



**SOUTH WIGHT MARITIME  
European marine site**

**English Nature's advice given under  
Regulation 33(2) of the Conservation  
(Natural Habitats &c.) Regulations 1994**

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**Preface**

This document provides English Nature's advice to other relevant authorities as to (a) the conservation objectives and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for the South Wight Maritime European marine site. This advice is being prepared to fulfill our obligations under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994.

The South Wight Maritime European marine site is part of a candidate Special Area of Conservation. It has been Government policy that such sites should be protected as if they were already designated and, where appropriate, voluntary management schemes established at an early stage, before the formal statutory obligations applied, and to act in the spirit of the Directive in the meantime (DETR & The Welsh Office, 1998). In light of this policy, we have been working with you to develop this advice before statutory obligations applied. It should be noted however, that amendments to the Habitats Regulations for England are now in force which require the statutory obligations within the Regulations to be applied to candidate SACs earlier in the process than previously.

European marine sites are defined in the Conservation (Natural Habitats &c.) Regulations 1994 as any part of a European site covered (continuously or intermittently) by tidal waters or any part of the sea in or adjacent to Great Britain up to the seaward limit of territorial waters. European sites include Special Areas of Conservation (designated under the Habitats Directive, which support certain natural habitats and species of European importance), and Special Protection Areas (designated under the Birds Directive which support significant numbers of internationally important wild birds). In many instances, where these designations coincide, our advice is being prepared to cover both the SAC and SPA interests.

This 'Regulation 33 package' is designed to help relevant and competent authorities who have responsibilities to implement the Habitats Directive to:

- understand the international importance of the site, underlying physical processes and the ecological requirements of the habitats and species involved;
- advise relevant authorities as to the conservation objectives for the site and operations which may cause deterioration and disturbance;
- set the standards against which the condition of the site's interest features can be determined and undertake compliance monitoring to establish whether they are in favourable condition; and
- develop if deemed necessary a management scheme to ensure that the features are maintained.

In addition, the Regulation 33 package will provide a basis to inform on the scope and nature of 'appropriate assessment' required in relation to plans and projects (Regulations 48 & 50 and by English Nature under Regulation 20). English Nature will keep this advice under review and may update it every six years or sooner, depending on the changing circumstances of the European marine site. In addition, we will provide more detailed advice to competent and relevant authorities to assess the implications of any given plan or project under the Regulations, where appropriate, at the time a plan or project is being considered. If as a result of the European Union's moderation process qualifying interest features are added to this European marine site, English Nature will add to this advice, as appropriate.

Tim Bines  
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25<sup>th</sup> May 2001

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## **English Nature's advice for South Wight Maritime European marine site given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994**

### **1. Introduction**

#### **1.1 Natura 2000**

The European Union Habitats<sup>1</sup> and Birds Directives<sup>2</sup> are international agreements which set out a number of actions to be taken for nature conservation. The Habitats Directive aims to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements, and sets out measures to maintain or restore, natural habitats and species of European Union interest at favourable conservation status<sup>3</sup>. The Birds Directive protects all wild birds and their habitats within the European Union and there are special measures for migratory birds and those that are considered rare or vulnerable.

The Habitats and Birds Directives include requirements for the designation of conservation areas. In the case of the Habitats Directive these are Special Areas of Conservation (SACs) which support certain natural habitats or species, and in the Birds Directive, Special Protection Areas (SPAs) which support wild birds of European Union interest. These sites will form a network of conservation areas across the EU to be known as "Natura 2000". Where SACs or SPAs consist of areas continuously or intermittently covered by tidal waters or any part of the sea in or adjacent to Great Britain up to the limit of territorial waters, they are referred to as European marine sites.

Further guidance on European marine sites is contained in the Department of the Environment Transport and Regions/Welsh Office document: *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*.

#### **1.2 English Nature's role**

The Conservation (Natural Habitats &c.) Regulations 1994 translate the Habitats Directive into law in Great Britain. It gives English Nature a statutory responsibility to advise relevant authorities as to the conservation objectives for European marine sites in England and to advise 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 sites have been designated. This information will be a key component of any of the management schemes which may be developed for these sites.

In addition to providing such advice, the Regulation 33 package informs the scope and nature of 'appropriate assessment' which the Directive requires to be undertaken for plans and projects (Regulations 48 & 50 and by English Nature under Regulation 20). English Nature may also provide more detailed advice to competent and relevant authorities to assess the implications of any such plans or projects.

#### **1.3 The role of relevant authorities**

The Conservation (Natural Habitats &c.) Regulations 1994 require all competent authorities to exercise their functions so as to secure compliance with the Habitats Directive. The single management scheme which the relevant authorities may draw up under Regulation 34 for the South Wight Maritime European marine site will provide the framework through which this will be done and it should be based on the

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1 Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora

2 Council Directive 79/409/EEC on the conservation of wild birds

3 A habitat or species is defined as being at favourable conservation status when its natural range and the areas it covers within that range are stable or increasing and the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future

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advice in this package. In this respect, relevant authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on interest features of the site as well as cumulative effects. This may include consideration of issues outside the boundary of the European marine site and above highest astronomical tide.

Relevant authorities should ensure that all present and future plans for the area integrate with the management scheme for the European marine site. Such plans may include shoreline management plans, local Environment Agency plans, SSSI management plans, Coastal Habitat Management Plans (ChaMPs) and local and national BAP plans. This must occur to ensure that there is only a single management scheme through which all relevant authorities exercise their duties under the Conservation (Natural Habitats &c.) Regulations 1994.

Relevant authorities also need to have regard to changing circumstances of the SAC and SPA and may therefore need to modify the management scheme and/or the way in which they exercise their functions so as to maintain the favourable condition of interest features concerned in the long term. There is no legal requirement for relevant authorities to take any actions outside their statutory functions.

Under certain circumstances, where another relevant authority is unable to act for legal reasons, or where there is no other relevant authority, English Nature is empowered to use its bylaw-making powers for Marine Nature Reserves (MNR) for use in European marine sites.

#### **1.4 Activity outside the control of relevant authorities**

Nothing within this Regulation 33 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<sup>4</sup>. This also applies if the changes, although causing deterioration or disturbance to the interest features, are the result of human or natural events outside their control. Having issued Regulation 33 advice for European marine sites, English Nature will work with relevant authorities and others to agree, within a defined time frame, a protocol for evaluating all observed changes to baselines and to develop an understanding of natural change and provide further guidance as appropriate and possible. For the South Wight Maritime European marine site a management group has already been set up (Appendix V) and should be used to alert all relevant authorities to such issues so that they may be assessed and any appropriate measures taken. This does not, however, preclude relevant authorities from taking action to prevent deterioration to the interest features, for example by introducing or promoting codes of practice through the management group.

#### **1.5 Responsibilities under other conservation designations**

In addition to its candidate SAC status, parts of South Wight Maritime are also designated and subject to agreements under other conservation mechanisms (e.g. SSSIs notified under the Wildlife and Countryside Act 1981, Ramsar sites). The obligations of relevant authorities and other organisations under such designations are not affected by the advice contained in this document.

#### **1.6 Role of conservation objectives**

Section 4 of this document sets out the conservation objectives for the South Wight Maritime European marine site. They 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 for informing on the scope of appropriate assessments of plans or projects. The conservation objectives set out what needs to be achieved and thus deliver the aims of the Habitats Directive.

#### **1.7 Role of advice on operations**



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The advice on operations set out in Section 6 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. It is given on the basis of the working assumption that sites were in favourable condition at the time they were identified. In the 2000-2006 reporting period an assessment of the condition of the site will be made to support this assumption, and ensure that favourable condition is being maintained. The advice should also be used to identify the extent to which existing measures of control, management and use are, or can be made, consistent with the conservation objectives and thereby focus the attention of relevant authorities and surveillance to areas that may need management measures.

The operations advice may need to be supplemented through further discussions with any management and advisory groups for the European marine site.

## **1.8 European marine sites**

In the Regulations implementing the Habitats Directive a European marine site is described as a European site so far as it consists of marine areas.

A European site is any one of the following:

- A special area of conservation;
- a site of community importance which has been placed on the list referred to in the third subparagraph of Article 4(2) of the Habitats Directive;
- a site hosting a priority natural habitat type or priority species in respect of which consultation has been initiated under Article 5(1) of the Habitats Directive, during the consultation period or pending a decision of the Council under Article 5(3), or;
- an area classified pursuant to Article 4(1) or (2) of the Wild Birds Directive.

The Regulations describe marine areas as any land covered (continuously or intermittently) by tidal water, or any part of the sea, in or adjacent to Great Britain, up to the seaward limit of territorial waters. After this the marine area of South Wight candidate Special Area of Conservation is known as South Wight Maritime European marine site.

## **1.9 Precautionary principle**

All forms of environmental risk should be tested against the precautionary principle which 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 however 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).
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## 2. Identification of interest features under the EU Habitats and Birds Directives

### 2.1 Introduction

The South Wight Maritime European marine site is a dynamic site encompassing a large range of different reef types and associated marine communities on the south coast of the Isle of Wight. The site includes some of the most important subtidal chalk reefs in Britain, representing 5% of Europe's coastal chalk exposures and supporting a diverse range of species both in the subtidal and intertidal. Vertical and horizontal faces and crevices on the limestone reefs off Bembridge and Whitecliff Bay and areas of large boulders off the south coast of the island provide a range of habitats for a number of marine species. On much of the reefs the bedrock is extensively bored by bivalves and sponges which adds further to habitat diversity. A number of nationally scarce seaweed biotopes such as the shepherd's purse seaweed *Gracilaria bursa-pastoris* and the *Corallina officinalis* seaweed community are also present within the site. Several species reach their eastern limit of distribution along the English Channel at the Isle of Wight, which represents a transition zone between warmer south-western and colder North Sea waters, particularly at St Catherine's Point or on the extensive limestone reefs at Bembridge Ledges. Rare fish species often turn up in summer months such as the trigger fish *Balistes carolinensis*, probably at the eastern limits of their distribution (Fowler, 1995).

South Wight Maritime is a candidate Special Area of Conservation (SAC), the boundary of which is illustrated in Appendix II. Its marine component qualifies as a European marine site, the South Wight Maritime European marine site. At the eastern end of South Wight Maritime European marine site, it overlaps with the Solent and Southampton Water Special Protection Area (SPA). The advice for the interests of this SPA are provided in English Nature's Regulation 33 advice package for the Solent Maritime European marine site. Accordingly, the advice in this document covers only the marine interests of the South Wight Maritime SAC. However, relevant authorities should have regard to the conservation objectives of such adjacent interests as they might be affected by activities taking place within, or adjacent to the site.

The coastline of the South Wight Maritime European marine site is naturally dynamic; Despite the many modifications to the coast form, these dynamic processes continue and are important in maintaining the site in favourable condition. Allowing the important features of the site to adjust as processes change, such as in response to sea level rise, poses a particular challenge for conservation. In order to fulfill the requirements of the Directive to maintain a functional ecosystem, it must have the capacity to change, and major artificial changes in the channel form need to be avoided. Accommodating natural change requires a flexible approach that may involve areas outside the current proposed boundary of the site.

Each of these European marine site interests (called interest features) and their associated key sub-components (called sub-features) is discussed in more detail below and they are mapped in Map 1 (Appendix I) to show their distribution and extent.

### 2.2 Interest features under the EU Habitats Directive

South Wight Maritime qualifies as a SAC for the following Annex I habitat as listed in the EU Habitats Directive:

#### • Reefs

South Wight Maritime SAC also qualifies for the Annex I habitat **vegetated sea cliffs of the Atlantic and Baltic coasts**. This does not however occur within the European marine site as it occurs above the high water mark. As a consequence there are no specific conservation objectives within this document for this habitat. Objectives to maintain **vegetated sea cliffs of the Atlantic and Baltic coasts** in favourable condition are identified within English Nature's conservation objectives for the relevant SSSIs within the SAC boundary and will be dealt with through procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. However, relevant authorities need to have regard to such adjacent interests as they might be affected by activities taking place within, or adjacent to the site and often form a natural transition with reef habitats.

### 3. SAC interest feature

#### 3.1 Reefs

##### 3.1.1 Definition

Reefs are rocky marine habitats (or biological concretions) that arise from the sea floor. They are largely sublittoral (subtidal) but may extend as an unbroken transition into the littoral (intertidal) zone, where the rocky shore is exposed at low water. Where reefs extend from the seabed into the littoral zone a strong vertical zonation of communities is apparent. The diversity of reef habitat types is of considerable conservation importance as they are sites of high biodiversity (Hill *et al.*, 1998). Reef forms which characterise this habitat type include vertical rock walls to horizontal ledges and boulder fields. The distribution of particular marine communities can correlate strongly with particular rock types such as chalk.

Rocky reef types are extremely variable, both in structure and in the communities they support. The species assemblage is characterised by attached algae and invertebrates, usually associated with a range of mobile animals including invertebrates and fish.

Exposure to wave action has a major effect on community structure, with extremely exposed habitats dominated by a robust turf of sponges, anemones and foliose red seaweeds. The presence of enhanced tidal streams often significantly increases species diversity. The topography and hydrography can also influence biological assemblages, with the greatest variety of communities typically found where coastal topography is highly varied, with a wide range of exposures to wave action and tidal streams.

Water quality, including the turbidity (or murkiness) of the water is a major factor affecting reef communities. In turbid waters light penetration is low and algae can occur only in shallow depths or in the littoral zone. However, in such conditions animals have a plentiful supply of suspended food and filter feeding species may be abundant. Salinity is also important in determining which plants and animals occur on a reef. In addition, in the UK there is a marked biogeographical trend in species composition related to temperature.

##### 3.1.2 Importance of the feature within South Wight

South Wight Maritime European marine site has a range of reef types and associated communities, including chalk, limestone, sandstone, clay/mudstone and greensand bedrock and boulder reefs, providing an important diversity of habitats. All of these reef types, a number of which extend into the littoral zone, are generally soft and characteristically burrowed into extensively by shellfish and worms, adding to their diversity. The chalk provides a sufficiently stable substratum for long-lived, slow growing species of axinellid sponge and soft corals such as *Alcyonium digitatum*, whilst remaining soft enough to support burrowing piddocks such as *Pholas dactylus*. In contrast, the Wealden sandstone is an easily eroded substratum colonised by rapidly growing and relatively short-lived species such as encrusting sponges and bryozoa. The soft nature of the rock makes this an ideal habitat for burrowing piddocks such as *P. dactylus* which are commoner here than in the chalk (Bunker, 2000 in prep.). Greensand boulders also provide a stable substratum for the growth of marine species but although generally a soft rock, the boulders are often too hard for burrowing piddocks such as *P. dactylus* and *Barnea candida*. Instead they are colonised by the another boring bivalve, the 'red nose' *Hiatella arctica*. Clay exposures or mudstone reefs, which are not a very common subtidal habitat in Britain (Fowler, 1995), are associated with the greensand rock and provide a good habitat for piddocks such as *P. dactylus* and *B. candida*. Areas found off Sandown and Shanklin are of particular interest.

The South Wight reef communities are representative of the tide-swept, turbid water, epifaunal communities which are characteristic of the English Channel east of Durlston Head. The range of exposure to tides, waves and currents around the site varies from extremely exposed to moderately sheltered and includes wave and tide-exposed headlands. Although the type of substratum, wave exposure and other physical factors strongly influence the community structure on reefs, one of the main influencing factors in South Wight is the amount of light penetrating the water. This determines the depth to which kelps and/or red algae can grow and it forms the basis for selection of the sub-features

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(see Section 3.1.3). Algal communities present on clean shallow limestone and chalk bedrock and large boulders show classic zonation with depth, from rocky shore communities through to the kelp forest communities of *Laminaria digitata* and *L. hyperborea* (Fowler, 1995). Below this, the red algal zone (subtidal red algae communities) is dominated by *Palmaria palmata*, *Cystoclonium purpureum*, *Furcellaria lumbricalis*, *Calliblepharis ciliata* and *Phyllophora* spp. (English Nature, 1994). At depths where light penetration is insufficient for any algal growth, subtidal faunal turfs occur. In the South Wight Maritime European marine site, this is approximately 10 m below chart datum.

Of special interest in the area are the algal communities, particularly those of Alum Bay. Encrusting bryozoa and sponges occur in most circalittoral areas within the site and reefs of tubes made by the amphipod *Ampelisca diadema* are found at several locations. The waters are fairly turbid and this is reflected in the biota. Kelp plants are not found any deeper than 3.

1m below chart datum and very few foliose algae occur below 10 m. Species typical of turbid conditions and scouring such as the ascidian *Molgula manhatensis* and the horn wrack *Flustra foliacea* can be found at these depths on the reefs (Bunker, 2000 in prep).

### 3.1.3 Sub-features

**Rocky shore communities** - The intertidal rocky shores within South Wight Maritime provide a very diverse range of habitats with varying local geology, wave and tide exposures. These range from the very exposed steep shores of the south-western end of the Isle of Wight, to extensive wave cut platforms at Bembridge Ledges. Extensive areas of limestone and chalk bedrock provide a complex system of crevices, tunnels and pools supporting a very diverse algae and invertebrate fauna, particularly in rock pools, which add considerably to species diversity (Tittley, 1988; George *et al.*, 1995). The rocky shore fauna within the site includes many species at the easterly edge of their range. The rich and varied shores are of considerable conservation value since they make a significant contribution to the structure and diversity of the site as a whole. Rocky shores also have an important functional role, forming a link between marine and terrestrial environments.

Bembridge Ledges to Culver Cliff, which is the most easterly example of extensive hard shores in the English Channel, has been described in detail by Collins *et al.*, (1990). The upper shore supports some rare species, such as the gastropod mollusc *Paludinella littorina*. The considerable interest of the Bembridge Ledges arises from the presence of large and slowly draining pools between the extensive gently shelving ledges. These are host to a great variety of species, including many more commonly found in the sublittoral. At Bembridge, and elsewhere within the site, littoral pools support a number of rare or unusual seaweeds such as the shepherd's purse seaweed *Gracilaria bursa-pastoris*. The limestone reefs have eroded to form a complex of roughly rectangular crevices characteristic of limestone pavements which is readily bored by rock dwelling organisms, thus supporting a more diverse fauna than harder rocks. On the upper shore these are dominated by the bladder wrack *Fucus vesiculosus*. This gives way in the middle and lower shore to extensive mats of *Fucus serratus*, punctuated by pools in the wider rock crevices in which algal species including *Padina pavonica* occur, the latter at its eastern limit of distribution in Britain.

Many of the rocky shores within the site have a high diversity of littoral algae with the extreme lower shore areas characterised by kelp forest dominated by *Laminaria digitata* and *L. hyperborea*. Underneath the kelp is a dense turf of fauna and flora with a wide range of red and brown algae. Those areas of reef not covered by a faunal or floral turf are often coated with encrusting coralline algae. Many of the algae include a number with warmer water affinities at the eastern limit of their distribution. The underlying rock is extensively bored by piddocks but is stabilised by a covering of coralline algae. Areas such as Freshwater Bay have rock pools which contain large populations of the uncommon strawberry anemone *Actinia fragacea*. Rock pools at Hanover Point support the peacock's tail seaweed *Padina pavonica*. Along the south-western part of the coast, round to St Catherine's Point at the south of the Island, large populations of Lusitanian (warm temperate) littoral species occur at the eastern limit of their distribution in the Channel; these include the molluscs *Patella depressa* and *Gibbula umbilicalis* and the barnacles *Balanus perforatus* and *Chthamalus montagui*. The boulder shores along the Undercliff coast east of Blackgang (up to highest astronomical tide) have high densities, relative to the Solent area, of the dog-whelk *Nucella lapillus*. The algal species in Alum Bay are also of particular interest with the occurrence of three species listed by as 'nationally rare or scarce': *Zanardinia*

*prototypus*, *Gracilaria bursa-pastoris* and *Chondracanthus teedei*. Jones (2000) provides an account of the algal flora around the Isle of Wight.

**Kelp forest communities** - Kelp forests are highly productive ecosystems found in the shallow subtidal and are major primary producers in the coastal waters of the UK. It is estimated that 90% of kelp production enters the detrital food webs of coastal areas, supporting a wide range of habitats in addition to the kelp beds (Birkett *et al.* 1998). Kelp forests are also of considerable conservation value because they harbour a wide variety of plants and animals. For example a single kelp holdfast may be home to several thousand small animals, the stipe may be covered in numerous foliose red algae and invertebrates, whilst the habitat also plays a significant role as a nursery area for a wide variety of species. Other important mobile species also occur in the kelp forests, particularly fish such as the ballan wrasse *Labrus bergylta* and the cuckoo wrasse *Labrus mixtus*. These kelp communities are therefore considered to be key structural and functional components of the reefs at South Wight Maritime.

Kelp forests colonise a variety of reef substrates within the site. Areas of hard reef, for example the limestone off Bembridge and Whitecliff Bay, has a rich algal flora in shallow water, particularly to the south of Foreland. Where the limestone occurs within a few metres of the surface the kelps *Laminaria digitata*, *L. hyperborea* and *L. saccharina* dominate the tops of the outcrops. The kelps extend to a depth of about 7 m below chart datum at this location with a rich understory of red algae. On South Wight, the natural turbidity of the water restricts kelp forest communities of *Laminaria* spp. by affecting the penetration of light through the water column and hence the amounts of light available to the plants for photosynthesis. Of interest is the occurrence of *Laminaria ochroleuca* in the kelp forest at Atherfield Point (Bunker, 2000 in prep.).

**Subtidal red algae communities** - Red algal communities generally occur at depths in the subtidal where there is insufficient light penetration for green and brown algae to survive. They are also often found beneath the canopy of kelp forests. On South Wight, these communities provide an important habitat for marine fauna as well as hosting a number of rare or unusual algal species. Live fragments of maerl have been found in clean gravel off Culver Spit (Fowler, 1995). Subtidal red algal communities occur across the site, varying with reef substrate and hydrography. On the limestone reefs off Bembridge beyond a depth of about 7 m below chart datum, the kelp forest becomes less dense and is replaced by a variety of red algae, including *Dilsea carnosus*, *Calliblepharis ciliata* and *Chondrus crispus*.

**Subtidal faunal turf communities** - 'Faunal turfs' are highly diverse assemblages of attached animals growing on subtidal hard substrata. They range from low encrusting forms, such as sea mats and sponges, to tall erect forms, such as soft corals and sea fans. These communities also include prominent mobile organisms associated with the attached fauna such as decapod crustaceans, echinoderms, molluscs and fish, which may play important structuring roles in the community (Hartnoll, 1998). By definition, faunal turf communities are animal dominated, although there will be foliose and crustose red algae present in the upper regions which overlap with the shallower infralittoral zone. In contrast to intertidal substrata, zonation of subtidal communities is very much broadened and space is less frequently monopolised by single dominant species.

Within South Wight Maritime the subtidal faunal turf communities vary primarily with the reef substrate and the local hydrography of the area. Off the south-western end of South Wight, the chalk reefs are characterised by extensive burrowing by the piddock *Pholas dactylus*. The high loading of silt in the water column is reflected by crusts of the worm *Sabellaria spinulosa* at a number of locations and in the more current exposed areas, a rich turf of bryozoans, hydroids and sponges are present (Bunker, 2000 in prep.). Unlike some of the softer sandstone and clay reefs off south west Wight, the chalk hosts long-lived erect branched species such as the sponge *Stelligera stuposa* and dead man's fingers *Alcyonium digitatum*. Sea anemones, especially the white anemone *Actinothoe sphyrodeta* are also a notable feature on many areas of these chalk reefs.

The large reef of harder limestone off Bembridge and Whitecliff Bay for example comprise horizontal and vertical faces and crevices which provide a range of habitats with rich and diverse faunal communities. The rough vertical surfaces are well colonised by a range of sponges, notably *Dysidea fragilis*, *Haliclona* spp., *Axinella polypoides* and *Hemimyscale columella*. The bedrock is extensively bored by the bivalve species *Barnea* and *Hiattella* and sponges such as *Cliona celata*. The presence of

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boring bivalves and sponges, together with the holes they create, gives shelter to other species which adds further to habitat diversity. The rough surface is also colonised by a range of encrusting sponges, hydroids and bryozoans. The plankton communities in the water column above the reef are an integral part of the abundance and recruitment of species within the reef. Plankton species are, also, an important source of food for filter feeding species identified within the reef.

The subtidal faunal turf communities have a particularly diverse sponge (26 species recorded so far) and bryozoan fauna, with a number of unusual species, some only rarely recorded, such as the rare sponge *Stelletta grubii*, or (at the edge of their range in the Channel) the erect sponge *Stelligera stuposa*, bryozoans *Parasmittina trispinosa*, *Smittoidea reticulata* and *Schizomavella auriculata*, and tunicates *Lissoclinum perforatum* and *Pycnoclavella aurilucens* (Fowler, 1995). On the boulder and cobble area off Bembridge ledges, the rare bryozoan *Epistomia bursaria* has been recorded.

**Sea cave communities** - The reefs within South Wight Maritime possess a number of sea cave systems. The presence of large littoral caves in the chalk cliffs is of ecological importance, with many hosting rare algal species, which are restricted to this type of habitat. The fauna of these sea cave areas includes a range of mollusc species such as limpets and the horseshoe worm *Phoronis hippocrepia*. More extensive current-exposed subtidal chalk around the Needles forms 3-5m high cliffs with vertical faces and overhangs, small caves and gullies.

Sea cave communities vary considerably depending on the structure and extent of the cave system, their degree of submergence and of exposure to scour and surge, and the nature of their geology. Caves can vary in size, from only a few metres to more extensive systems, which may extend hundreds of metres into the rock. There may be tunnels or caverns with one or more entrance, in which the vertical and overhanging rock faces provide the principal marine habitat. Caves are typically colonised by encrusting animal species but may also support shade-tolerant algae near their entrances.

#### **4. Conservation objectives for all interest features**

Under Regulation 33(2)(a) of The Conservation (Natural Habitats &c.) Regulations 1994, English Nature has a duty to advise other relevant authorities as to the conservation objectives for the European marine site. The conservation objectives for the South Wight Maritime European marine site interest features are provided below and should be read in the context of other advice given in this package, particularly:

- the maps (appendices I and II) showing the extent of the interest feature and sub-features;
- summary information on the interest of the feature; and
- the favourable condition table, providing information on how to recognise favourable condition for the interest feature and which will act as a basis for the development of a monitoring programme.

##### **4.1 The conservation objective for reefs**

Subject to natural change, maintain the **reefs** in favourable condition<sup>5</sup>, in particular:

- Rocky shore communities
- Kelp forest communities
- Subtidal red algae communities
- Subtidal faunal turf communities
- Sea cave communities

## **5. Favourable condition table**

The favourable condition table is supplied as part of English Nature's Regulation 33 advice package. It is intended to supplement the conservation objectives only in relation to management of activities and requirements on monitoring the condition of the site and its features. The table **does not by itself** provide a comprehensive basis on which to assess plans and projects as required under Regulations 20 and 48-50, but it does provide a basis to inform the scope and nature of any 'appropriate assessment' that may be needed. It should be noted that appropriate assessments are, by contrast, a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects. English Nature will provide more detailed advice to competent and relevant authorities to assess the implications of any given plan or project under the Regulations, where appropriate, at the time a plan or project is being considered.

The favourable condition table is the principle source of information that English Nature will use to assess the condition of an interest feature and as such comprises indicators of condition. On many terrestrial European sites, we know sufficient about the preferred or target condition of qualifying habitats to be able to define measures and associated targets for all attributes to be assessed in condition monitoring. Assessments as to whether individual interest features are in favourable condition will be made against these targets. In European marine sites we know less about habitat condition and find it difficult to specify favourable condition. Individual sites within a single marine habitat category are also all very different, further hampering the identification of generic indicators of condition. Accordingly, in the absence of such information, condition of interest features in European marine sites will be assessed against targets based on the existing conditions, which may need to be established through baseline surveys in many cases.

The assumption that existing interest features on European marine sites are in favourable condition will be tested in the 2000 - 2006 reporting period and the results subsequently fed back into our advice and site management. Where there is more than one year's observations on the condition of marine habitats, all available information will need to be used to set the site within long-term trends in order to form a view on favourable condition. Where it may become clear that certain attributes are a cause for concern, and if detailed studies prove this correct, restorative management actions will need to be taken to return the interest feature from unfavourable to favourable condition. It is the intention of English Nature to provide quantification of targets in the favourable condition table during the 2000 - 2006 reporting period.

This advice also provides the basis for discussions with management and advisory groups, and as such the attributes and associated measures and targets may be modified over time. The aim is to produce a single agreed set of attributes that will then be monitored in order to report on the condition of features. Monitoring of the attributes may be of fairly coarse methodology, underpinned by more rigorous methods on specific areas within the site. To meet UK agreed common standards, English Nature will be committed to reporting on each of the attributes subsequently listed in the final version of the table, although the information to be used may be collected by other organisations through agreements.

The table will be an important, but not the only, driver of the site monitoring programme. Other data, such as results from compliance monitoring and appropriate assessments, will also have an important

### **Box 1 Glossary of terms used in the favourable condition table**

role in assessing condition. The monitoring program will be developed as part of the management scheme process through discussion with the relevant authorities and other interested parties. English Nature will be responsible for collating the information required to assess condition and will form a judgement on the condition of each feature within the site, taking into account all available information and using the favourable condition table as a guide.



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**Table 1      Favourable Condition Table for the South Wight Maritime European marine site**

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**NB** - Many of the attributes will be able to be monitored at the same time or during the same survey. The frequency of sampling for many attributes may need to be greater during the first reporting cycle in order to characterise the site and establish the baseline. Biotopes referred to in this table are referenced in appendix IV.

Interest feature	Sub-feature	Attribute	Measure	Target	Comments
Reefs		Extent	Area (ha) of the reef measured periodically (frequency to be determined).	No decrease in extent of reef from an established baseline <sup>6</sup> , subject to natural change.	The extent of reef is monitored as a reporting requirement of the Habitats Directive. The reef interest feature comprises a variety of reef biotopes and associated communities and it is important that the extent of the reef habitat is maintained to ensure that it is in favourable condition.
		Absence of Coastal Defence	Length of reef without coastal defence, measured periodically (frequency to be determined).	No decrease in length of reef without coastal protection from an established baseline <sup>6</sup> ,	Sections of the reef without coastal protection show the natural zonation and structure of the associated reef communities and it is important that the natural coastal profile, comprising cliff, foreshore and subtidal reef, are maintained. Wherever possible the natural erosion of the reefs should be allowed. This is an integral part of the natural evolution of the reef and hence the favourable condition.
		Water temperature & salinity	Average water temperature and salinity measured periodically throughout the reporting cycle (frequency to be determined).	Average temperature and salinity should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	The temperature and the salinity of the water overlying the reef are characteristic of the overall hydrography of the area. Changes in temperature and salinity influences the presence and distribution of species (along with recruitment processes and spawning behaviour) including those at the edge of their biogeographic ranges and non-natives.
		Water clarity	Average light attenuation measured during the summer season annually throughout the reporting cycle	Average light attenuation should not decrease significantly from an established baseline <sup>6</sup> , subject to natural change.	Water clarity is important for maintaining extent and density of algal dominated communities, such as kelp forest, and thus the structure of the reef interest feature. The clarity of the water may decrease as a result of increases in the levels of suspended matter and this may reduce light penetration through the water column. Siltation of suspended material may also lead to damage of benthos by causing a reduction in feeding efficiency and colonisation.
Reefs	Sea cave communities	Extent	Number and location of sea caves measured once during the reporting cycle.	No decrease in the number and integrity of the sea caves from an established baseline <sup>6</sup> , subject to natural change.	Extent is an attribute on which reporting is required by the Habitats Directive. The extent of sea caves may alter as a result of natural erosion and collapses as well as a result of human activity, hence the need for periodic measurement.
		Range and distribution of characteristic sea cave biotope complexes	Range and distribution of sea cave biotope complex (CR.Cv), measured during the summer, once during the reporting cycle.	Range and distribution of sea cave biotope should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	The plant and animal communities associated with the sea caves are important to the biological structure and function of the sea caves and form an important part of the reef habitat. Changes in the range and distribution of characteristic sea cave communities may be indicative of deterioration caused by operations within the European

					marine site.
	Rocky shore communities	Range and distribution of characteristic biotopes	Range and distribution of biotopes. Measured during summer, once during reporting cycle	Range and distribution of characteristic biotopes should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	The range and distribution of the biotopes (particularly those listed at appendix IV) are an important structural aspect of the sub-feature and therefore the reef. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.
Reefs	Kelp forest communities	Extent and distribution of characteristic biotopes	Extent and distribution of kelp communities (listed in appendix IV), measured during summer, once during reporting cycle.	Extent and distribution of characteristic biotopes should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	The extent and distribution of characteristic kelp biotopes are an important structural (composition) and functional (productivity) aspect of the European marine site. Changes in extent and distribution may indicate long term changes in the physical conditions at the site.
		Species composition of characteristic biotopes	Monitoring the diversity of species within a subset of biotopes selected from appendix IV. Measured during summer, once during reporting cycle.	Presence and abundance of composite species should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	Species composition is an important contributor to this sub-feature and therefore the reef as a whole. The presence and relative abundance of characterising species gives an indication of the quality of the biotopes and change in composition may indicate cyclic change/trend in reef communities.
	Subtidal red algae communities	Extent and distribution of characteristic biotopes	Extent and distribution of red algae communities (listed in appendix IV), measured during summer, once during reporting cycle.	Extent and distribution of characteristic biotopes should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	Extent and distribution of red algae biotopes is an important structural (composition) and functional (productivity) aspect of the European marine site. Changes in extent and distribution may indicate long term changes in the physical conditions at the site
		Species composition of characteristic biotope EIR.KFaR.FoR	Monitoring the diversity of species within a subset of biotopes selected from appendix IV (including EIR.Kfar.for). Measured during summer, once during reporting cycle.	Presence and abundance of composite species should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	Species composition is an important contributor to this sub-feature and therefore the reef as a whole. The presence and relative abundance of characterising species gives an indication of the quality of the biotopes and change in composition may indicate cyclic change/trend in reef communities. Species composition also provides an indicator of light attenuation.
	Subtidal faunal turf communities	Extent and distribution of characteristic biotopes	Distribution of circalittoral communities (listed in appendix IV) measured during summer, once during reporting cycle	Extent and distribution of characteristic biotopes should not deviate significantly from an established baseline <sup>6</sup> , subject to natural change.	South Wight Maritime is noted for the number and range of circalittoral biotopes because they make up a significant proportion of the reef resource at this site. Relative distribution and number of circalittoral biotopes is an important structural and functional aspect of the European marine site. Changes in extent and variety may indicate long term changes in the physical conditions at the site
		Species composition of characteristic	Monitoring the diversity of species within a subset of biotopes	Presence and abundance of composite species should not deviate significantly from an established baseline <sup>6</sup> , subject	Species composition is an important contributor to this sub-feature and therefore the reef as a whole. The presence and relative abundance of characterising

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		biotope.	selected from appendix IV. Measured during summer, once during reporting cycle.	to natural change.	species gives an indication of the quality of the biotopes and change in composition may indicate cyclic change/trend in reef communities.
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NB. Extreme events (such as storms reducing or increasing salinities, exceptionally cold winters or warm summers) also need to be recorded as they may be critical in influencing ecological issues in South Wight and may well be missed by routine monitoring.

## **6. Advice on operations**

English Nature has a duty under Regulation 33(2)(b) of The Conservation (Natural Habitats &c.) Regulations 1994 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. Information on how English Nature has developed this advice is given in Section 6.2, and on how it may be reviewed and updated in the future, in Section 6.4.

The advice is provided in summary form in Table 2 and Section 6.5 and with more detail in Tables 3 and 4 and Section 6.6, including advice in relation to specific interest features and their sub-features.

### **6.1 Purpose of advice**

The aim of this advice is to enable all relevant authorities to direct and prioritise their work on the activities under their control that pose the greatest potential threat to the favourable condition of interest features on the South Wight Maritime European marine site. The advice is linked to the conservation objectives for interest features and will help provide the basis for detailed discussions within the management group to formulate and agree a management scheme to agreed timescales for the site. The advice given here will inform on, but is without prejudice to, any advice given under Regulation 48 or Regulation 50 on operations that qualify as plans or projects within the meaning of Article 6 of the Habitats Directive.

### **6.2 Methods for assessment**

To develop this advice on operations English Nature 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 European marine site in an effective manner. Through a consistent approach, this process enables English Nature 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.

All the scores of relative sensitivity, exposure and vulnerability are derived using best available scientific information and informed scientific interpretation and judgement. The process uses sufficiently coarse categorisation to minimise uncertainty, reflecting the current state of our knowledge and understanding of the marine environment. Information has been gathered from a range of sources including reports such as ABP Research (1999).

#### **6.2.1 Sensitivity assessment**

The sensitivity assessment used is an assessment of the relative sensitivity of the interest features or the component sub-features of the South Wight Maritime European marine site to the effects of 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).

The sensitivity assessments of the interest features or their component sub-features of the South Wight Maritime European marine site are based primarily upon a number of UK Marine SACs *Life* Project Task Reports (Davison and Hughes, 1998; Elliott *et al.*, 1998; and Hill, *et al.*, 1998, Cole *et al.*, 1999, ABP, 1999, Fowler, 1999, Gubbay and Knapman, 1999, Jones *et al.*, 2000)

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The sensitivity assessments are based on current information but may develop with improvements in scientific knowledge and understanding. In particular, English Nature and Scottish Natural Heritage have commissioned the Marine Biological Association of the UK, through its Marine Life Information Network (MarLIN) to provide detailed sensitivity information to underpin this advice, over the next three years, and available to all over the World Wide Web ([www.marlin.ac.uk](http://www.marlin.ac.uk)).

### **6.2.2 Exposure assessment**

This has been undertaken for the South Wight Maritime European marine site by assessing the relative exposure of the interest features or their component sub-features on the site to the effects of broad categories of human activities currently occurring on the site (as at August 2000).

### **6.2.3 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). The process of deriving and scoring relative vulnerability is provided in Appendix III.

## **6.3 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 English Nature.

These broad categories provide a clear framework against which relevant authorities can assess activities under their responsibility. The more detailed information in Table 3 and 4 provides relevant authorities with a context against which to consider an assessment of 'significant effect' of any plans or projects which may affect the site and a basis to inform on the scope and nature of appropriate assessments required in relation to plans and projects. It is important to note that this advice is only a starting point for assessing impacts. It does not remove the need for the relevant authorities to formally consult English Nature over individual plans and projects where required to do so under the Regulations.

## **6.4 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 English Nature knows about current activities and patterns of usage at the South Wight Maritime European marine site. English Nature expects that the information on current activities and patterns of usage (which was used to derive table 3) will be refined as part of the process of developing the management scheme through further discussion with the relevant authorities. The option of zoning this information to a local, site-specific focus may be appropriate. As such, it is important that future consideration of this advice by relevant authorities and others takes account of changes in the usage patterns that have occurred at the site, over the intervening period, since the advice was issued. In contrast, the information provided in this advice on the sensitivity of interest features or sub-features (Table 4) 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 may 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.





## **6.5 Summary of advice on operations for the interest feature (with reference to Table 2)**

### **6.5.1 Reefs**

In pursuit of the conservation objective for the reefs, the relevant and competent authorities for the South Wight Maritime European marine site are advised to manage human activities within their remit such that they do not result in deterioration or disturbance to habitats or species for which the site has been designated through any of the following:

- Physical loss through removal and/or smothering.
- Physical damage through siltation and/or abrasion.
- Changes in toxic contamination through the introduction of synthetic compounds.
  - Non-toxic contamination through changes in nutrient and/or organic loading and/or changes in turbidity.
  - Biological disturbance through the introduction of non-natives and/or translocation of species and/or the selective extraction of species.

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**Table 2 Operations which may cause deterioration or disturbance to the South Wight Maritime European**

## marine site interest features at current levels of use<sup>7</sup>

The advice below is not a list of prohibitions but rather a checklist for operations which may need to be subject to some form of management measures(s) or further measures where actions are already in force. Examples of activities under relevant authority jurisdiction are also provided. Operations marked with a \_ indicate those features (or some component of them) that are considered to be highly or moderately vulnerable to the effects of the operations.

Standard list of categories of operations which may cause deterioration or disturbance	Reefs
<b>Physical Loss</b>	
• Removal (e.g. land claim, coastal development)	–
• Smothering (e.g. disposal of dredged spoil, coastal development)	–
<b>Physical Damage</b>	
• Siltation (e.g. dredged spoil disposal, outfalls, coastal development)	–
• Abrasion (e.g. anchoring, land-based recreation, coastal development)	–
• Selective extraction (e.g. aggregate extraction, fossil collection)	
<b>Non-physical disturbance</b>	
• Noise (e.g. land-based/water-based recreational activity, marine traffic)	
• Visual presence (e.g. land-based/water-based recreational activity, marine traffic, potting)	
<b>Toxic contamination</b>	
• Introduction of synthetic compounds (e.g. domestic/industrial effluent outfalls, antifouling paint)	–
• Introduction of non-synthetic compounds (e.g. domestic/industrial effluent outfalls, disposal of dredged spoil)	
• Introduction of radionuclides (e.g. power station effluent discharges)	
<b>Non-toxic contamination</b>	
• Changes in nutrient loading (e.g. agricultural run-off, domestic/industrial effluent outfalls)	–
• Changes in organic loading (e.g. domestic/industrial effluent outfalls)	–
• Changes in thermal regime (e.g. power station effluent discharges)	
• Changes in turbidity (e.g. agricultural run-off, dredging, dredged spoil disposal, coastal development)	–
• Changes in salinity (e.g. water abstraction, domestic/industrial effluent outfalls)	
<b>Biological disturbance</b>	
• Introduction of microbial pathogens (e.g. domestic effluent outfalls)	
• Introduction of non-native species and translocation (e.g. <i>Sargassum muticum</i> , ballast water species)	–
• Selective extraction of species (e.g. commercial and recreational fishing, potting)	–

<sup>7</sup>

This advice has been developed using best available scientific information and informed scientific interpretation and judgement. This process has used a coarse grading of relative sensitivity, exposure and vulnerability of each interest feature to different categories of operation based on the current state of our knowledge and understanding of the marine environment. This is shown in the sensitivity and vulnerability table (Table 4). The advice is indicative only, and is given to guide relevant authorities and others on particular operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the site has been designated.

The precise impact of any category of operation occurring on the site will be dependent upon the nature, scale, location and timing of events. More detailed advice is available from English Nature to assist relevant authorities in assessing actual impacts and cumulative effects. Assessment of this information should be undertaken in the development of the management of the site through wider consultation.

In accordance with Government policy guidance, the advice on operations is feature and site specific, and provided in the light of current activities and patterns of usage at the site. As such, it is important that future consideration of this advice by relevant authorities, and others, takes account of changes in usage patterns that have occurred at the site over the intervening period. Advice for sites will be kept under review and may 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 or projects on the marine environment. The provision of the statutory advice given here, on operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated, under Regulation 33(2), is provided without prejudice to specific advice given under Regulation 48 (3) or Regulation 50 on individual operations that qualify as plans or projects within the meaning of Article 6 of the Habitats Directive.

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**6.6 Detailed advice on operations for the reefs interest feature**

This section provides information on the sensitivity and exposure of those sub-features of the reefs of the South Wight Maritime European marine site which are considered highly or moderately vulnerable to operations as summarised in Table 2 and detailed in Tables 3 and 4. This enables links to be made between the categories of operation and the ecological requirements of the European marine site's interest features, as set out in Section 3 and 4

#### 6.6.1 Reefs

##### i) Physical loss

- South Wight Maritime has a wide range of reef types providing an important diversity of habitats. These support a variety of marine communities, many of which are dependent upon the ecological functioning of other reef communities. Physical loss through either removal or smothering, which may occur primarily as a result of one-off events, but also by the effects of activities, could jeopardise the survival of some of these communities and would therefore be detrimental to the favourable condition of the reef. All the reef sub-features are therefore considered to be highly sensitive to removal and smothering.
- Most of the reef sub-features are currently considered to have a low exposure to removal and smothering. Exposure may occur primarily as a result of one-off developments such as coastal protection works, infrastructure construction and modification, but also as a result of ongoing activities such as aggregate dredging which may indirectly cause the removal of reef habitat through the modification of coastal processes and subsequent coastal erosion. The rocky shores within the European marine site however, are considered to have a higher exposure to removal and smothering in light of the intensity of one-off developments which occur there. The sea caves are generally situated in areas which have limited access and minimal human activity and therefore have a negligible exposure score to removal and smothering. The reef is periodically covered, in parts, by sand
- Using the assessment matrix in Appendix III and the exposure and sensitivity scores in Tables 3 and 4 respectively, kelp forest communities, subtidal red algae communities and subtidal faunal turf communities are moderately vulnerable to removal and smothering. Rocky shore communities are highly vulnerable to removal and smothering.

##### ii) Physical damage

- Siltation of fine sediment on reef communities can smother or block the feeding and respiratory organs of marine animals, it can effect recruitment processes of both marine fauna and flora, and it can contribute to a reduction in light penetration through the water column (Cole *et al.*, 1999). For these reasons, the subtidal reef communities of kelp forests, red algae and faunal turfs are considered moderately sensitive to this process, whilst the rocky shore communities which generally experience higher natural siltation have a low sensitivity.
- All the reef sub-features are moderately sensitive to abrasion which can cause dislodgement of species or damage to the structure of reef communities (Hill *et al.*, 1998), although most of the reef sub-features, especially those in the intertidal and the more wave exposed areas of the coastline, have natural adaptations to the high energy physical environment to which they are often subjected and are consequently less sensitive to abrasion than more sheltered areas. However, if local damage is intensive or persistent this may be detrimental to the favourable condition of the reefs interest feature in relation to its structure and functioning.

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- The exposure of reef sub-features to physical damage varies across the site and between sub-features. Siltation may arise as a result of one-off developments such as coastal protection works and

infrastructure construction and modification, or from ongoing activities such as domestic effluent outfalls and stormwater overflows, aggregate extraction, and maintenance dredging and dredged spoil disposal adjacent to the reefs.

- As a consequence of these sensitivities and exposure scores, the subtidal reef communities are considered moderately vulnerable to siltation and abrasion, whilst the rocky shore communities are moderately vulnerable to abrasion.

iii) Toxic contamination

- All the reef sub-features are considered to be highly sensitive to the toxic contamination through the introduction of synthetic compounds such as pesticides, Polychlorinatedbiphenyls (PCBs) and biocides (e.g. tributyltin (TBT)). Marine organisms such as algae, macrophytes, invertebrates and fish are most sensitive to toxic substances (Cole *et al.*, 1999). Many synthetic compounds, such as PCBs, are known to have toxic effects even in low concentrations (particularly to invertebrate larvae) and capable of high levels of bioaccumulation within many benthic organisms, particularly those such as molluscs which are poor at regulating the uptake of contaminants. Such compounds may then biomagnify up the food chain if these organisms are predated upon. Whilst the effects of individual synthetic compounds on the many species found within these sub-features is poorly understood, there is evidence of high levels of toxicity to some groups of species such as crustaceans. The potential effects of toxic pollutants also varies according to the state and availability of the compound and the characteristics of the receiving environment. Where the effects are lethal, removal of individual species may result in the loss of key grazers or predators, such as limpets or dogwhelks on rocky shores, and a dominance of pollution tolerant organisms. Sub-lethal effects however, may affect the healthy functioning of organisms such as its reproduction, physiology or genetics, which may ultimately reduce the organism's fitness for survival. Faunal communities within kelp forests and elsewhere on subtidal reefs, which primarily consist of filter feeders relying on larval dispersal for recruitment, are particularly recognised as being sensitive to toxic contamination (Birkett *et al.*, 1998).
- Despite the high sensitivity of the reef sub-features to toxic contaminants, particularly synthetic compounds, their exposure to such substances within the European marine site is relatively low and may arise from sources such as domestic effluent outfalls, unlicensed shore-based and water-based discharges and anti-fouling paint leachate. Consequently, all the sub-features are considered moderately vulnerable to toxic contamination through the introduction of synthetic compounds.
- Although in general the reef habitats within South Wight Maritime are less vulnerable to the introduction of non-synthetic compounds such as oil, primarily due to the more robust and high energy nature of reef habitat, reef communities may be damaged by the toxic and smothering effects of spilled oil (Cole *et al.*, 1999) and therefore procedures to respond to oil spill incidents need to be kept under review.

iv) Non-toxic contamination

- Elevated nutrient (phosphate and nitrate) levels can contribute to the stimulation of algal growth (eutrophication) and deoxygenation of the water column, although water movement within the site is likely to inhibit pronounced eutrophication (Cole *et al.*, 1999). The effects of nutrient enrichment therefore are likely to be restricted to the localised growth of ephemeral opportunistic algae and localised eutrophication in large pools on the foreshore, with the greatest potential effects on algal communities (Hill *et al.*, 1998). Given the medium exposure of sub-features to nutrient enrichment, arising from domestic effluent outfalls and from the outside the site in the Solent area, all the algal dominated sub-features have a moderate vulnerability to nutrient enrichment.
- All the reef sub-features are considered moderately sensitive to organic enrichment. Increased levels of organic compounds can lead to a localised depletion of oxygen levels due to the

increased activity of anaerobic bacteria which break down the organic material. A good supply of oxygen in the water column is vital for most marine species and elevated levels of organic matter can alter this natural balance, potentially causing changes to the species composition and distribution on the interest feature, caused primarily by the increased growth of opportunistic invertebrate species (Cole *et al.*, 1999).

- Exposure of the sub-features to organic enrichment is also considered to be medium for all sub-features. However, the exposure varies temporally and spatially across the interest feature and the exposure score reflects the localised areas of organic input, particularly from domestic effluent outfalls. All the sub-features are therefore considered to be moderately vulnerable to organic enrichment.
- Increases in the turbidity of the water column is primarily a concern for algae communities (particularly subtidal algae such as kelp and red algae) which require sufficient penetration of light through the water column for photosynthesis (Cole *et al.*, 1999). The exposure of sub-features to changes in turbidity is medium for all the reef sub-features except sea cave communities, for which the exposure score is low, a consequence of their relatively remote location. Localised increases in turbidity may arise from one-off developments such as coastal protection works, infrastructure construction and modification, and from ongoing activities such as domestic effluent outfalls, stormwater overflows or maintenance dredging and dredged spoil disposal adjacent to the reefs. Consequently, the subtidal algae sub-features are considered moderately vulnerable to changes in turbidity.

v) Biological disturbance

- All the reef sub-features are considered moderately sensitive to the introduction of non-natives and the translocation of species to the reefs. This is because introduced species can out-compete native species and result in an altered community structure of the reef (Hill *et al.*, 1998). Currently, the rocky shore communities are considered moderately vulnerable to the introduction and spread of non-native species. This is derived from the medium exposure rating which reflects the occurrence of the introduced algae *Sargassum muticum* particularly in the more sheltered areas of the rocky shore, and the potential risks of species introduction associated with the international shipping within and near the European marine site.
- Reef communities are also moderately sensitive to selective extraction through for example, removal of shellfish and demersal or pelagic fish. This is because the removal of particular species or predators from a marine food web may not only affect that population but can also have indirect effects on associated species and may disrupt the functioning and stability of reef communities (Hill *et al.*, 1998). Most selective extraction within the site occurs in the subtidal by commercial potting for crabs and lobsters and by recreational sea angling, although pelagic fishing is known to occur outside the site. Due to the complexity of marine ecosystems and the mobility of species, influenced by climatic and seasonal conditions, it is difficult to assess the likely impact of selective extraction of reef species from the South Wight reefs through either commercial fishing or recreational pursuits and further investigation may therefore be necessary.

## 6.7 Plans and Projects

Under Regulation 48(1) of The Conservation (Natural Habitats, &c.) Regulations 1994, an appropriate assessment needs to be undertaken in respect of any plan or project which:

- a. either alone or in combination with other plans or projects would be likely to have a **significant effect** on a European Site; and
- b. is not directly connected with the management of the site for nature conservation.

Where a. and b. are satisfied, an appropriate assessment is required by law for all European Sites (Regulation 48). A European Site is any classified SPA and any SAC from the point where the Union and the Government agree



the site as a Site of Community Importance. It should be noted, however, that amendments to the Habitats Regulations for England are now in force which result in a statutory requirement for Appropriate Assessments to be conducted for candidate SACs before they become Sites of Community Importance.

Tables 3 and 4 of this Regulation 33 advice package provide relevant authorities with a guide against which to initiate an assessment of the 'significance' of any plans or projects (and ongoing operations or activities) proposed for the site although this will only be the starting point for assessing impacts and does not remove the need for relevant authorities to formally consult English Nature over individual plans and projects where required under the Regulations. English Nature's guidance note HRGN1 'The Appropriate Assessment (Regulation 48)' is at Appendix VI for further information.

## **6.8 Review of consents**

Regulation 50 of The Conservation (Natural Habitats, &c.) Regulations 1994 requires competent authorities to undertake a review of all existing consents and permissions affecting the SAC and SPA, as soon as possible after the site officially becomes a Site of Community Importance. This will have implications for discharge and other consents, which will need to be reviewed in light of these objectives and may mean that lower targets for background levels of contaminants etc will need to be set.

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**Table 3.**                    **Assessment of the relative exposure of interest features and sub-features of the South Wight Maritime European marine site to different**

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**categories of operations (as at August 2000).**

**Key**

<b>High</b>	High exposure
<b>Med</b>	Medium exposure
<b>low</b>	Low exposure
<b>None</b>	No exposure

Categories of operations which may cause deterioration or disturbance	Reefs				
	Rocky shore communities	Kelp forest communities	Subtidal red algae communities	Subtidal faunal turf communities	Sea cave communities
Physical Loss					
• Removal (e.g. land claim, coastal development)	Med	Low	Low	Low	None
• Smothering (e.g. disposal of dredged spoil, coastal development)	Med	Low	Low	Low	None
<b>Physical Damage</b>					
• Siltation (e.g. disposal of dredged spoil, outfalls, coastal development)	Med	Med	Med	Med	Low
• Abrasion (e.g. anchoring, land-based recreation, coastal development)	Med	Med	Med	Med	Low
• Selective extraction (e.g. aggregate extraction, fossil collection)	Low	Low	Low	Low	Low
<b>Non-physical disturbance</b>					
• Noise (e.g. land-based/water-based recreational activity, marine traffic)	Med	Low	Low	Low	Low
• Visual presence (e.g. land-based/water-based recreational activity, marine traffic, potting)	Med	Low	Low	Low	Low
<b>Toxic contamination</b>					
• Introduction of synthetic compounds (e.g. domestic/industrial effluent outfalls, anti-fouling paint)	Low	Low	Low	Low	Low
• Introduction of non-synthetic compounds (e.g. domestic/industrial effluent outfalls, disposal of dredged spoil)	Low	Low	Low	Low	Low
• Introduction of radionuclides (e.g. power station effluent discharges)	Low	Low	Low	Low	Low
<b>Non-toxic contamination</b>					
• Changes in nutrient loading (e.g. agricultural run-off, domestic/industrial effluent outfalls)	Med	Med	Med	Med	Med
• Changes in organic loading (e.g. domestic/industrial effluent outfalls)	Med	Med	Med	Med	Med
• Changes in thermal regime (e.g. power station effluent discharges)	None	None	None	None	None

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• Changes in turbidity (e.g. agricultural run-off, domestic/industrial effluent outfalls, dredging, disposal of dredged spoil, coastal development)	Med	Med	Med	Med	Low
• Changes in salinity (e.g. water abstraction, domestic/industrial effluent outfalls)	Low	Low	Low	Low	Low
<b>Biological disturbance</b>					
• Introduction of microbial pathogens (e.g. domestic effluent outfalls)	Med	Med	Med	Med	Med
• Introduction of non-native species & translocation (e.g. <i>Sargassum muticum</i> , ballast water)	Med	Low	Low	Low	Low
• Selective extraction of species (e.g. commercial and recreational fishing, potting)	Low	Med	Med	Med	Low

**Table 4. Assessment of the relative vulnerability of interest features and sub-features of the South Wight Maritime European marine site to different categories of operations. Categories of operations to which the features or sub-features of the site are highly or moderately vulnerable are indicated by shading. This table also incorporates relative sensitivity scores used in part to derive vulnerability (as at August 2000).**

**Key**

	High vulnerability	----	High sensitivity
	Moderate vulnerability	---	Moderate sensitivity
		--	Low sensitivity
		-	No detectable sensitivity

NB Appendix III shows the matrix used to determine relative vulnerability. Exposure x Sensitivity = Vulnerability

Categories of operations which may cause deterioration or disturbance	Reefs				
	Rocky shore communities	Kelp forest communities	Subtidal red algae communities	Subtidal faunal turf communities	Sea cave communities
Physical Loss					
• Removal (e.g. land claim, coastal development)	----	----	----	----	----
• Smothering (e.g. disposal of dredged spoil, coastal development)	----	----	----	----	----
<b>Physical Damage</b>					
• Siltation (e.g. disposal of dredged spoil, outfalls, coastal development)	--	---	---	---	--
• Abrasion (e.g. anchoring, land-based recreation, coastal development)	---	---	---	---	---
• Selective extraction (e.g. aggregate extraction, fossil collection)	---	---	---	---	---
<b>Non-physical disturbance</b>					
• Noise (e.g. land-based/water-based recreational activity, marine traffic)	-	-	-	-	-
• Visual presence (e.g. land-based/water-based recreational activity, marine traffic, potting)	-	-	-	-	-
<b>Toxic contamination</b>					
• Introduction of synthetic compounds (e.g. domestic/industrial effluent outfalls, anti-fouling paint)	----	----	----	----	----
• Introduction of non-synthetic compounds (e.g. domestic/industrial effluent outfalls, disposal of dredged spoil)	---	---	---	---	---
• Introduction of radionuclides (e.g. power station effluent discharges)	--	--	--	--	--
<b>Non-toxic contamination</b>					
• Changes in nutrient loading (e.g. agricultural run-off, domestic/industrial effluent outfalls)	---	---	---	--	---
• Changes in organic loading (e.g. domestic/industrial effluent outfalls)	---	---	---	---	---

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• Changes in thermal regime (e.g. power station effluent discharges)	--	---	---	---	--
• Changes in turbidity (e.g. agricultural run-off, domestic/industrial effluent outfalls, dredging, disposal of dredged spoil, coastal development)	--	---	---	--	--
• Changes in salinity (e.g. water abstraction, domestic/industrial effluent outfalls)	--	---	---	---	--
<b>Biological disturbance</b>					
• Introduction of microbial pathogens (e.g. domestic effluent outfalls)	--	--	--	--	--
• Introduction of non-native species & translocation (e.g. <i>Sargassum muticum</i> , ballast water)	---	---	---	---	---
• Selective extraction of species (e.g. commercial and recreational fishing, potting)	---	---	---	---	---

English Nature's advice on operations is derived from an assessment combining relative sensitivity of the features or sub-features with information on human usage of the site, to identify relative vulnerability to categories of operations. In accordance with Government policy guidance this advice is provided in the light of current activities and patterns of usage at the site. It is important therefore that future consideration of this advice by relevant authorities, and others, takes account of changes in the usage patterns at the site. In contrast, the sensitivity of interest features, or sub-features, is relatively stable with alterations reflecting improvement in our scientific knowledge and understanding. To this end, information on sensitivity has been included in this table to assist the management and advisory groups with the future management of the site.

## 7. Bibliography

- ABP Research. 1999. *Good practice guidelines for ports and harbours operating within or near UK European marine sites*. UK Marine SAC Project.
- Ackers, R.G., Moss, D. and Picton, B.E. 1992. Sponges of the British Isles ("Sponge V"). A colour Guide and Working Document. Marine Conservation Society.
- Barn, J. & Robson, C. (Editors). 1995. British Coasts and Seas. Region 9: Southern England. Hayling Island to Lyme Regis. Peterborough. Joint Nature Conservation Committee.
- Beveridge, M.C.M., Ross, L.G. & Stewart, J.A. 1997. *The development of mariculture and its implications for biodiversity*. Cambridge University Press.
- Birkett, D.A., Maggs, C.A., Dring, M.J. & Boaden, P.J.S. 1998. *Infralittoral reef biotopes with kelp species* (Vol. VII). An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association of Marine Science (UK Marine SACs Project).
- 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.
- Bryan, G.W., Gibbs, P.E., Hummerston, L.G., Burt, G. 1987. The effects of tributyltin accumulation on adult dogwhelks, *Nucella lapillus*: long-term field and laboratory experiments. *J. Mar. Biol. Ass.*, UK, 67, 525-544.
- Bunker, F. St. P D. 2000 in prep.. *Sublittoral Surveys in the South Wight Maritime candidate Special Area of Conservation in October 1999* A report to English Nature currently in preparation.<sup>6</sup>
- Cole, S., Codling, I.D., Parr, W. and Zabel, T. 1999. *Guidelines for managing water quality impacts within UK European marine sites*. WRc Swindon. UK Marine SAC Project.
- Collins, K.J., Herbert, R.J.H. and Mallinson, J.J. 1990. The marine flora and fauna of Bembridge and St. Helens, Isle of Wight. *Proceedings of the Isle of Wight Natural History and Archaeological Society*, 9, pp 41-859.
- Connor, D.W., Brazier, D.P., Hill, T.O. & Northen, K.O. 1997. Marine Nature Conservation Review: marine biotope classification for Britain and Ireland. Volume 1. Littoral biotopes. Version 97.06. *Joint Nature Conservation Committee Report*, No. 229.
- Connor, D.W., Dalkin, M.J., Hill, T.O., Holt, R.H.F. & Sanderson, W.G. 1997. Marine Nature Conservation Review: marine biotope classification for Britain and Ireland. Volume 2. Sublittoral biotopes. Version 97.06. *Joint Nature Conservation Committee Report*, No. 230.
- Connor, D., & Hiscock, K. 1996. Data collection methods (and Appendices 5-10). In: Marine Nature Conservation Review: rationale and methods, ed. By K. Hiscock, 51-65, 126-158. Peterborough, *Joint Nature Conservation Committee*. (Coasts and seas of the United Kingdom. MNCR series.)
- Department of the Environment. 1994. *Planning Policy Guidance No. 9: Nature Conservation*. London, HMSO.

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<sup>6</sup> The survey by Bunker 2000 was carried out on the south western coast of the Isle of Wight cSAC (i.e. west of St Catherine's Point).

- 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*. DETR, London.
- Davison, D. and Hughes, D. 1998. *Zostera Biotopes* (volume I) An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association of Marine Science (UK Marine SACs Project).
- English Nature, Site Objective Statements and citation sheets for SSSIs, Isle of Wight: English Nature, unpublished.
- English Nature. 1994. *Marine Annex Types - further information*. Peterborough: English Nature.
- English Nature. 1994. *Important areas for marine wildlife around England*. Peterborough. English Nature.
- EN, SNH, EHS(DOE(NI)), CCW, JNCC & SAMS. 1998. *Natura 2000: European marine sites: Guidance relating to statutory conservation objectives and operations which may cause deterioration or disturbance*. Peterborough.
- Fowler, S.L. 1999. *Guidelines for managing the collection of bait and other shoreline animals within UK marine Special Areas of Conservation*. The Nature Conservation Bureau Ltd., Newbury. (UK Marine SACs Project).
- Fowler, S.L. 1995. *Review of nature conservation features and information within the Solent and Isle of Wight Sensitive Marine Area*. Report to English Nature by the Nature Conservation Bureau Ltd., Berkshire, UK.
- GeoData Institute, 1999. *Solent and South Wight Mapping of Intertidal and Subtidal Marine cSACs*. Report to English Nature. Report No UC382, English Nature, Lyndhurst.
- George, J.D., Titley, I. and Wood, E. 1995. *Marine Conservation Review : The chalk coasts of Great Britain - biotopes and conservation assessment*. JNCC Report.
- Gubbay, S. & Knapman, P.A. 1999. *A review of the effects of fishing within UK European marine sites*. English Nature (UK Marine SACs Project).
- Hartnoll, R.G., 1998. *Circalittoral faunal turf biotopes* (volume VIII). An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association of Marine Science (UK Marine SACs Project).
- Hill, S., Burrows, M.T., & Hawkins, S.J. 1998. *Intertidal reef biotopes* (Volume VI). An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. Scottish Association of Marine Science (UK Marine SACs Project).
- Hiscock, K. (Ed.). 1996. *Marine Nature Conservation Review: rationale and methods*. Peterborough, Joint Nature Conservation Committee, (Coasts and Seas of the United Kingdom, MNCR series).



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Insole, A.M. & Greensmith, J.T. (1998). *Geologists' Association Guides: The Isle of Wight*. Geologists'

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Association.

Jones, L.A. 1999. Studies on littoral algae of the Isle of Wight and Solent Region. PhD Thesis.

Jones, L.A. 2000. The history of phycology on the Isle of Wight. *Proc. Isle of Wight Nat. Hist. Archaeol. Soc.* **16**.

Jones, L.A., Hiscock, K., Connor, D.W. 2000. *Marine Habitat Reviews. A summary of ecological requirements and sensitivity characteristics for the conservation and management of marine SACs* Peterborough , Joint Nature Conservation Committee.

Ministry of Defence Hydrographic Office (1991). Hydrographic Office Tidal Prediction System, Tidecalc. Version 1.00. A Ministry of Defence Hydrographic Office Production.

Parr, W., & Wheeler, M.A. 1996. *Trends in nutrient enrichment of Sensitive Marine Areas in England*, Report to English Nature from Water Resources Council (WRc Report No. CO 4055/1).

Sotheran, I. & Foster-Smith, R. 1995. Mapping the distribution of benthic biotopes around the Isle of Wight. English Nature Research Report, No. 120.

Southern Water, 1999. Appropriate assessment of the effects on European marine sites - Seaclean Wight: Sandown Long Sea Outfall.

Southern Water Services, 1998. Ecological assessment of marine sites of European importance in the Solent. Report by EMU Environmental Ltd.

Titley, I. 1988. *Chalk cliff algal communities: 2. outside southeastern England*. Report for NCC.

Trueman, A.E. 1961. Geology and Scenery in England and Wales. Penguin Books Ltd. Harmondsworth Middlesex.

Wood, C. 1992. Sublittoral chalk habitats in southern England. Report to the Marine Conservation Society, South East Group, Chalk Cliffs Project 1985-1991. Unpublished, Marine Conservation Society.
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8. Glossary
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<b>Abrasion</b>	The process of scraping or wearing down by friction
<b>Advisory group</b>	The body of representatives from local interests, user groups and conservation groups, formed to advise the management group
<b>Annex I habitat type(s)</b>	A natural habitat(s) listed in Annex I of the Habitats Directive for which Special Areas of Conservation can be selected.
<b>Annex II species</b>	A species listed in Annex II of the Habitats Directive for which Special Areas of Conservation can be selected.
<b>Annex V</b>	The listing, in the Habitats Directive, of the animal and plant species whose taking in the wild and exploitation may be subject to management measures.
<b>Assemblage</b>	A collection of plants and/or animals characteristically associated with a particular environment.
<b>Attribute</b>	Characteristic of an interest feature/sub-feature which provides an indication of the condition of the feature or sub-feature to which it applies.
<b>BAP</b>	Biodiversity Action Plan.
<b>Baseline</b>	A standard or value from which it is possible to determine any deviation in the integrity of the interest features for which the site has been designated.
<b>Benthos</b>	Those organisms attached to, or living on, in or near, the seabed, including that part which is exposed by tides.
<b>Bioaccumulation</b>	The ability of organisms to retain and concentrate substances from their environment. The gradual build-up of substances in living tissue, usually used in referring to toxic substances, may result from direct absorption from the environment or through the food chain.
<b>Biomagnification</b>	Increasing concentration of a substance in successive trophic levels of a food chain.
<b>Biotope</b>	The physical habitat with its biological community; a term which refers to the combination of physical environment and its distinctive assemblage of conspicuous species.
<b>Biodiversity</b>	The total variety of life on earth. This includes diversity within species, between species and of ecosystems.
<b>Characteristic</b>	Special to or especially abundant in, a particular situation or biotope. Characteristic species should be immediately conspicuous and easily identified.

<b>Circalittoral</b>	The rocky subtidal zone below that which is dominated by algae (Animal dominated subtidal zone)
<b>Community</b>	A group of organisms occurring in a particular environment, presumably interacting with each other and with the environment, and identifiable by means of ecological survey from other groups.
<b>Competent authority</b>	Any Minister, government department, public or statutory undertaker, public body or person holding a public office that exercises legislative powers.
<b>Conservation objective</b>	A statement of the nature conservation aspirations for a site, expressed in terms of the favourable condition that we wish to see the species and/or habitats for which the site has been selected to attain. Conservation objectives for European marine sites relate to the aims of the Habitats Directive.
<b>Eulittoral</b>	The main part of the intertidal zone characterised by limpets, barnacles, mussels, fucoid algae and with red algae often abundant on the lower part.
<b>European marine site</b>	A European site (SAC or SPA) which consists of, or in so far as it consists of, marine areas.
<b>Exposure (to operations)</b>	The relative extent and intensity of the effects of broad categories of human activities currently occurring on the site to which the interest features or their component sub-features on the site are subject.
<b>Favourable conservation status</b>	A range of conditions for a natural habitat or species at which the sum of the influences acting upon that habitat or species are not adversely affecting its distribution, abundance, structure or function throughout the EC in the long term. The condition in which the habitat or species is capable of sustaining itself on a long-term basis.
<b>Favourable condition</b>	A range of conditions for a natural habitat or species at which the sum of the influences acting upon that habitat or species are not adversely affecting its distribution, abundance, structure or function within an individual Natura 2000 site in the long term. The condition in which the habitat or species is capable of sustaining itself on a long-term basis.
<b>Habitat</b>	The place in which a plant or animal lives.
<b>Habitats Directive</b>	The abbreviated term for <i>Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora</i> . It is the aim of this Directive to promote the conservation of certain habitats and species within the European Union.
<b>Infauna</b>	Benthic animals which live within the seabed.

<b>Infralittoral</b>	The subtidal zone in which upward facing rocks are dominated by erect algae, typically kelps.
<b>Interest feature</b>	A natural or semi-natural feature for which a European site has been selected. This includes any Habitats Directive Annex I habitat, or any Annex II species and any population of a bird species for which an SPA has been designated under the Birds Directive.
<b>Maintain</b>	The action required for an interest feature when it is considered to be in favourable condition.
<b>Management group</b>	The body of relevant authorities formed to manage the European marine site
<b>Management scheme</b>	The framework established by the relevant authorities at a European marine site under which their functions are exercised to secure, in relation to that site, compliance with the requirements of the Habitats Directive.
<b>Nationally scarce/rare</b>	For marine purposes, these are regarded as species of limited national occurrence
<b>Natura 2000</b>	The European network of protected sites established under the Birds Directive and the Habitats Directive
<b>Notable species</b>	A species that is considered to be notable due to its importance as an indicator, and may also be of nature conservation importance, and which is unlikely to be a 'characteristic species'
<b>Operations which may cause deterioration or disturbance</b>	Any activity or operation taking place within, adjacent to, or remote from a European marine site that has the potential to cause deterioration to the natural habitats for which the site was designated or disturbance to the species and its habitats for which the site was designated
<b>Plan or project</b>	Any proposed development that is within a relevant authority's function to control, or over which a competent authority has a statutory function to decide on applications for consents, authorisations, licences or permissions.
<b>Relevant authority</b>	The specific competent authority which has powers or functions which have, or could have, an impact on the marine environment, or adjacent to, a European marine site.
<b>Restore</b>	The action required for an interest feature when it is not considered to be in a favourable condition.
<b>Sensitivity</b>	The intolerance of a habitat, community or individual species to damage from an external force.
<b>Sub-feature</b>	An ecologically important sub-division of an interest feature.
<b>Vulnerability</b>	The exposure of a habitat, community or individual of a species to an external factor to which it is sensitive.

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**WeBs**

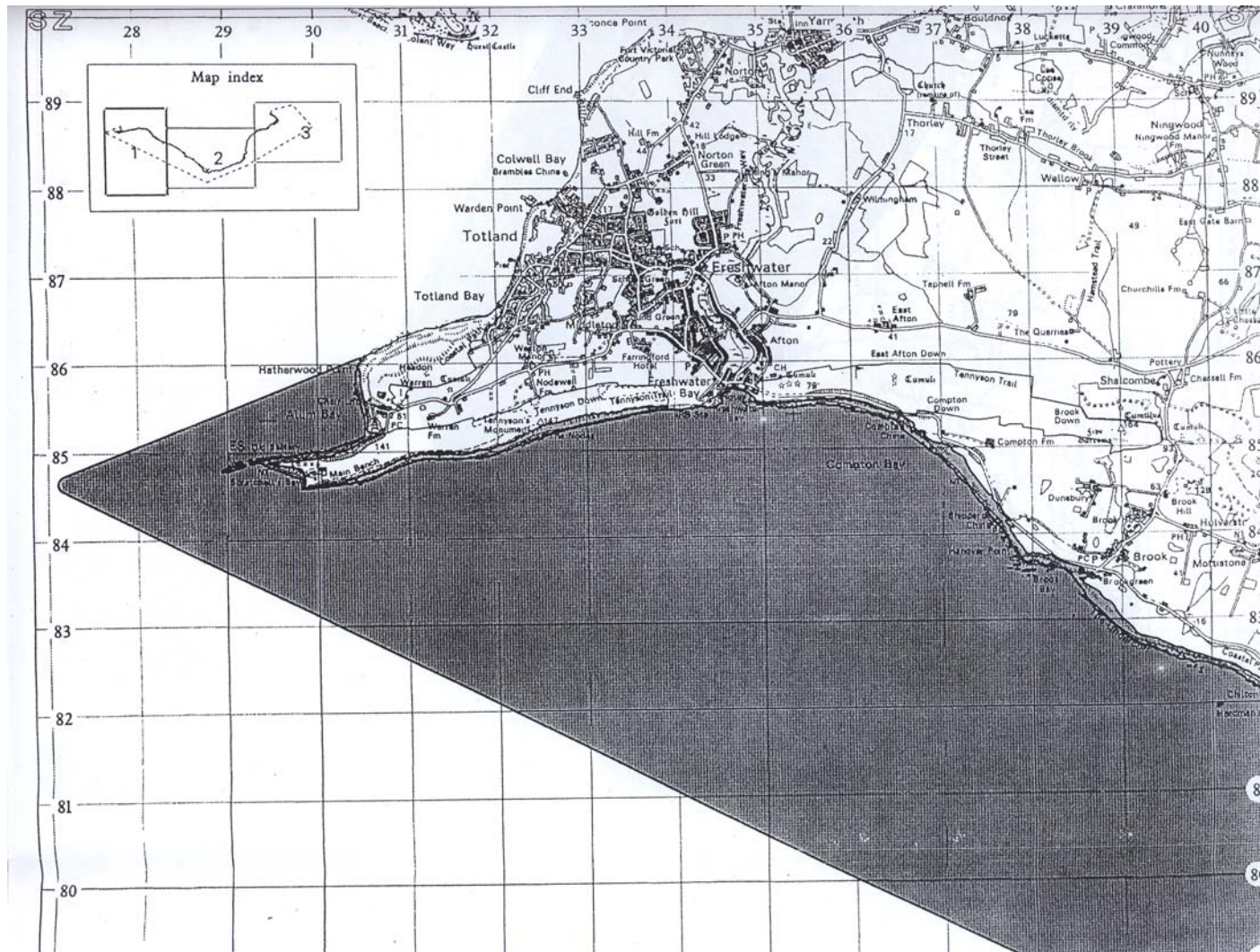
Wetland Bird Survey: a collaborative national surveillance scheme of the UK's waterfowl based on counts undertaken once per month outside of the breeding season

**Appendix I    Map showing the location of the South Wight Maritime marine habitats**

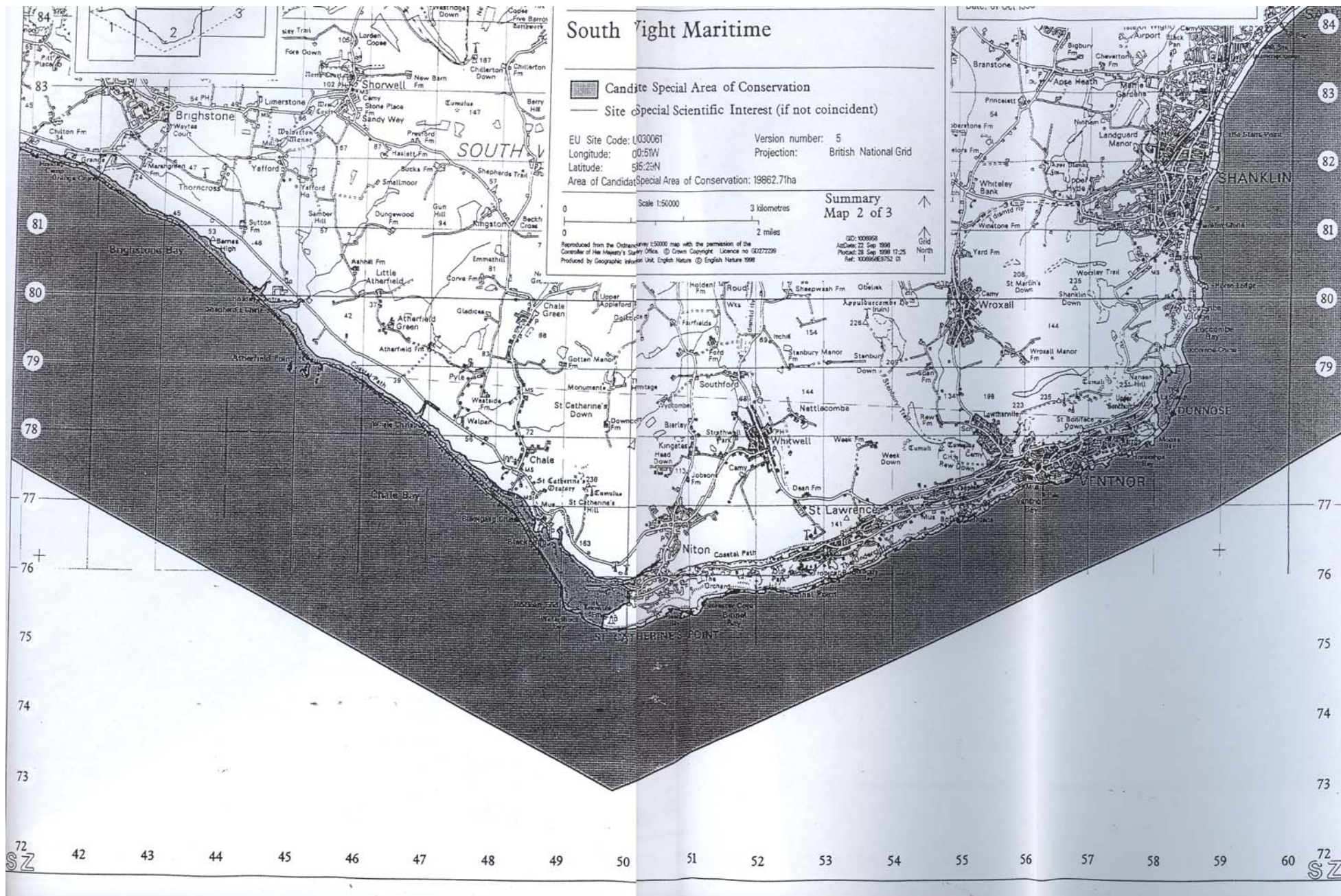




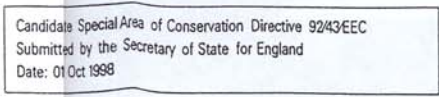
## Appendix II Maps showing the boundary of the South Wight Maritime candidate Special Area of Conservation











### Appendix III Matrix of relative vulnerability

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.

### Relative sensitivity of the interest feature

[illegible]

Appendix IV Summary of key biotopes for the reef interest feature

From sites surveyed during Bunker (2000).

Reef Type	MNCR Biotope (97.06 nearest match)	Biotope Name
Chalk	MIR.KR.L.dig.Pid	Sublittoral fringe rock with kelp and Corallinaceae indet. (crusts).
Chalk	EIR.KFaR.FoR	Upper infralittoral bedrock and boulders dominated by <i>Halopithys incurvus</i> and <i>Gelidium latifolium</i> .
Chalk	EIR.KFaR.FoR	Silted small boulders and cobbles on fine silty sand with <i>Calliblepharis ciliata</i> and <i>Ostrea edulis</i>
Chalk	EIR.KFaR.FoR	Silted chalk boulders on pebbles and fine silt with <i>Halopithys incurvus</i> , other foliose algae and encrusting sponges
Chalk	CR.Cv	Chalk cave with sabellid worms, encrusting sponges and <i>Chartella papyracea</i>
Chalk	EIR.KFaR.FoR	Chalk boulders on bedrock riddled by piddocks and covered in red algae, especially <i>Halopithys incurvus</i> and <i>Heterosiphonia plumosa</i> and Ectocarpaceae indet.
Chalk	IMX.CreAph	Mixed substrata with <i>Calliblepharis ciliata</i> , <i>Gracilaria verrucosa</i> , <i>Dictyota dichotoma</i> and <i>Crepidula fornicata</i> .
Chalk	MCR.ByH.Flu.HByS	Upper circalittoral current-swept mixed sediment with bed of the tube forming amphipod <i>Ampelisca diadema</i> with crepidula and occasional <i>Flustra</i> dominated boulders.
Chalk	MCR.CSab.Sspi	Boulders in the upper circalittoral with <i>Sabellaria spinulosa</i> , bryozoans and sponges
Chalk	MCR.Sfr.Pid	Sand inundated flat chalk with live piddocks.
Chalk	MCR.ByH.Flu.HByS	Steep upper circalittoral bedrock burrowed by piddocks with <i>Flustra</i> , <i>Chartella</i> , encrusting sponges and hydroids.
Chalk	MCR.ByH.Flu.HByS	Tide swept circalittoral boulders and cobbles with <i>Flustra foliacea</i> , sponges and anthozoans.
Wealden	MCR.Sfr.Pid	Low lying soft sandstone in the circalittoral, burrowed by piddocks and with <i>Flustra</i> .
Wealden	MCR.Sfr.Pid	Soft sandstone rock heavily pitted with piddock burrows with encrusting sponges and bryozoans
Wealden	MCR.ByH.Flu.HByS	Upper circalittoral bedrock with gulleys covered with piddocks, sponges, bryozoans and hydroids
Wealden	MCR.Sfr.Pid	Soft friable circalittoral boulders with piddocks, encrusting fauna and dense tubes of the amphipod <i>Ampelisca diadema</i>
Wealden	MCR.Sfr.Pid	Low lying stepped plateau of sandstone burrowed by piddocks with dense <i>Ampelisca diadema</i> tubes, <i>Flustra</i> and encrusting sponges
Upper & Lower Greensand plus Gault & Atherfield Clay	MIR.KR.Lhyp.Loeh	Large boulders with Laminaria sp(p), Halidrys siliquosa., dense crustose corallines and foliose algae
Upper & Lower Greensand & Gault Clay	EIR.KFaR.FoR	Lower infralittoral scoured soft rock with foliose red algae and piddocks
Upper & Lower Greensand plus Gault & Atherfield Clay	EIR.KFaR.FoR	Upper circalittoral boulder with bryozoan and hydroid turf and sponges
Upper & Lower Greensand plus Gault & Atherfield Clay	EIR.KFaR.FoR	Large boulders in the lower infralittoral dominated by foliose red algae
Upper & Lower Greensand plus Gault & Atherfield Clay	EIR.KFaR.FoR	Lower infralittoral scoured rock with dense foliose algae.
Upper & Lower Greensand plus Gault & Atherfield Clay	MCR.ByH.Flu.HByS	Upper circalittoral sandstone boulders with bryozoan / hydroid turf and sponges
Upper & Lower Greensand plus Gault & Atherfield Clay	EIR.KFaR.FoR	Level silted and piddock burrowed very soft rock / clay with <i>Calliblepharis ciliata</i> turf and encrusting sponges
Upper & Lower Greensand plus Gault & Atherfield Clay	EIR.KFaR.FoR	Sand scoured bedrock and boulders with foliose and filamentous red sea weeds
Upper &	MCR.Sfr.Pid	Circalittoral soft rock with piddocks, sponges, bryozoans and hydroid turf

Lower Greensand & Gault Clay		
Upper & Lower Greensand plus Gault & Atherfield Clay	MCR.Sfr.Pid	Boulders in the circalittoral riddled with piddock burrows with encrusting sponges and hydroids
Upper & Lower Greensand plus Gault & Atherfield Clay	CGS	Upper layer of clean sand with layer of clay 3cm below
	MIR.SabKR	<i>Sabillera spinulosa</i> with kelp and red seaweeds on sand influenced infralittoral rock
	MCR.Flu.HByS	<i>Flustra folicea</i> with hydroids, bryozoans and sponges on slightly tide swept circalittoral mixed substrata
	CMX.SspiMx	<i>Sabillera spinulosa</i> and <i>Polydora</i> spp, on stable circalittoral sediment
	MCR.Flu.Flu	<i>Flustra folicea</i> on slightly scoured silty circalittoral rock or mixed substrata.
	MCR.Flu.HOCH	<i>Haliclona oculata</i> and <i>Flustra foliacea</i> with a rich faunal turf on tide swept circalittoral boulders or cobbles
	IMU.TubeAP	Semi permanent tube building amphipods and polychaetes in sublittoral mud or muddy sand
	MIR.PolAhn	<i>Polyides rotundus</i> , <i>Ahnfelita plicata</i> and <i>Chondrus crispus</i> on sand-covered infrealittoral rock.
	IGS.Lcon/MIR.XkScrR	Dense <i>Lanice conchilega</i> and other polychaetes in tide swept infaunal sand/
	IGS.Lcon/MCR.Flu.Ser.Hyd/	Dense <i>Lanice conchilega</i> and other polychaetes in tide swept infaunal sand/ <i>Sertularia argentea</i> , <i>S. cupressina</i> and <i>Hhydrallmania falcata</i> on tide swept circalittoral rock/
	IMU.NhomTub.AphTub	<i>Nephtys hombergii</i> and <i>Tubificoides</i> spp in variable salinity infralittoral soft mud
	MCR.Pid	Piddocks with sparse associated fauna in upward facing circalittoral very soft chalk or clay

**Appendix V List of relevant authorities on the South Wight Maritime European marine site management group**

English Nature 1 Southampton Road LYNDHURST SO43 7BU	Queen's Harbour Master Semaphore Tower HM Naval Base PORTSMOUTH PO1 3LT	Southern Water Services Ltd Southern House, Yeoman Road WORTHING BN13 3NX
The Environment Agency Colvedene Court, Wessex Way Colden Common WINCHESTER SO21 1WP	Southern Sea Fisheries Committee 64 Ashley Road POOLE BH14 9BN	Trinity House Legal Officer Trinity House Lighthouse Service Trinity House Tower Hill LONDON EC3N 4CH
Isle of Wight Council Seaclose, Fairlee Road NEWPORT Isle of Wight PO30 2QW		

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**Appendix VI English Nature's Habitats Regulations Guidance Note HRGN1 on "The Appropriate Assessment (Regulation 48)"**