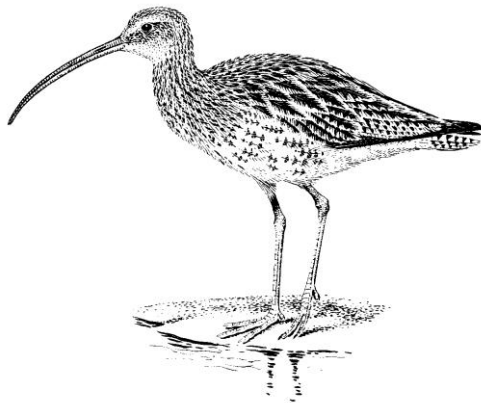




EXE ESTUARY

European marine site

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



Issued 23 January 2001

English Nature's advice for the Exe Estuary European marine site given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994

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 Exe Estuary European marine site. This advice is being prepared to fulfil our obligations under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994.

The Exe Estuary Special Protection Area is a European marine site. 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 these designations may coincide and our advice is being prepared to cover both the SAC and SPA interests where this occurs.

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 or 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.
- develop if deemed necessary a management scheme to ensure that the features of the site are maintained.

In addition, the Regulation 33 package will provide a basis to inform 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 UK SPA Network Review (led by JNCC) interest features are added to this European marine site or the site boundaries change, English Nature will amend this advice, as appropriate.

Tim Bines
General Manager
English Nature
23 January 2001

English Nature's advice for the Exe Estuary European marine site given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994

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English Nature's advice for the Exe Estuary 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 Habitats¹ and Birds² Directives are international obligations 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 status³. 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 of European importance, and 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.

This document is English Nature's advice for the Exe Estuary European marine site which will be issued in fulfilment of Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994 (the 'Regulation 33 package'). Copies of key references quoted in this document are held at the English Nature Devon Office, Level 2, Renslade House, Bonhay Road, Exeter, EX4 3AW.

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.

In addition to providing such advice, the Regulation 33 package informs on 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 competent authorities to exercise their functions so as to secure compliance with the Habitats Directive. This European marine site is managed through existing SSSI mechanisms under the Wildlife and Countryside Act 1981, as amended 1985. Relevant authorities may, if deemed necessary, draw up a management scheme under Regulation 34 for the European marine site component of the Exe Estuary SPA. If such a management scheme is developed, it will provide the framework through which relevant authorities exercise their functions so as to secure compliance with the Habitats Directive and must be based on the advice in this package. Irrespective of this decision, relevant authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on an interest feature of the site as well as cumulative effects. This may include consideration of features and issues outside the boundary of the European marine site and above the highest astronomical tide.

Relevant authorities should ensure that all plans for the area integrate with the management scheme for the European marine site. Such plans may include shoreline management plans, CHaMP’s (Coastal Habitat Management Plans) local Environment Agency plans, SSSI management plans, local BAP plans and sustainable development strategies for estuaries. 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 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 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 causes⁴. 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.

The Exe Estuary has an established Management Partnership which will be used to deliver the aims of the Habitats Directive and to meet the requirements for a single scheme of management. This management is centred upon a Joint Advisory Committee (JAC) made up of members from the partnership parent bodies of local authorities and other statutory and non-governmental organisations, with advice from local community representatives and meetings of the wider Exe Estuary Forum.

⁴ Determination of what constitutes natural change will be based on the best available information and scientific opinion at the time.

The aims of the Joint Advisory Committee are to fulfill the following objectives:-

- to promote the sustainable use of the Exe Estuary, balancing the demands made on its natural resources and resolving conflicts of interest where they arise, and;
- to provide a framework for the co-ordinated management of the Estuary and to improve communications between users and organisations with authority over the Exe

This committee is therefore ideally placed to alert all relevant and competent authorities as to any issues or concerns and uses of the Estuary so that they may be assessed and any appropriate measures taken within the management scheme.

The JAC does not replace the relevant and competent authorities.

1.5 Responsibilities under other conservation designations

In addition to its SPA status, parts of the Exe Estuary are also designated and subject to agreements under other conservation legislation and agreements (eg. SSSIs notified under the Wildlife and Countryside Act 1981 as amended 1985, and as a Ramsar Site under the Ramsar convention on Wetlands of International Importance). 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 Exe Estuary European marine site. They are the starting point from which management schemes and monitoring programmes are may be developed as they provide the basis for determining what is currently 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

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.

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

2. Qualifying species within the SPA under the EU Birds Directive

The boundary of the Exe Estuary Special Protection Area (SPA) is shown in Figure 1.

The Exe Estuary SPA qualifies under Article 4.1 of the EU Birds Directive by supporting:

- Internationally important populations of regularly occurring Annex 1 species.

It also qualifies under Article 4.2 of the EU Birds Directive in that it supports:

- Internationally important populations of regularly occurring migratory species; and
- An internationally important assemblage of waterfowl.

Exe Estuary SPA citation was written on September 1991 and classified on March 1992 and it is that citation on which this advice is based. Exe Estuary was also listed on March 1992 as a Ramsar site under the Ramsar convention for its internationally important wetland status.

3. Interest features of the European marine site

The Exe Estuary SPA includes both marine areas (ie. land covered continuously or intermittently by tidal waters) and land which is not subject to tidal influence. The marine part of the SPA is termed a European marine site. The extent of the Exe Estuary European marine site is illustrated in Figure 2. The seaward boundary of the European marine site is concurrent with that of the SPA. The landward boundary of the European marine site is the upper boundary of the SPA, or where that extends above land covered continuously or intermittently by tidal waters it is at the limit of the marine habitats.

Where SPA qualifying species occur within the European marine site they are referred to as interest features. Sub-features (habitats) have also been identified to highlight the ecologically important components of the European marine site for each interest feature. The interest features and sub-features for the Exe Estuary European marine site are described below and the sub-features are mapped at Figure 2 to show their distribution and extent.

3.1 Background and context

A major aim of the Birds Directive is to take special measures to conserve the habitats of qualifying birds in order to ensure their survival and reproduction within the European Union. A key mechanism in achieving this is the classification by Member States of the most suitable sites as SPAs.

English Nature's conservation objectives at a site level focus on maintaining the condition of the habitats used by the qualifying species. Habitat condition will be delivered through appropriate site management including the avoidance of damaging disturbance. In reporting on Favourable Conservation Status, account will need to be taken both of habitat condition and the status of the birds on the SPA.

Accordingly, English Nature will use annual counts, in the context of five year peak means for qualifying species, together with available information on population and distribution trends, to assess whether an SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species. Count information will be assessed in combination with information on habitat condition, at the appropriate time within the reporting cycle, in order to report to the European Commission.

English Nature's advice focuses on the qualifying species for which the SPA was originally classified despite the fact that numbers and species composition may have changed on this site since that time. Such population and species composition changes are being documented through the UK SPA Network Review, led by JNCC, which will provide advice to Ministers on any changes required in SPA citations. Depending on the review and decisions from DETR, English Nature may reissue this advice.

In addition to focusing on avoiding deterioration to the habitats of the qualifying species, the Habitats Directive also requires that actions are taken to avoid significant disturbance to the species for which the site was designated. Such disturbance may include alterations in population trends and/or distribution patterns. Avoiding disturbance to species requirements is mentioned in the favourable condition table underpinning the conservation objectives for the SPA. In this context, five year peak mean information on populations will be used as the basis for assessing whether disturbance is damaging.

Attention is, however, also directed to the inclusion of disturbance in the advice on operations provided in section 6. Where disturbance is highlighted in such advice, relevant authorities need to avoid damaging disturbance to qualifying species when exercising their functions under the Directive.

3.2 Reductions in organic inputs

Under the Urban Waste Water Treatment (UWWT) Directive all coastal discharges above a certain volume must have secondary treatment installed by the end of 2000. Secondary treatment of sewage will significantly reduce organic loading and to a lesser extent reduce concentrations of dissolved nutrients. The effects of these reductions on coastal features and the birds they support are difficult to predict. On the one hand, it might be expected that there would be a redistribution of feeding birds or a reduction in the overall capacity of a coastal area to support bird populations. On the other hand, where bird populations are currently adversely affected by eutrophication, cleaner discharges may contribute to improving site condition.

English Nature supports the cleaning up of coastal discharges. On balance, the overall ecological benefits of cleaner discharges are likely, in general, to outweigh any subsequent local decline in bird numbers, although there is presently insufficient knowledge to accurately predict the effects in general or for individual SPA sites. Consequently, English Nature, with input from the Countryside Council for Wales and the Environment Agency, is commissioning a related research project to study the relationship between birds and organic nutrient levels, the overall effects on the ecosystem and thereby the effects of the clean-up programme under the UWWT and Bathing Water Directives.

Under the Habitats Regulations, if significant effects are likely from such activities, the competent authority (in this case the Environment Agency) will be required to undertake an appropriate assessment to determine whether there is an adverse effect on site integrity.

3.3 General description

In recognition that bird populations may change as a reflection of national or international trends or events, this advice on the bird interests of the European marine site focuses on the condition of the habitats necessary to support the bird populations. Sub-features are identified which describe the key habitats within the European marine site necessary to support the birds that qualify within the SPA. Detailed information and targets for habitat condition are listed in the favourable condition table in Section 5. Bird usage of the site varies seasonally, with different areas being favoured over others at certain times of the year. However, annual counts for qualifying species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether this SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

Bird communities are highly mobile and exhibit patterns of activity related to tidal water movements and many other factors. Different bird species exploit different parts of a marine area and different prey species. Changes in the habitat may therefore affect them differently. The important bird populations at this site require a functional estuary which is capable of supporting intertidal habitat for feeding and roosting. The most important factors related to this are:

- current extent and distribution of suitable feeding and roosting habitat (e.g. saltmarsh, mudflats);
- sufficient prey availability (e.g. small fish, crustaceans and worms);
- minimal levels of disturbance;
- water quality necessary to maintain intertidal plant and animal communities and minimise the risk of secondary contamination of birds through contaminated prey items; and
- water quantity and salinity gradients necessary to maintain saltmarsh conditions suitable for bird feeding and roosting.

3.4 Internationally important populations of the regularly occurring Annex 1 species

The species listed in Annex 1 of the Birds Directive are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Species listed on Annex 1 are in danger of extinction, rare or vulnerable. The Exe Estuary European marine site is of importance for supporting two internationally important populations of Annex 1 listed species, wintering avocets *Recurvirostra avosetta*, and Slavonian grebe *Podiceps auritus*.

3.4.1 Key sub-features

Mudflat and sandflat communities (excluding seagrass bed communities) - These provide important feeding areas for the avocet which are found predominantly at the northern end of the estuary on the muddy substrates. They feed communally in the shallow waters here on a range of organisms but primarily on the ragworm *Nereis diversicolor* (Hughes 1992).

Saltmarsh communities - Saltmarsh on the site provides an important roosting area for the avocet. The variety of saltmarsh communities range from strandline areas of *Suaeda maritima* and *Glaux maritima*, through to lower mid marsh areas of common saltmarsh grass *Puccinellia maritima*. *Elymus pycnanthus* can also be found in many places at the boundary of saltmarsh and seawall or other river backing.

Shallow coastal waters - Towards the lower part and around the mouth of the estuary the shallow coastal waters provide an important feeding area for the Slavonian grebe, which feeds primarily on small fish and crustaceans such as the swimming crab *Liocarcinus* sp, and prawn *Crangon crangon*. The seagrass beds within this area provide an important nursery for these prey species.

3.5 Internationally important populations of regularly occurring migratory bird species

Britain's wildfowl belong to the north-west European population and the waders to the East Atlantic flyway population. Migratory species of these biogeographic populations that regularly occur at levels of 1% or more of the total biogeographical population meet the SPA criteria and qualify in their own right. The Exe Estuary supports a population of dark-bellied brent goose *Branta bernicula bernicula* which occurs in internationally important numbers, and thus qualifies for SPA status. The dark-bellied brent goose is a component species of the internationally important assemblage and contributes to the total qualifying number (i.e. >20,000) of wintering waterfowl. The assemblage includes the same individual birds that form this internationally important population of dark-bellied brent goose and therefore the assemblage will in part be dependent on the same sub-features. For clarity, the sub-features for the internationally important population of dark-bellied brent goose are given in section 3.5.1 and the sub-features for the nationally important species that comprise the remainder of the assemblage are given in section 3.6.

Dark-bellied brent geese feed in large flocks on the saltmarsh communities, mudflats and seagrass beds, sub-features which occur within the Exe Estuary European marine site. However, when this food resource becomes low and at times of high tide, the birds disperse to the surrounding grazing marshes. These marshes are not within the European marine site as they occur above the point of Highest Astronomical Tide. Important feeding and roosting sites for the regularly occurring migratory birds also lie outside the SPA boundary. Objectives to maintain these areas of bird interest in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SPA boundary and will be dealt with through procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

3.5.1 Key sub-features

Mudflat and sandflat communities (excluding seagrass bed communities) - When the seagrass beds become eaten out in December the brent geese may move upstream to feed on less concentrated food supplies of various green algae particularly *Enteromorpha* and *Ulva* species, found within the mudflat and sandflat communities (Hughes 1992).

Saltmarsh communities - Saltmarsh on the site provides an important feeding and roosting area for the dark - bellied brent goose which disperse on to the saltmarsh to graze during the second half of the winter.

Seagrass bed communities - Beds of both *Zostera noltii* and *Z. angustifolia* extend intertidally from Warren Point across the outer section of the Bight to Cockwood Corner and as far north as Cockwood on the west shore, and from Exmouth to Lympstone on the east shore. This is an important food resource for species such as the dark - bellied brent goose which graze on the seagrass beds during the first half of the winter period. As well as being an important food resource for birds, seagrass beds are an important habitat in their own right, and have shown substantial declines throughout the UK since the 1930's.

3.6 An internationally important assemblage of waterfowl

The Exe Estuary European marine site is of international importance, regularly supporting an excess of 20,000 wintering waterfowl and seabirds. The importance of the estuary is primarily as a wintering site for waterfowl and in addition to internationally important population of dark-bellied brent goose, the site also supports nationally important populations of waterfowl. The sub-features for the internationally important population of dark-bellied brent-geese have been detailed in the previous section. The following sub-features are the habitats that are required to maintain the additional nationally important populations that also contribute to the internationally important waterfowl assemblage.

During severe winter weather the Exe Estuary marine site assumes even greater international importance acting as a cold weather refuge as waterfowl from other areas concentrate here, attracted by the relatively mild climate and abundant food resources available.

Important feeding and roosting sites for the internationally important assemblage lie outside the SPA boundary. Objectives to maintain these areas of bird interest in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SPA boundary and will be dealt with through procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

3.6.1 Key sub-features

Mudflat and sandflat communities (excluding seagrass bed communities) - Intertidal mudflats on the site support high densities of invertebrates which are important as food for waterfowl. The distributions of the sediment fauna within this sub-feature are related predominantly to the environmental factors of sediment type and salinity. The invertebrates of the low-lying tide swept sands found in the outer estuary consist mainly of the sand hopper *Bathyporeia sarsi* the polychaete worm *Nephtys cirrosa* and the tellin *Angulus tenuis*. The rare polychaete *Ophelia bicornis* can be found in the mobile, well drained sand on Shaggles Bank, along the northern edge of Pole Sand, the south western area of Cockle sand and on Bull Hill. Birds found in this area include wader species like the dunlin and grey plover which feed on a range of invertebrates, particularly the polychaete worms.

The mid estuary sediments composed predominantly of mud and sand contain areas supporting large populations of polychaete worms: *Scolopus armiger*, *Hediste diversicolor* and *Pygospio elegans* and the more obvious fauna of lugworms *Arenicola marina* and the cockle *Cerastoderma edule*. Birds found

feeding in this area include wader species like dunlin and grey plover which feed on a range of invertebrates, particularly the polychaete worms.

Within the intertidal mudflat and sandflat communities found in the sheltered or upper part of the estuary the most extensive habitat is that composed predominantly of mud. This contains high numbers of ragworm, peppery furrow shell *Scrobicularia plana*, the spionid worm *Streblospio shrubsolii* and the isopod *Cyathura carinata*. Birds found feeding in this area include wader species like the black-tailed godwit which feed mainly on ragworm and lugworm species and dunlin which feed on a range of invertebrates.

Intertidal and subtidal boulder and cobble scar communities - Boulder and cobble scars found in the estuary provide a hard substrate for a different range species including dense beds of mussels *Mytilus edulis*, the edible winkle *Littorina littorea* and the barnacles *Semibalanus balanoides* and *Eliminus modestus*. These communities can be found on both sides of the estuary providing very important bird feeding habitats. Small mussels are eaten by species such as knot, dunlin and turnstone whilst larger mussel specimens are taken by oystercatchers. These boulder and cobble communities also provide an important habitat for other marine animal and plant species.

Saltmarsh communities - Saltmarsh on the site provides an important feeding and roosting area for species such as wigeon which disperse on to the saltmarsh to feed and roost, particularly in the second half of the winter period. The boundary between the saltmarsh and the sandflat and mudflat communities is convoluted, with muddy creeks penetrating into the saltmarsh itself. Directly either side of high tide, these are the only exposed areas of mud, as sandflat and mudflats in the lower reaches of the estuary are still covered by the tide and remain inaccessible. To a lesser extent, wading birds will also feed within these areas.

Seagrass bed communities - This is an important food resource for species such as wigeon which graze on the seagrass beds during the first half of the winter period.

4. Conservation objectives for SPA 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 Exe Estuary European marine site interest features are provided below and should be read in the context of other advice given in this package, particularly:

- the attached maps showing the extent of the sub-features;
- summary information on the interest of each of the features; and
- the favourable condition table, providing information on how to recognise favourable condition for each of the features, which will act as a basis from which the monitoring programme will be developed.

4.1 The conservation objective for the internationally important populations of the regularly occurring Annex 1 bird species

Subject to natural change, maintain in favourable condition⁵ the habitats for the **internationally important populations of the regularly occurring Annex 1 bird species**, under the Birds Directive, in particular:

- **Mudflat and sandflat communities (excluding seagrass bed communities).**
- **Saltmarsh communities.**
- **Shallow coastal waters.**
- **Seagrass bed communities**

Numbers of bird species using these habitats are given in Table 1

4.2 The conservation objective for the internationally important populations of regularly occurring migratory bird species

Subject to natural change, maintain in favourable condition⁵ the habitats for the **internationally important assemblage of waterfowl including the internationally important population of regularly occurring migratory bird species**, under the Birds Directive, in particular:

- **Intertidal mud and sandflat communities (excluding seagrass bed communities).**
- **Saltmarsh communities.**
- **Seagrass bed communities.**
- **Intertidal and subtidal boulder and cobble scar communities.**

Numbers of bird species using these habitats are given in Table 1

4.3 The conservation objective for the internationally important assemblage of waterfowl

Subject to natural change, maintain in favourable condition⁵ the habitats for the **internationally important assemblage of waterfowl**, under the Birds Directive, in particular:

- **Mudflat and sandflat communities (excluding seagrass bed communities).**
- **Saltmarsh communities.**
- **Seagrass bed communities.**
- **Intertidal and subtidal boulder and cobble scar communities.**

Numbers of bird species using these habitats are given in Table 1

Note: These SPA conservation objectives focus on habitat condition in recognition that bird populations may change as a reflection of national or international trends or events. Annual counts for qualifying species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether this SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

⁵ For a detailed definition of how to recognize favourable condition see attached table (Section 5, Table2)

Table 1 Information on populations of bird species qualifying under the Birds Directive using the Exe Estuary European marine site at the time the SPA was classified.

Internationally important populations of regularly occurring Annex 1 species.

Species	Population (5yr peak mean 1985/86 -1989/90)*	
Avocet (<i>Recurvirostra avosetta</i>)	200 birds	20% Great Britain
Slavonian Grebe (<i>Podiceps auritus</i>)	20 birds	5% Great Britain

Internationally important populations of regularly occurring migratory bird species.⁶

Species	Population (5yr peak mean 1985/86 -1989/90)*	
Dark - bellied Brent Goose (<i>Branta bernicula bernicula</i>)	2,650 birds	3% Great Britain

An internationally important assemblage of waterfowl and seabirds.

Importance	Population (5yr peak mean 1985/86 -1989/90)*
The Exe Estuary supports in excess of 20,000 wintering waterfowl.	23,922 birds

Nationally important bird populations within internationally important assemblages of waterfowl and seabirds.

Species	Population (5yr peak mean 1985/86 -1989/90)*	
Oystercatcher (<i>Haematopus ostralegus</i>)	3,980 birds	1% Great Britain
Grey plover (<i>Pluvialis squatarola</i>)	350 birds	2% Great Britain
Black tailed godwit (<i>Limosa limosa</i>)	580 birds	12% Great Britain
Dunlin (<i>Calidris alpina</i>)	5,300 birds	1% Great Britain

* SPA citation (March 1992) held on Register of European marine sites for Great Britain.

⁶ The Exe Estuary is regularly used by 1% or more of the biogeographical population of a regularly occurring species (other than those listed on annex 1) in any season (Cranswick *et al.*, 1995).

5. Favourable condition table

The favourable condition table is supplied as an integral 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 role in assessing condition. The monitoring programme 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.

Box 1	Glossary of terms used in the favourable condition table
Interest feature	The habitat or species for which the site has been selected.
Sub-feature	An ecologically important sub-division of the interest feature.
Attribute	Selected characteristic of an interest feature/sub-feature which provides an indication of the condition of the feature to which it applies.
Measure	What will be measured in terms of the units of measurement, arithmetic nature and frequency at which the measurement is taken. This measure will be attained using a range of methods from broad scale to more specific across the site.
Target	This defines the desired condition of an attribute, taking into account fluctuations due to natural change. Changes that are significantly different from the target will serve as a trigger mechanism through which some further investigation or remedial action is taken.
Comments	The rationale for selection of the attribute.

Table 2 Favourable Condition Table for the Exe Estuary European marine site

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.

FEATURE	SUB-FEATURE	ATTRIBUTE	MEASURE	TARGET	COMMENTS
Internationally important populations of regularly occurring Annex 1 species	All Sub-features (Mudflat and sandflat communities, seagrass bed communities, saltmarsh communities and shallow coastal waters)	Disturbance	Reduction in numbers or displacement of birds.	No significant reduction in numbers or displacement of birds from an established baseline, subject to natural change.	Avocets and Slavonian grebe require feeding and roosting areas free from significant disturbance. Data on numbers of birds using sub-optimal (marginal) feeding/roosting sites would aid interpretation.
		Extent and distribution of habitat	Area (ha). Measured once per reporting cycle.	No decrease in extent and distribution of all habitats from an established baseline, subject to natural change.	Avocets require a sufficiently large extent of mudflat and sandflat for feeding and saltmarsh for roosting. Slavonian grebe require a sufficiently large extent of shallow coastal water for feeding and roosting.
	Mudflat and sandflat communities (excluding seagrass bed communities)	Absence of obstructions to view lines	Sandflats and mudflats free of obstructions. Measured periodically (frequency to be determined).	No increase in obstructions to existing bird view lines, subject to natural change.	Avocets require views >200m to allow early detection of predators when feeding and roosting.
		Food availability	Abundance of prey species. Measured periodically (frequency to be determined).	Abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.	Intertidal wintering habitat. Avocets feed communally in shallow waters on a range of organisms such as the crustaceans <i>Gammarus</i> , and <i>Corophium</i> , the molluscs <i>Hydrobia</i> , and <i>Cerastoderma</i> and fish such as gobies. Predominantly avocets feed on the ragworm, <i>Nereis diversicolor</i> .

FEATURE	SUB-FEATURE	ATTRIBUTE	MEASURE	TARGET	COMMENTS
Internationally important populations of regularly occurring Annex 1 species	Saltmarsh communities	Absence of obstructions to view lines	Open areas free of obstructions. Measured periodically (frequency to be determined).	No increase in obstructions to existing bird view lines, subject to natural change.	Avocets require views >200m to allow early detection of predators when roosting.
	Shallow coastal waters	Food availability	Abundance of prey species. Measured periodically (frequency to be determined).	Abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.	Slavonian grebe require an abundance of marine or freshwater fish e.g gobies, stickleback, scupins and aquatic invertebrates e.g. molluscs, crustaceans, insects.
Internationally important assemblage of waterfowl including the internationally important populations of regularly occurring migratory species	All sub-features (Mudflat and sandflat communities, seagrass bed communities and intertidal and sub-tidal boulder and cobble scar communities.)	Disturbance	Reduction in numbers or displacement of birds.	No significant reduction in numbers or displacement of birds from an established baseline, subject to natural change.	All qualifying species require areas free from significant disturbance for feeding/roosting. Data on numbers of birds using sub-optimal (marginal) feeding/roosting sites would aid interpretation.
		Extent and distribution of habitat	Area (ha). Measured once per reporting cycle.	No decrease in extent and distribution of all habitats from an established baseline, subject to natural change.	All qualifying species require a sufficiently large extent of mudflats/sandflats for feeding and/or roosting. Dark - bellied brent goose and wigeon require a sufficiently large extent of saltmarsh and seagrass for feeding and roosting. Oystercatcher, knot, and dunlin require a sufficiently large extent of intertidal and subtidal boulder and cobble scar for feeding and/or roosting.

FEATURE	SUB-FEATURE	ATTRIBUTE	MEASURE	TARGET	COMMENTS
Internationally important assemblage of waterfowl including the internationally important populations of regularly occurring migratory species	Mudflat and sandflat communities (excluding seagrass bed communities)	Food availability	Abundance of surface and sub-surface invertebrates. Measured periodically (frequency to be determined).	Abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.	Wader species e.g. black-tailed godwit, grey plover, dunlin and oystercatcher feed on a range of organisms including the crustaceans <i>Gammarus</i> and <i>Corophium</i> , the molluscs <i>Hydrobia</i> and <i>Cerastoderma</i> and ragworms <i>Nereis</i> species.
			Presence and abundance of green algae. Measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.	Dark - bellied brent geese and wigeon use the mudflat and sandflat communities to feed on <i>Enteromorpha</i> and <i>Ulva</i> species.
		Absence of obstructions to view lines.	Open areas free of obstructions. Measured periodically (frequency to be determined).	No increase in obstructions to existing bird view lines, subject to natural change.	Dark - bellied brent geese require views of over >500m for detection of predators when feeding. Wader species (black-tailed godwit, grey plover, dunlin, oystercatcher) require views of over >200m for detection of predators when feeding.
	Saltmarsh communities	Food availability	Presence and abundance of soft leaved and seed-bearing plants. measured periodically (frequency to be determined).	Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.	Dark - bellied brent geese and wigeon require an abundance of soft-leaved and seed bearing plants e.g. <i>Spergularia</i> , <i>Puccinellia</i> , <i>Triglochin</i> , <i>Aster trifolium</i> , <i>Plantago</i> , <i>Salicornia</i> spp. for feeding.

FEATURE	SUB-FEATURE	ATTRIBUTE	MEASURE	TARGET	COMMENTS
<p>Internationally important assemblage of waterfowl and seabirds including the internationally important populations of regularly occurring migratory species</p>	<p>Saltmarsh communities</p>	<p>Food availability</p>	<p>Abundance of surface and sub-surface invertebrates. Measured periodically (frequency to be determined).</p>	<p>Abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.</p>	<p>Wader species e.g. black-tailed godwit, grey plover, dunlin and oystercatcher feed on a range of organisms including the crustaceans <i>Gammarus</i> and <i>Corophium</i>, the molluscs <i>Hydrobia</i> and <i>Cerastoderma</i> and ragworms <i>Nereis</i> species.</p>
		<p>Vegetation characteristics</p>	<p>Areas of open, short vegetation or bare ground predominating at roosting sites. Measured periodically (frequency to be determined).</p>	<p>Vegetation cover should not deviate significantly from an established baseline, subject to natural change.</p>	<p>Wader species e.g black-tailed godwit, grey plover, dunlin, oystercatcher require vegetation of < 10cm throughout areas used for roosting or >80% cover of bare ground.</p>
		<p>Absence of obstructions to view lines</p>	<p>Open areas free of obstructions. Measured periodically (frequency to be determined).</p>	<p>No increase in obstructions to existing bird view lines, subject to natural change</p>	<p>Dark - bellied brent geese require views of over >500m for detection of predators when feeding.</p>
	<p>Seagrass bed communities</p>	<p>Food availability</p>	<p>Abundance of mud-surface plants. Measured periodically (frequency to be determined).</p>	<p>Presence and abundance of food species should not deviate significantly from an established baseline, subject to natural change.</p>	<p>Dark-bellied brent geese and species like wigeon require an abundance of mud-surface plants particularly <i>Zostera</i> species for feeding. The cover of <i>Zostera</i> declines throughout winter due to weather/erosion and feeding, therefore a standard date needs to be set for measurements.</p>

FEATURE	SUB-FEATURE	ATTRIBUTE	MEASURE	TARGET	COMMENTS
Internationally important assemblage of waterfowl including the internationally important populations of regularly occurring migratory species	Seagrass bed communities	Food availability	Abundance of surface and sub-surface invertebrates. Measured periodically (frequency to be determined).	Abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.	Wader species e.g. black-tailed godwit, grey plover, dunlin and oystercatcher feed on a range of organisms including the crustaceans <i>Gammarus</i> and <i>Corophium</i> , the molluscs <i>Hydrobia</i> and <i>Cerastoderma</i> and ragworms <i>Nereis</i> species.
		Absence of obstructions to view lines	Open areas free of obstructions. Measured periodically (frequency to be determined).	No increase in obstructions to existing bird view lines, subject to natural change	Waders require unrestricted views over >200m to allow early detection of predators when feeding and roosting.
	Intertidal and subtidal boulder and cobble scar communities.	Food availability	Presence and abundance of prey species. Measured periodically (frequency to be determined).	Presence, abundance and diversity of prey species should not deviate significantly from an established baseline, subject to natural change.	Species like the oystercatcher, knot, and dunlin feed on a range of molluscs such as the mussel <i>Mytilus edulis</i> .
		Absence of obstructions to view lines	Open areas free of obstructions. Measured periodically (frequency to be determined).	No increase in obstructions to existing bird view lines, subject to natural change	Waders require unrestricted views of over >200m to allow early detection of predators when feeding and roosting.

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 the Exe Estuary 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 3 and Section 6.5 and with more detail in Table 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 management of activities that pose the greatest potential threat to the favourable condition of interest features on the Exe Estuary 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 European marine 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 in information, 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 Exe Estuary 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 has been assessed in relation to the use of habitats by birds. As an example, seagrass beds are

highly sensitive to physical loss through removal.

The sensitivity assessments of the interest features or their component sub-features of the Exe Estuary European marine site are based upon a series of scientific review documents. These include reports produced for the UK Marine SAC LIFE project (Davison & Hughes 1998; Elliott *et al* 1998), the Countryside Council for Wales Science Report (Holt *et al*, 1995) and the Marine Habitats Reviews (Jones *et al*, 2000.).

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).

6.2.2 Exposure assessment

This has been undertaken for the Exe Estuary European marine site by assessing the relative exposure of the interest features of their component sub-features on the site to the effects of broad categories of human activities currently occurring on the site as at March 2000. The assessment was made by combining the best available scientific information from reports such as Hughes (1992) with knowledge gleaned from consulting with relevant local authorities (see footnote, Table 4). The exposure has been assessed in relation to the use of habitats by birds and represents the current best available information. As an example, wintering birds' feeding and roosting grounds may be considered moderately exposed to toxic contamination from synthetic compounds due to the locations and intensity of discharges into an area.

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). For example, seagrass beds are highly sensitive to physical loss, through removal which may occur as a result of activities such as coastal development or dredging. However, the seagrass beds in the Exe Estuary European marine site are currently only considered moderately vulnerable to such activities, due to the low exposures, their location and existing site management. The process of deriving and scoring relative vulnerability is provided in Appendix I.

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.

Sensitivity and vulnerability have been assessed in relation to the use of habitats by birds.

These broad categories provide a clear framework against which relevant authorities can assess activities under their responsibility. The more detailed information in Table 4 provides relevant authorities with a context against which to consider an assessment of ‘significant effect’ or 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 competent authorities to consult English Nature formally 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 Exe Estuary European marine site. English Nature expects that the information on current activities and patterns of usage (which was used to derive table 4) will be supplemented as part of the process of developing the management of the site through further discussion with the relevant authorities. The option of zoning this information 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 5) 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 discussion 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

6.5.1 Internationally important populations of regularly occurring Annex 1 species

In pursuit of the conservation objective for “habitats supporting internationally important populations of regularly occurring Annex 1 species” (Section 4.1), the relevant and competent authorities for the Exe Estuary 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 selected, through any of the following:

- physical loss through removal or loss of estuarine habitats
- physical damage resulting from abrasion / siltation
- noise or visual disturbance
- increased synthetic toxic contamination
- changes in nutrient and/or organic loading.
- biological disturbance through selective extraction of species which form important food sources.

6.5 Internationally important assemblage of waterfowl including the internationally important population of regularly occurring migratory species.

In pursuit of the conservation objective for “habitats supporting internationally important assemblage of waterfowl and seabirds, including the internationally important population of regularly occurring migratory species” (Sections 4.2 and 4.3), the relevant and competent authorities for the Exe Estuary 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 selected, through any of the following:

- physical damage resulting from abrasion / siltation
- noise or visual disturbance
- increased synthetic toxic contamination
- changes in nutrient and/or organic loading
- biological disturbance through selective extraction of species which form important food sources

6.6 Plans and Projects

Under Regulation 48(1), an appropriate assessment must to be undertaken in respect of any plan or project which:

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

This legal requirement applies to all European sites. Regulation 48 is also applied, as a matter of Government policy, to potential SPAs and listed Ramsar sites.

English Nature's 'Habitats regulations guidance note: The Appropriate Assessment (Regulation 48)', is at Appendix II for further information.

Tables 3 and 4 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.

6.7 Review of consents

Regulation 50 of The Conservation (Natural Habitats, &c.) Regulations 1994 requires a competent authority to undertake a review of any existing consent or permission to which Regulation 48(1) would apply if were being reconsidered as of the date on which the site became a European site. Where a review is required under these provisions it must be carried out as soon as reasonably practicable. 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.

Table 3 showing operations which may cause deterioration or disturbance to the Exe Estuary European marine site interest features at current levels of use⁷

The advice below is not a list of prohibitions but rather a checklist for operations for discussion with the management group, which may need to be subject to some form of management measure(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 that are considered to be highly or moderately vulnerable to the effects of the operations.

Standard list of categories of operation which may cause deterioration or disturbance	Internationally important populations of regularly occurring Annex 1 birds	Internationally important assemblage of waterfowl , including the internationally important population of regularly occurring migratory species
Physical loss Removal (e.g. harvesting, coastal development) Smothering (e.g. by artificial structures, disposal of dredge spoil)	✓	✓
Physical damage Siltation (e.g. run-off, channel dredging, outfalls) Abrasion (e.g. boating, anchoring, trampling) Selective extraction (e.g. aggregate dredging)	✓ ✓	✓ ✓
Non-physical disturbance Noise (e.g. boat activity) Visual (e.g. recreational activity)	✓ ✓	✓ ✓
Toxic contamination Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs) Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	✓	✓

Standard list of categories of operation which may cause deterioration or disturbance	Internationally important populations of regularly occurring Annex 1 birds	Internationally important assemblage of waterfowl, including the internationally important population of regularly occurring migratory species
Non-toxic contamination Changes in nutrient loading (e.g. agricultural run-off, outfalls) Changes in organic loading (e.g. mariculture, outfalls) Changes in thermal regime (e.g. power stations) Changes in turbidity (e.g. run-off, dredging) Changes in salinity (e.g. water abstraction, outfalls)	✓ ✓	✓ ✓
Biological disturbance Introduction of microbial pathogens Introduction of non-native species & translocation Selective extraction of species (e.g. bait digging, wildfowling, commercial & recreational fishing)	✓	✓

⁷ This advice has been developed using best available scientific information and informed scientific interpretation and judgement as at March 2000. 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 matrices at 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 advice, therefore, is not a list of prohibitions but rather a check list for operations which may need to be subject to some form of management measure(s) or further measures where actions are already in force.

The precise impact of any category of operation occurring on the site will be dependant 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 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 at March 2000. 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.

6.8 Interest feature and sub-feature specific advice on operations

This section provides information to help relate general advice to each of the specific interest features of the Exe Estuary European marine site.

This advice relates to the vulnerability of the interest features and sub-features of the Exe Estuary European marine site as summarised in Table 3 and set out in more detail in Table 4. An explanation of the sensitivity of the interest features or sub-features follows with an explanation of their exposure and therefore their vulnerability to damage or disturbance from the listed categories of operations. This enables links between the categories of operation and the ecological requirements of the European marine site's interest features, as set out in Section 3, to be made.

6.8.1 Internationally important populations of regularly occurring Annex 1 species, the internationally important assemblage of waterfowl and the internationally important migratory species.

i) Physical loss

- The Exe Estuary provides roosting and feeding habitats for all interest features found within the European marine site. Birds are sensitive to any habitat loss, so whilst current levels of habitat loss may be low, any activities or developments such as land claim which would result in the loss of feeding and roosting habitat and therefore the interest features of the site are shown to be moderately vulnerable to removal by processes such as coastal development.

ii) Physical damage

- The habitats of the Exe Estuary and their associated food supplies, support the Annex 1 species, the internationally important assemblage of waterfowl and the internationally important migratory species. Therefore, any operations or activities that would adversely affect these habitats would affect these interest features.

The communities that occur on the seagrass beds, saltmarsh, and intertidal and subtidal boulder and cobble scar, are sensitive to activities that can cause physical damage such as trampling and digging for bait. This can have the effect of reducing the total amount of habitat available to the birds for roosting and feeding and could therefore be detrimental to the sites' interest features. At present the major issues contributing to the moderate vulnerability of the birds to this category of operation appear to be boats landing on, and launching off, the saltmarsh at Dawlish Warren, bait digging (particularly peeler crab collecting) and trampling on the intertidal and subtidal boulder and cobble scars and seagrass beds. The impact of these activities needs further investigation.

The Exe Estuary suffers severely from sedimentation which can cause damage to the communities occurring on the intertidal mudflats, sandflats and seagrass beds by gradually increasing the height of the sediment supporting them until they occur above that of mean high water. This will cause a change in habitat conditions resulting in a loss of many of the species on which the birds feed, and hence a reduction of the birds food supply.

There have been recent proposals to carry out channel and harbour dredging. Activities such as these have the potential to change the extent, nature and distribution of intertidal habitats which could have an impact on the birds and so will require thorough investigation.

iii) Non-physical disturbance

- Birds are highly sensitive to disturbance by unpredictable movements of objects and increases in noise. This can have the effect of displacing the birds from their roosting or feeding grounds. Disturbance can prevent the birds from feeding and in response they could either a) decrease their energy intake at their present feeding sites when disturbed, or b) expend energy moving to an alternative, less favourable feeding site. Such a response affects energy budgets and thus survival. At present the major issues contributing to the high vulnerability of the birds to this category of operation appear to be boats landing and taking off at Dawlish Warren, jet skiing and bait digging. The impact of these activities needs further investigation.

iv) Toxic contamination

- Waders, divers and wildfowl are sensitive to the accumulation of toxins through the food chain or through direct contact with toxic substances when feeding. Contaminants may also affect bird populations indirectly by affecting the abundance of their food items while their ability to feed can be affected by changes in the palatability and quality of prey items caused by toxic contamination, such as the bioaccumulation of persistent organics. It is recognised that diffuse agricultural pollution occurs in the Rivers Exe, Clyst, and Kenn and so there is a possibility of pesticides entering the estuary via this route and their potential impact may need to be investigated. Discharges from the sewage treatment works at Countess Wear may also contribute by containing some non-synthetic compounds from the trade discharges it receives. Although there is no evidence to suggest this is having a detrimental affect on bird numbers it is an issue which will need to be assessed.

The intertidal mudflats occurring in the Topsham area are highly exposed to antifoulants, resulting from a combination of current usage by local boatyards and historic contamination from previous high levels of usage in the area. These mudflats are an important feeding area for the avocet and so this source of contamination will require further investigation. Antifoulant exposure also occurs throughout the estuary from small craft moorings, recreational boat use and maintenance.

Birds can also be exposed to another source of toxic contamination through the re-mobilisation of contaminants such as TBT in the mudflats/sandflats. As well as causing physical disturbance to the habitats, activities such as bait digging and the recently proposed harbour dredgings could contribute to this category of operation by increasing the amount of toxins within the habitat.

v) Non-toxic contamination

- All the habitats used by the birds are moderately sensitive to an increase in organic or nutrient loading, this can have an effect on the birds by reducing the availability of food in the intertidal area through an increased growth of algal mats. An increase in the extent and coverage of the algal mats reduces the area available for feeding and cause a reduction in populations of *Corophium* in areas of high algal mat density. However, an increased growth of algal mats is beneficial to the dark - bellied brent geese which utilise this as a food resource. Increased phytoplankton growth may also occur resulting in a reduction of water clarity.

The Environment Agency have identified that the Exe Estuary may already be, or may be at risk of becoming, eutrophic. Extensive monitoring has been undertaken and limited analysis of data sampled in 1998 indicates dissolved oxygen and chlorophyll a levels throughout the estuary suggesting enrichment. A report on the trophic status of the estuary will be completed by the Agency in 2001. Further monitoring would be required to establish if this is a result of agricultural

or sewage inputs. This will require an ongoing assessment.

vi) Biological disturbance

- Bait digging, winkle and mussel picking and peeler crab collection can result in the selective extraction of species from the intertidal area. This may result in the reduction of food availability for feeding birds. The quantitative impacts of bait collection are unclear at present. However the vulnerability of the intertidal sandflats and mudflats and boulder and cobble scar communities to the current levels of activity, particularly peeler crab collection are considered moderate.

Table 4. Assessment of the relative exposure of interest features and sub-features of the Exe Estuary European Marine site to different categories of operations based on current level of activities (March 2000)

Key High= High exposure (3) Med =Medium exposure (2) Low= Low exposure (1)

Categories of operation which may cause deterioration or disturbance	Internationally important populations of regularly occurring bird species listed on Annex 1 of the Birds Directive.				Internationally important assemblage of waterfowl, including the internationally important populations of regularly occurring migratory species			
	Intertidal mudflat and sandflat communities	Saltmarsh communities	Shallow coastal waters	Seagrass bed communities	Intertidal mudflat and sandflat communities	Saltmarsh communities	Intertidal and subtidal boulder and cobble scar communities	Seagrass bed communities
Physical loss								
Removal (e.g. harvesting, land claim)	Low	Low	Low	Low	Low	Low	Low	Low
Smothering (e.g. by artificial structures, disposal of dredge spoil)	Low	Low	Low	Low	Low	Low	Low	Low
Physical damage								
Siltation (e.g. run-off, dredging, outfalls)	High	Med	Med	High	High	Med	Med	High
Abrasion (e.g. boating, anchoring, trampling)	Med	Med	None	High	Med	Med	Med	High
Selective extraction (e.g. aggregate dredging)	Low	Low	None	Low	Low	None	Low	Low
Non-physical disturbance								
Noise (e.g. boat activity)	Med	Med	Med	Med	Med	Med	Med	Med
Visual (e.g. recreational activity)	Med	Med	Med	Med	Med	Med	Med	Med
Toxic contamination								
Introduction of synthetic compounds (e.g. Pesticides, antifoulants, PCBs)	High	Med	Low	Low	Med	Med	Med	Low
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	Low	Low	Low	Low	Low	Low	Low	Low

Categories of operation which may cause deterioration or disturbance	Internationally important populations of regularly occurring bird species listed on Annex 1 of the Birds Directive.				Internationally important assemblage of waterfowl, including the internationally important populations of regularly occurring migratory species			
	Intertidal mudflat and sandflat communities	Saltmarsh communities	Shallow coastal waters	Seagrass bed communities	Intertidal mudflat and sandflat communities	Saltmarsh communities	Intertidal and subtidal boulder and cobble scar communities	Seagrass bed communities
Introduction of radionuclides	None	None	None	None	None	None	None	None
Non-toxic contamination								
Changes in nutrient loading (e.g. agricultural run-off, outfalls)	Med	High	Low	Med	Med	High	Med	Med
Changes in organic loading (e.g. mariculture, outfalls)	Med	High	Low	Med	Med	High	Med	Med
Changes in thermal regime (e.g. outfalls, power stations)	None	None	None	Low	None	None	None	Low
Changes in turbidity (e.g. run-off, dredging)	Med	Med	Low	Med	Med	Med	Low	Med
Changes in salinity (e.g. water abstraction, outfalls)	None	None	None	Low	None	None	None	Low
Biological disturbance								
Introduction of microbial pathogens	Low	None	None	None	None	None	Low	None
Introduction of non-native species & translocation	Low	None	None	None	Low	None	Low	None
Selective extraction of species (e.g. bait digging, wildfowling, commercial & recreational fishing)	Med	Low	Low	Low	Med	Low	Med	Low

Information derived from Williams .M. & Sibley. D., Environment Agency, Robbins T. ,Devon Seafisheries, Hill. R., Devon County Council, McNie P. South West Water, and Goss - Custard J. (pers. comm.).

Table 5. Assessment of the relative vulnerability of interest features and sub-features of the Exe Estuary 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. Table also incorporates relative sensitivity scores used in part to derive vulnerability.⁸

Key

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

Categories of operations which may cause deterioration or disturbance	Internationally important populations of regularly occurring Annex 1 species				Internationally important assemblage of waterfowl including the internationally important populations of regularly occurring migratory species			
	Intertidal mudflat and sandflat communities	Saltmarsh communities	Shallow coastal waters	Seagrass bed communities	Intertidal mudflat and sandflat communities	Saltmarsh communities	Intertidal and subtidal boulder and cobble scar communities	Seagrass bed communities
Physical Loss Removal (e.g. harvesting, land claim, coastal defence)
Smothering (e.g. artificial structures, disposal of dredge spoil)
Physical Damage Siltation (e.g. run-off, channel dredging, outfalls)
Abrasion (e.g. boating, anchoring, trampling)
Selective extraction (e.g. aggregate dredging, entanglement)
Non-physical disturbance Noise (e.g. boat activity)
Visual presence (e.g. recreational activity)
Toxic contamination Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs)
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)
Introduction of radionuclides

Categories of operations which may cause deterioration or disturbance	Internationally important populations of regularly occurring Annex 1 species				Internationally important assemblage of waterfowl including the internationally important populations of regularly occurring migratory species			
	Intertidal mudflat and sandflat communities	Saltmarsh communities	Shallow coastal waters	Seagrass bed communities	Intertidal mudflat and sandflat communities	Saltmarsh communities	Intertidal and subtidal boulder and cobble scar communities	Seagrass bed communities
Non-toxic contamination
Changes in nutrient loading (e.g. agricultural run-off, outfalls)
Changes in organic loading (e.g. mariculture, outfalls)
Changes in thermal regime (e.g. outfalls, power stations)
Changes in turbidity (e.g. run-off, dredging)
Changes in salinity (e.g. water abstraction, outfalls)
Biological disturbance								
Introduction of microbial pathogens
Introduction of non-native species & translocation
Selective extraction of species (e.g. bait digging, wildfowling, commercial & recreational fishing)

⁸ 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 (as at March 2000), 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.

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8. Glossary

Advisory Group	The body of the representatives from local interests, user groups and conservation groups, formed to advise the management group
Annex 1 Bird species	The species listed in Annex 1 of the Birds Directive are the subject of special conservation measures concerning their habitat. These measures ensure the survival and reproduction of the birds in their area of distribution. Species listed on Annex 1 are in danger of extinction, rare or vulnerable
Annex I habitat type(s)	A natural habitat(s) listed in Annex I of the Habitats Directive for which Special Areas of Conservation can be selected.
Annex II species	A species listed in Annex II of the Habitats Directive for which Special Areas of Conservation can be selected.
Annex V	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.
Assemblage	A collection of plants and/or animals characteristically associated with a particular environment.
Attribute	Characteristic of an interest feature/sub-feature which provides an indication of the condition of the feature or sub-feature to which it applies.
BAP	Biodiversity Action Plan.
Benthos	Those organisms attached to, or living on, in or near, the seabed, including that part which is exposed by tides.
Biotope	The physical habitat with its biological community; a term which refers to the combination of physical environment and its distinctive assemblage of conspicuous species.
Biodiversity	The total variety of life on earth. This includes diversity within species, between species and ecosystems.
Characteristic	Special to or especially abundant, in a particular situation or biotope. Characteristic species should be immediately conspicuous and easily identified.
Circalittoral	The rocky subtidal zone below that which is dominated by algae (Animal dominated subtidal zone).
Community	A group or 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.
Competent authority	Any Minister, government department, public or statutory undertaker, public body or person holding a public office that exercises legislative powers.
Conservation objective	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.
Eulittoral	The main part of the intertidal zone characterised by limpets, barnacles, mussels, fucoid algae and with red algae often abundant on the lower part.
Epifauna	Benthic animals living on the seabed.
European marine site	A European site which consists of, or in so far as it consists of, areas covered intermittently or continuously by seawater.

European site	A classified SPA, designated SAC, site of community importance (a site selected as a candidate SAC, adopted by the European Commission but not yet designated), a candidate SAC (in England only) or a site hosting a priority species in respect of which Article 5 of the Habitats directive applies.
Favourable conservation status	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.
Favourable condition	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.
Habitat	The place in which a plant or animal lives.
Habitats Directive	The abbreviated term of <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.
Infauna	Benthic animals which live within the sediment.
Infralittoral	The subtidal zone in which upward facing rocks are dominated by erect algae, typically kelps.
Interest feature	A natural or semi-natural feature for which a European site has been selected. This includes any Habitats Directive Annex I habitat, or specific component of their fauna and flora, or any Annex II species and any population of a bird species for which and SPA has been designated under the Birds Directive. Any habitat of a species for which a site has been selected, or typical species of an Annex I habitat are also considered to be interest features.
Maintain	The action required for an interest feature when it is considered to be in favourable condition.
Management group	The body of relevant authorities formed to manage the European marine site.
Management scheme	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.
Nationally scarce/rare	For marine purposes, these are regarded as species of limited national occurrence.
Natura 2000	The European network of protected sites established under the Birds Directive and the Habitats Directive.
Notable species	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'.
Operations which may cause deterioration or disturbance	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 significant disturbance to the species and its habitats for which the site was designated.
Plan or project	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.

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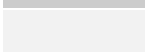
Peak mean counts (5 yr)	The Exe Estuary is broken down into count sectors. Over the winter months WeBs volunteers count all the birds which are visible within each sector. The yearly figures for each species in the Exe Estuary are then averaged over a five year period to give the 5 yr peak mean count.
Relevant authority	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.
Restore	The action required for an interest feature when it is not considered to be in a favourable condition.
Sensitivity	The intolerance of a habitat, community or individual species to damage from an external force.
Sub-feature	An ecologically important sub-division of an interest feature.
Vulnerability	The exposure of a habitat, community or individual of a species to an external factor to which it is sensitive.
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 Matrix of relative vulnerability

The relative vulnerability of an interest feature or sub-feature is determined by combining the relative sensitivity and exposure assessments according to the table below.

		Relative sensitivity of the interest feature			
		High ●●●●	Moderate ●●●	Low ●●	None detectable ●
Relative exposure of the interest feature	High	High	Moderate	Low	None detectable
	Medium	High	Moderate	Low	None detectable
	Low	Moderate	Moderate	Low	None detectable
	None	None detectable	None detectable	None detectable	None detectable

Categories of relative vulnerability

High	
Moderate	
Low	
None detectable	

Appendix III List of Relevant Authorities

Devon County Council

Devon Sea Fisheries Committee

East Devon District Council

Environment Agency

Exeter City Council

MAFF

Ministry of Defence

South West Water

Teignbridge District Council