella verrucosa* and *Pentapora fascialis* on wave-exposed circalittoral rock
CR.HCR.Xfa.ByErSp.Sag	Mixed turf of bryozoans and erect sponges with *Sagartia elegans* on tide-swept ciraclittoral rock
CR.MCR.EcCr.CarSp.Bri	Brittlestars overlying coralline crusts, *Parasmittina trispinosa* and *Caryophyllia smithii* on wave-exposed circalittoral rock
CR.MCR.EcCr.FaAlCr.Flu	*Flustra foliacea* on slightly scoured silty circalittoral rock
CR.MCR.EcCr.FaAlCr	Faunal and algal crusts on exposed to moderately wave-exposed circalittoral rock
CR.HCR.Xfa.FluCoAs.X	*Flustra foliacea* and colonial ascidians on tide-swept exposed circalittoral mixed substrata
CR.MCR.EcCr.CarSp.PenPcom	*Caryophyllia smithii* and sponges with *Pentapora fascialis, Porella compressa* and crustose communities on wave-exposed circalittoral rock
CR.HCR.Xfa.CvirCri	*Corynactis viridis* and a mixed turf of crisiids, *Bugula, Scrupocellaria,* and *Cellaria* on moderately tide-swept exposed circalittoral rock
IR.HIR.KFaR.FoR.Dic	Foliose red seaweeds with dense *Dictyota dichotoma* and/or *Dictyopteris membranacea* on exposed lower infralittoral rock
IR.HIR.KFaR.FoR	Foliose red seaweeds on exposed lower circalittoral rock
CR.MCR.EcCr.AdigVt	*Alcyonium digitatum* and faunal crust communities on vertical circalittoral bedrock
IR.HIR.KFaR.LhypFa	*Laminaria hyperborea* forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed infralittoral rock
Key Species	**Common name**
Actinothoe sphyrodeta	Sandalled anemone
Adreus fascicularis	A sponge
Aglaophenia sp	A hydroid
Aiptasia mutabilis	Trumpet anemone
Alaria esculenta	Dabberlocks
Alcyonidium diaphanum	Sea chervil
Alcyonium digitatum	Dead man's fingers
Alcyonium glomeratum	Red sea fingers
Amphianthus dohrnii	Sea fan anemone
Antedon bifida	Rosy feather star
Aslia lefevrei	Brown sea cucumber
Asterias rubens	Common starfish
Axinella damicornis	A sponge
Axinella dissimilis	a branching sponge
Axinella infundibuliformis	A sponge
Bispira volutacornis	Twin fan worm
Caberea ellisii	Ellis' bryozoans
Calliostoma zizyphinum	Painted top shell
Cancer pagurus	Edible crab

Carpomitra costata	A brown seaweed
Caryophyllia inornata	Southern cup coral
Caryophyllia smithii	Devonshire cup coral
Cellaria fistulosa	A bryozoan
Cellepora pumicosa	A bryozoan
Chaetopteridae sp	A polychaete
Ciocalypta penicillus	A sponge
Cliona celata	Boring sponge
Corynactis viridis	Jewel anemone
Cryptopleura ramose	A red seaweed
Dercitus bucklandii	A sponge
Desmarestia aculeate	Witches hair
Diazona violacea	Football sea squirt
Dictyopteris membranacea	A brown seaweed
Dictyota dichotoma	A brown seawed
Didemnum sp	A sea squirt
Diplosoma listerianum	A sea squirt
Dysidea fragilis	A sponge
Echinus esculentus	Edible sea urchin
Electra pilosa	A sea mat
Esperiopsis fucorum	A sponge
Eunicella verrucosa	Pink sea fan
Flustra foliacea	Hornwrack
Gymnangium montagui	Yellow feathers
Halecium halecium	Herring-bone hydroid
Halchondria panacea	A sponge
Haliclona cinerea	A sponge
Haliclona viscosa	A sponge
Hemimycale columella	An encrusting sponge
Henricia sanguinolenta	Bloody henry
Heterosiphonia plumose	A red seaweed
Holothurian forskali	Cotton spinner sea cucumber
Hoplangia durotrix	Weymouth carpet coral
Hydrallmania falcate	Sickle hydroid
Isozanthus sulcatus	Peppercorn anemone
Laminaria hyperborea	Tangle or cuvie
Laminaria saccharina	Sugar kelp
Leptopsammia pruvoti	Sunset cup coral
Limaria hians	Gaping file shell
Lissoclinum perforatum	A sea squirt
Lithophyllum so	An encrusting coralline algae
Luida ciliaris	Seven-armed starfish
Macropodia tenuirostris	Slender spider crab
Marthasterias glacialis	Spiny starfish
Meredithia microphylla	A red seaweed
Metridium senile	Plumose anemone
Microciona atrasanguinea	An encrusting sponge
Necora puber	Velvet swimming crab
Nemertesia antennina	Sea beard
Nemertesia ramosa	A cnidarian
Obelia sp	A hydroid
Pachymatisma johnstonia	A sponge
Parasmittina trispinosa	an encrusting bryozoan
Parazoanthus anguicomus	White cluster anemone
Parazoanthus axinellae	Yellow cluster anemone
Parerythropodium hibernicum	Pink sea fingers
Pentapora fascialis	Ross
Phoronis sp	A horseshoe worm

Phycodrys rubens	A red seaweed
Phyllochaetopterus anglicus	a parchment tube worm
Phylliphora crispa	A red seaweed
Polymastia boletiformis	A sponge
Polymastia mammillaris	A sponge
Pomatoceros triqueter	A tubeworm
Porania pulvillus	A cushion star
Pseudosuberites sulphurous	An encrusting sponge
Pycnoclavella auriluscens	an ascidian
Raspailia ramosa	A sponge
Sacchorhiza polyschides	Furbellows
Sagartia elegans	A sea anemone
Scrupocellaria sp	A bryozoans
Scyllarus arctus	Slipper lobster
Scypha compressa	A sponge
Securiflustra securifrons	A sea mat
Serpula vermicularis	A tubeworm
Sidyum elegans	-
Sphacelaria mirabilis	A brown seaweed
Spirorbis spirorbis	A tubeworm
Stolonica socialis	Orange sea grapes
Suberites carnosus	A sponge
Tethya aurantium	Golf ball sponge
Tritonia nilsodhneri	A sea slug
Tubularia indivisa	Oaten pipes hydroid
Urticina felina	Dahlia anemone

Listed species and biotopes may be reviewed to reflect new evidence / survey results.

Table 2

Start Point to Plymouth Sound and Eddystone cSAC Offshore (Area A) Reef Communities

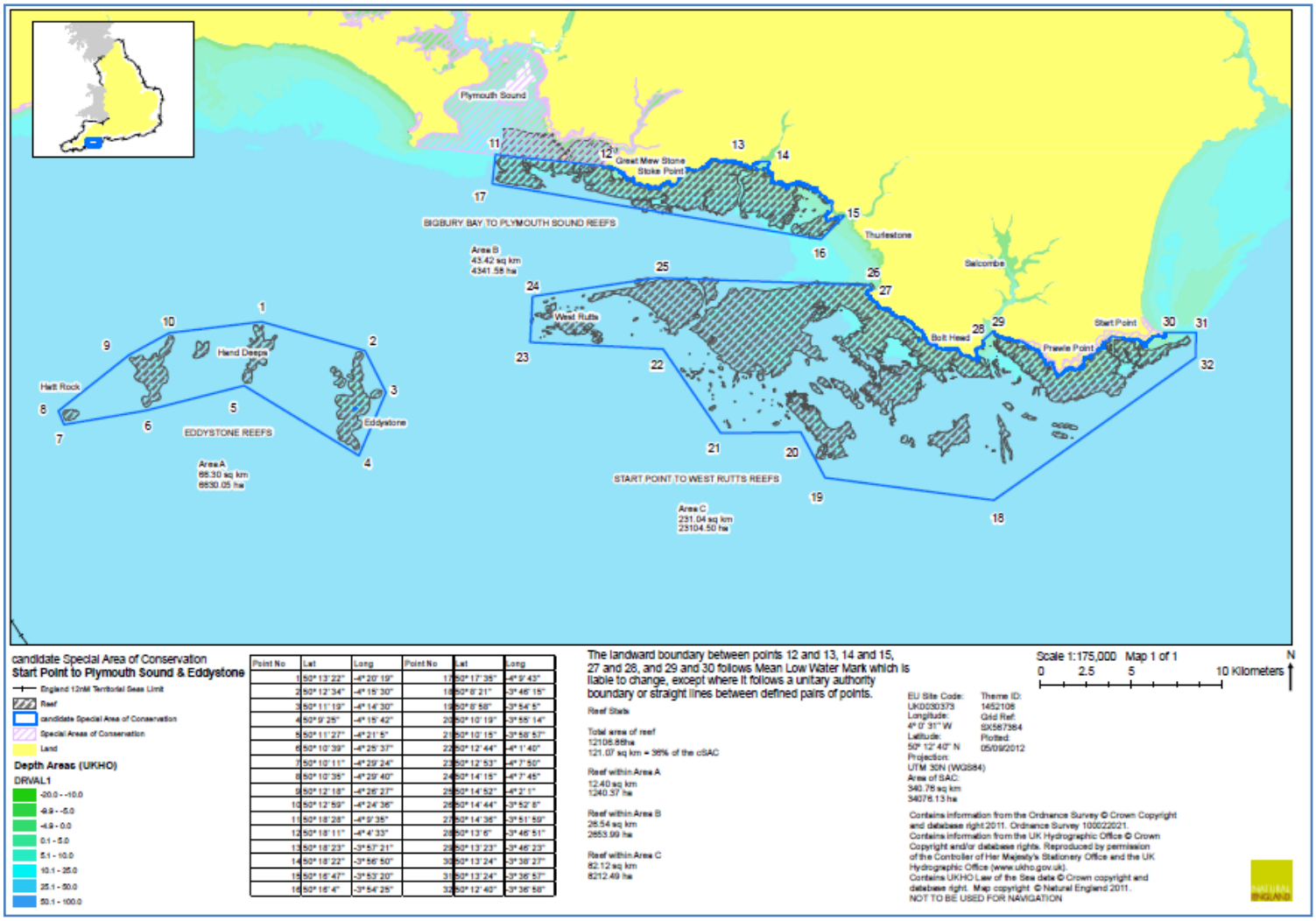
Offshore Reef Communities (Area A) **Source: Royal Haskoning (2008); Axelsson *et al*. (2006); University of Plymouth (2011)**	
Key Biotopes	**Definition**
CR.HCR.Xfa.ByErSp.Eun	*Eunicella verrucosa* and *Pentapora fascialis* on wave-exposed circalittoral rock
IR.HIR.Ksed.LsacSac	*Laminaria saccharina* and/or *Saccorhiza polyschides* on exposed infralittoral rock
CR.HCR.Xfa.CvirCri	*Corynactis viridis* and a mixed turf of crisiids, *Bugula, Scrupocellaria,* and *Cellaria* on moderately tide-swept exposed circalittoral rock
IR.HIR.KFaR.AlaAnCrSp	*Alaria esculenta* forest with dense anemones and crustose sponges on extremely exposed infralittoral bedrock
IR.HIR.KFaR.LhypFa	*Laminaria hyperborea* forest with a faunal cushion (sponges and polyclinids) and foliose red seaweeds on very exposed infralittoral rock
CR.HCR.DpSp	Sponge communities on deep circalittoral rock
Key Species	**Common name**
Abietinaria abietina	A hydroid
Aglaophenia sp	A hydroid
Alaria esculenta	Dabberlocks
Alcyonidium diaphanum	Sea chervil
Alcyonium digitatum	Dead man's fingers
Alcyonium glomeratum	Red sea fingers
Amphianthus dohrnii	Sea fan anemone
Antedon bifida	Rosy feather star
Aslia lefevrei	Brown sea cucumber
Asterias rubens	Common starfish
Asterina gibbosa	A cushion star
Axinella damicornis	A sponge
Axinella infunubuliformis	A sponge
Bugula	Erect bryozoans
Calliostoma zizyphinum	Painted top shell
Caryophyllia inornata	Southern cup coral
Caryophyllia smithii	Devonshire cup coral
Cellaria fistulosa	Bryozoans
Cellepora pumicosa	Bryozoans
Chaetopteridae sp	A polychaete
Ciocalypta penicillus	A sponge
Cliona celata	Boring sponge
Corynactis viridis	Jewel anemone
Dictyopteris membranacea	A brown seaweed
Dictyota dichotoma	a brown seaweed
Diplosoma literianum	A sea squirt
Echinus esculentus	Edible sea urchin
Esperiopsis fucorum	A sponge
Eunicella verrucosa	Pink sea fan
Flustra foliacea	Hornwrack
Gibbula cineraria	Grey top shell
Gymnangium montagui	Yellow feathers
Halecium halecium	Herring-bone hydroid
Haliclona cinerea	A sponge
Henricia sanguinlenta	Bloody henry
Holothuria forskali	Cotton spinner sea cucumber

Laminaria hyperborean	Tangle or cuvie
Laminaria saccharina	a kelp
Leptopsammia pruvoti	Sunset cup coral
Lithophyllum sp	An encrusting coralline algae
Luidia ciliaris	Seven-armed starfish
Marthasterias glacialis	Spiny starfish
Metridium senile	Plumose anemone
Nemertesia antennina	Sea beard
Nemertesia ramosa	a hydroid
Obelia sp	A hydroid
Parasmittina trispinosa	Encrusting bryozoans
Pentapora fascialis	Ross
Phyllochaetopterus anglicus	A parchment tube worm
Polymastia boletiformis	A sponge
Polymastia mammillaris	A sponge
Pomatoceros triqueter	A tubeworm
Porania pulvillus	A cushion star
Pycnoclavella auriluscens	An ascidian
Sacchorhiza polyschides	Furbelows
Scrupocellaria sp	Bryozoans
Securiflustra securifrons	A sea mat
Tethya aurantium	A golf ball sponge
Tubularia indivisa	Oaten pipes hydroid

Listed species and biotopes may be reviewed to reflect new evidence / survey results.

Appendix B

Map showing the interest sub-feature (bedrock reef) of the Start Point to Plymouth Sound and Eddystone cSAC



Appendix C

Methods deriving vulnerability

Sensitivity[24]	
None	-
Low	•
Moderate	••
High	•••

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

Vulnerability	
None detectable	
Low	
Moderate	
High	

The relative vulnerability of an interest feature or sub-feature is determined by multiplying the scores for relative sensitivity and exposure, and classifying that total into categories of relative vulnerability. For the bedrock reef sub-feature the sensitivity is as defined by MarLIN (2011). The sensitivity assessment for each activity in Annex D for the sub-feature uses the highest (i.e. most precautionary) sensitivity for the range of biotopes and species used to define this sub-feature, where more than one biotope or species is related to a sub-feature (see Annex F for a list of biotopes and species this bedrock reef sub-feature consists of, and for which sensitivity assessments are available for).

		Relative sensitivity of the interest feature			
		High (3)	**Moderate (2)**	**Low (1)**	**None detectable (0)**
Relative exposure of the interest feature	**High (3)**	9	6	3	0
	Medium (2)	6	4	2	0
	Low (1)	3	2	1	0
	None (0)	0	0	0	0

Categories of relative vulnerability	
High	6-9
Moderate	3-5
Low	1-2
None detectable	0

[24] Where sensitivities in MarLIN are defined as 'Very Low' they are classified here as 'Low'. Where sensitivities in MarLIN are defined as 'Very High' they are classified here as 'High'.

Appendix D

Summary of pressures which may cause deterioration or disturbance to Start Point to Plymouth Sound and Eddystone cSAC

Pressures which may cause deterioration or disturbance	Start Point to Plymouth Sound and Eddystone Inshore reefs	Start Point to Plymouth Sound and Eddystone Offshore reefs
Physical loss		
Removal (e.g. capital dredging, offshore development)	✓	✓
Smothering (e.g. by aggregate dredging, disposal of dredge spoil)	✓	✓
Physical damage		
Siltation (e.g. run-off, channel dredging, outfalls)	✓	
Abrasion (e.g. boating, anchoring, demersal fishing)	✓	✓
Selective extraction (e.g. aggregate dredging)		
Non-Physical damage		
Noise (e.g. boat activity)		
Visual (e.g. recreational activity)	✓	
Toxic contamination		
Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs)	✓	✓
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	✓	✓
Introduction of radionucleotides	(✓)	(✓)
Non-toxic contamination		
Changes in nutrient loading (e.g. agricultural run-off, outfalls)	✓	
Changes in organic loading (e.g. mariculture, outfalls)	✓	
Changes in thermal regime (e.g. power stations)		
Changes in turbidity (e.g. run-off, dredging)	✓	
Changes in salinity (e.g. water abstraction, outfalls)		
Biological disturbance		
Introduction of microbial pathogens		
Introduction of non-native species and translocation	✓	
Selective extraction of species (e.g. bait digging, wildfowling, commercial and recreational fishing)	✓	✓

(✓) represents where there is currently insufficient information to either determine the sensitivity of the habitat or the exposure of the habitat to the stated operation.

Appendix E

Assessment of relative vulnerability of the interest sub-feature of Start Point to Plymouth Sound and Eddystone cSAC to different categories of pressures (see Appendix C for key).

Pressures which may cause deterioration or disturbance	**Annex I Bedrock Reefs**					
	Inshore reefs (Areas B and C)			**Offshore reefs (Area A)**		
	Sensitivity	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**
Physical loss						
Removal (e.g. harvesting, coastal development)	•••	+	Moderate	•••	+	Moderate
Smothering (e.g. by artificial structures, disposal of dredge spoil)	•••	+	Moderate	•••	+	Moderate
Physical damage						
Siltation (e.g. run off, channel dredging, outfalls)	•••	+	Moderate	•••	-	-
Abrasion (e.g. boating, anchoring, trampling)	•••	+	Moderate	•••	+	Moderate
Selective extraction (e.g. aggregate dredging)	•••	-	-	•••	-	-
Non-Physical disturbance						
Noise (e.g. boat activity)	–	+	-	–	+	-
Visual (e.g. recreational activity)	•	+	Low	–	+	-
Toxic contamination						
Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs)	•••	+	Moderate	•••	+	Moderate
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	••	+	Low	••	+	Low
Introduction of radionucleotides	Insufficient information	-	-	Insufficient information	-	-

Non-toxic contamination						
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)	•••	-	-	•••	-	-
Biological disturbance						
Introduction of microbial pathogens	••	-	-	•	-	-
Introduction of non-native species and translocation	•	+	Low	••	-	-
Selective extraction of species (e.g. bait digging, wildfowling, commercial and recreational fishing)	•••	++	High	•••	++	High

Appendix F

Start Point to Plymouth Sound and Eddystone cSAC Species and Biotopes used to determine site sensitivity

Start Point to Plymouth Sound and Eddystone cSAC Species and Biotopes used to determine site sensitivity	
Inshore reefs (Areas B and C)	
CR.HCR.Xfa.ByErSp.Eun	*Eunicella verrucosa* and *Pentapora fascialis* on wave-exposed circalittoral rock
CR.MCR.EcCr.CarSp.Bri	Brittlestars overlying coralline crusts, *Parasmittina trisinosa* and*Caryophyllia smithii* on wave-exposed circalittoral rock
CR.FCR.Cv.SpCup (CR.FCR.Cv used)	Sponges, cup corals and anthozoans on shaded or overhanging circalittoral rock
CR.MCR.EcCr.UrtScr	*Urticina felina* on sand-affected circalittoral rock
Alaria esculenta	Dabberlocks
Alcyonium digitatum	Dead man's fingers
Amphianthus dohrnii	Sea fan anemone
Antedon bifida	Rosy feather star
Asterias rubens	Common starfish
Axinella dissimilis	A branching sponge
Cancer pagurus	Edible crab
Echinus esculentus	Edible sea urchin
Electra pilosa	A sea mat
Eunicella verrucosa	Pink Sea Fan
Flustra foliacea	Hornwrack
Laminaria hyperborea	Tangle or cuvie
Leptopsammia pruvoti	Sunset cup coral
Lithophyllum sp	An encrusting coralline algae
Metridium senile	Plumose anemone
Nemertesia ramosa	A cnidarian
Obelia sp	A hydroid
Pentapora fascialis	Ross
Pomatoceros triqueter	A tubeworm
Serpula vermicularis	A tubeworm
Urticina felina	Dahlia anemone
Offshore reefs (Area A)	
CR.HCR.Xfa.ByErSp.Eun	*Eunicella verrucosa* and *Pentapora fascialis* on wave-exposed circalittoral rock
Alaria esculenta	Dabberlocks
Alcyonium digitatum	Dead man's fingers
Amphianthus dohrnii	Sea fan anemone
Antedon bifida	Rosy feather star
Asterias rubens	Common starfish
Bugula sp	An erect bryozoan
Echinus esculentus	Edible sea urchin
Eunicella verrucosa	Pink Sea Fan
Flustra foliacea	Hornwrack
Laminaria hyperborean	Tangle or cuvie
Leptopsammia pruvoti	Sunset cup coral
Lithophyllum sp	An encrusting coralline algae
Metridium senile	Plumose anemone
Nemertesia ramosa	A cnidarian

Obelia sp	A hydroid
Pentapora fascialis	Ross
Pomatoceros triqueter	A tubeworm
Sacchorhiza polyschides	Furbellows