ENGLISH NATURE

# Drigg Coast

# European marine site

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

ISSUED 29 MARCH 2000

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

**Contents**

**List of Figures and Tables**

## 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 the natural habitats or the habitats of species, or disturbance of species for the Drigg Coast European marine site. This advice is being prepared to fulfill our obligations under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994.

The Drigg Coast European marine site is part of a candidate Special Area of Conservation. It is Government policy that such sites should be protected as if they were already designated and, where appropriate, it is desirable to establish voluntary management schemes at an early stage, before the formal statutory obligations apply, and to act in the spirit of the Directive in the meantime (DETR & The Welsh Office 1998). In light of this policy, we have worked with many of you to develop this advice in advance of statutory obligations applying. It should be noted, however, that amendments to the Habitats Regulations for England are currently before Parliament which will result in the statutory obligations within the Regulations being applied to candidate SACs earlier in the process than currently.

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 under the Habitats Directive, which support certain natural habitats and species of European importance, and Special Protection Areas under the Birds Directive which support significant numbers of internationally important wild birds.

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;

- develop a management scheme to ensure that the ecological requirements of the site's interest features are met; and

- 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.

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 during the European Union's moderation process qualifying interest features are added to this European marine site, English Nature will add to this advice, as appropriate.

Tim Bines
English Nature
29 March 2000

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

## 1 Introduction

### 1.1 Natura 2000

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

The Habitats and Birds Directives include requirements for the designation of conservation areas. In the case of the Habitats Directive these are Special Areas of Conservation (SACs) which support certain natural habitats or species, and in the Birds Directive, Special Protection Areas (SPAs) which support wild birds of European Union interest. These sites will form a network of conservation areas 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 and 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 Drigg Coast European marine site 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 local office.
In addition to providing such advice, the Regulation 33 package will inform the scope and nature of

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

'appropriate assessment' which the Directive requires to be undertaken for plans and projects (Regulations 48 & 50 and by English Nature under Regulation 20). In the future, 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 relevant authorities to exercise their functions so as to secure compliance with the Habitats Directive. The management scheme which the relevant authorities acting as the management group may draw up under Regulation 34 for the Drigg Coast European marine site will provide the framework through which this will be done, and it should be based on the advice in this package. In this respect, relevant authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on an interest feature of the site. This may include consideration of issues outside the boundary of the European marine site.

Relevant authorities must ensure that all plans for the area integrate with the management scheme for the European marine site. Such plans may include shoreline management plans, local Environment Agency plans, SSSI management plans, local BAP plans, Coastal Habitat Management Plans (CHaMPS) 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 any changing circumstances in the SAC 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 byelaw-making powers for Marine Nature Reserves (MNRs) for use in European marine sites.

### 1.4 Activity outside the control of relevant authorities

Nothing within this Regulation 33 package will require relevant authorities to undertake any actions or ameliorate changes in the condition of interest features if it is shown that the changes result wholly from natural causes[4]. 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 seek to 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. On the Drigg Coast European marine site a forum, based around the Drigg Dunes Local Nature Reserve meets bi-annually and should be used to alert English Nature to such issues so that they may be assessed and any appropriate measures taken. This does not however preclude relevant authorities from taking action to prevent other identified deterioration to the interest features, for example by introducing or promoting codes of practice.

### 1.5 Responsibilities under other conservation designations

In addition to its candidate SAC status, Drigg Coast is also designated and subject to agreements under other conservation legislation (eg. SSSIs notified under the Wildlife and Countryside Act 1981 as amended 1985). The obligations of relevant authorities and other organisations under such designations are not affected by the advice contained in this document.

---

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

## 1.6 Role of conservation objectives

Section 4 of this document sets out the conservation objective for the Drigg Coast European marine site. Conservation objectives are the starting point from which management schemes and monitoring programmes are to be developed as they provide the basis for determining what is likely to cause a significant effect, and for informing on the scope of appropriate assessment 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 have been generally presumed to have been in favourable condition at the time they were identified. This assumption will be tested during the 2000 - 2006 reporting period. It 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 will need to be refined through further detailed discussions with the management and advisory groups in formulating and agreeing a management scheme, where required, to agreed timescales for the European marine site.

## 2 Identification of interest features under the EU Habitats Directive

Drigg Coast is a candidate Special Area of Conservation (cSAC), the boundary of which is shown in Figure 1.

This site qualifies as an SAC for the following Annex I habitat as listed in the EU Habitats Directive:

- **Estuaries**

Drigg Coast also qualifies as a cSAC for the Annex I habitats: **Eu-Atlantic decalcified fixed dunes**[5] (commonly referred to as coastal dune heathland); and **Dunes with *Salix arenaria*** (commonly referred to as dunes with creeping willow). These two features do not however, occur within the European marine site, and therefore within this document, as they occur above Highest Astronomical Tide. Objectives to maintain Eu-Atlantic decalcified fixed dunes and Dunes with *Salix arenaria* in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SAC 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 may be affected by activities taking place within, or adjacent to the European marine site.

Where estuary habitat occurs within the European marine site it is referred to as an interest feature. Sub-features have been identified to highlight the ecologically important components of the interest feature. The interest feature and sub-features for the Drigg Coast European marine site are discussed in more detail below and are mapped at Figure 1 to show their distribution and extent. The boundary of Drigg Coast European marine site is also shown in Appendix III.

5 This is one of a number of "priority habitats" which are defined in the Directive as those habitats in danger of disappearance and for which the European Union has particular responsibility in view of the proportion of their natural range which lies in the European Union.

# 3 SAC interest feature

## 3.1 Estuaries

### 3.1.1 Definition

Estuaries are complex and highly productive systems supporting a wide range of habitat types. They form the interface between the freshwater and the marine environment and extend from the upper limit of tidal influences to the open sea. Unlike large shallow inlets and bays, estuaries generally have a substantial freshwater influence. The meeting of freshwater and seawater and reduced current flows in the shelter of estuaries leads to deposition of fine sediments, often forming extensive intertidal mudflats and sandflats. At higher elevations within the tidal range, these are exposed for sufficient periods to become vegetated with salt-tolerant plants and form saltmarshes.

Typical animals associated with intertidal sediments include the gastropod mollusc *Hydrobia* spp., burrowing amphipods *Corophium* spp. and a variety of polychaete worms, all of which are food sources for waterfowl and seabirds. Where rock occurs, there are communities with a limited variety of species, characteristic of brackish flowing water, consisting of sparse fucoid algae, barnacles and epifaunal molluscs.

Towards the mouth of estuaries, where the water gradually becomes more saline, the silt content of the sediment declines. Here the animal communities of the sediments are dominated by invertebrates such as free swimming polychaete worms and infaunal bivalve molluscs.

Although estuaries are highly dynamic, they have a natural tendency to accumulate sediment, thereby changing their form from their original Holocene morphology to a state where tidal energy is dissipated by sub- and inter-tidal sediment banks. The width and depth of the estuary will therefore change over time towards a state of dynamic equilibrium or “most probable state”. In this way, and according to a hypothesis proposed by O’Brien (1931, 1969), an estuary’s cross section will evolve until it balances tidal prism, velocities and erosional/depositional thresholds.

The UK has a particularly large number of estuaries, covering more than a quarter of the total area of all north west European estuaries. Estuaries qualifying as marine SACs were selected to represent the range and diversity of estuary types which occur in the UK (Brown *et al.* 1997).

### 3.1.2 Importance of Drigg Coast

This site is one of the best examples in the UK of a small bar-built estuary complex. Whilst there are 47 bar built estuaries in Britain, this is the only one on the north-west coast of England (the main concentrations being the Welsh, East Anglian and Southern coasts) and only 3 others have been selected as candidate SACs. The estuary complex is one of the most natural and least developed in the UK, with little industry and virtually no artificial coastal defences. It contains some of the best examples of little disturbed transitions to freshwater and sand dune habitats of any estuary in the UK.

The estuary complex is fed by the Rivers Irt, Mite and Esk which discharge through a mouth that has been narrowed by large sand and shingle spits on which the Drigg and Eskmeals dune systems have developed. The sediments within the estuary are largely muddy within the Rivers Irt and Mite, while those of the Esk are more sandy, particularly towards the mouth. There is a substantial freshwater influence in the upper reaches of all three rivers, with good development of associated animal communities. Within the site there is an excellent zonation of saltmarsh habitats from pioneer through to upper marsh and some of the least disturbed transitions to terrestrial habitats, particularly to sand dune, shingle and freshwater swamp. These transition habitats are absent in most other British estuaries.

### 3.1.3 Key sub-features

**Intertidal mudflat and sandflat communities** - Intertidal mudflat and sandflat communities are a key ecological and morphological component of estuaries, forming as a result of reduced current flows where freshwater and seawater mix. The physical structure of the intertidal flats can range from mobile coarse sand to fine stable sediment, the latter being more common in inner estuary areas. The range of particle sizes of sediments, together with its organic content and the salinity of the overlying water, can determine the types of plant and animal communities which inhabit it.

At the entrance to the estuary and along the open coast, the coarse sandy sediments of the mid and lower shore areas support a diverse and abundant community dominated by bivalve molluscs such as razor shells *Ensis* spp., amphipods and the sea potato *Echinocardium cordatum.*

The sheltered muddy sands within the estuary are extensive and provide a habitat for large numbers of characteristic infaunal marine species. These include ragworms *Hediste diversicolor,* the bivalve Baltic tellin *Macoma balthica* and the burrowing amphipod *Corophium volutator*.

The sediments of the upper parts of the Esk estuary are dominated by the lugworm *Arenicola marina*, the burrowing amphipod *Corophium volutator* and the isopod *Eurydice pulchra*.

**Boulder and cobble scars with mussel beds -** Although the estuary is principally composed of soft sediments, there are areas of boulders and cobbles which increase the diversity of habitats, and therefore, species, within the estuary. The boulder and cobble scars are predominantly intertidal and located in the inner estuary of the Esk and in the Esk Channel, below the confluence of the Esk, Mite and Irt.

Mussels *Mytilus edulis* dominate many of the scars of the inner estuary. The barnacles *Semibalanus balanoides* and *Elminius modestus* are found on the hard surfaces of the mussels and stones and shore crabs *Carcinus maenas* are frequent. Other boulder and cobble areas have scattered algae, particularly *Fucus ceranoides* in areas subject to freshwater influence. The fucoids bladder wrack *Fucus vesiculosus,* serrated wrack *Fucus serratus* and knotted wrack *Ascophyllum nodosum* also occur attached to the stones. Dense clusters of edible periwinkle *Littorina littorea* and rough periwinkle *L. saxatilis* are also present. Within the inner estuary, species diversity of the scars is affected by variable and reduced salinities, mobility of sediments, and sometimes by siltation.

In the outer estuary at the confluence of the three rivers, large areas of cobbles are colonised by barnacles and littorinids or ephemeral algae, notably the green alga *Enteromorpha* spp. and the red alga *Porphyra purpurea,* with occasional patches of mussels. Species diversity of the scars in these locations is reduced by the mobility of the substratum and by sand scour.

**Saltmarsh communities** - The saltmarshes within the estuary are particularly diverse and complex, and occur along the banks of all three rivers. They are an integral part of the structure and functioning of the estuaries providing sediment stabilisation, shelter and food for marine animals and birds. The saltmarshes have an excellent zonation from pioneer to low, mid and upper marsh with transitions to sand dune and freshwater habitats. Such transitions are scarce elsewhere in the country, largely as a result of land claim.

The pioneer saltmarsh communities along the seaward edge of the main marsh are dominated by glasswort *Salicornia europaea* and occasionally annual sea-blite *Suaeda maritima*. Common cord-grass *Spartina anglica* is also beginning to colonise the lower marshes of the Mite and Irt.

Lower and mid marsh communities are more diverse than pioneer communities and their species composition is largely determined by their grazing management. The grazed saltmarsh communities are characterised by common saltmarsh-grass *Puccinellia maritima,* red fescue *Festuca rubra,* sea milkwort *Glaux maritima* and sea rush *Juncus maritimus* with few forbs. On ungrazed and lightly grazed saltmarshes these species are also present but there is a greater proportion of herbs, with both common sea-lavender *Limonium vulgare,* and the rare, lax-flowered sea-lavender *L. humile* abundant (both near their north western limits of range). Ungrazed saltmarsh again has the above species but is dominated by grazing sensitive species such as sea purslane *Atriplex portulacoides*, and varying amounts of salt-tolerant pioneer species. Sea purslane is growing here near the northern limit of its geographic range on the west coast. Ungrazed and lightly grazed saltmarshes are uncommon on the north west coast of England, as most of the extensive saltmarshes have had a long history of stock grazing.

On creek banks on the Esk which are beyond the range of grazing animals, a community dominated by sea wormwood *Seriphidium maritimum* occurs. Although this community is widespread on the East Anglian and southern English coasts, west coast occurrences of this community are scattered, and restricted mainly to ungrazed or lightly grazed marshes (Rodwell, in press).

Upper marshes receive less tidal inundation and therefore have a greater proportion of less salt-tolerant plants. They are characterised by either abundant red fescue *Festuca rubra*, creeping bent *Agrostis stolonifera,* saltmarsh rush *Juncus gerardii*, sea milkwort *Glaux maritima,* autumn hawkbit *Leontodon autumnalis* or glaucous sedge *Carex flacca*.

There is much freshwater influence at the top of some of the marshes, which gives rise to a number of restricted communities such as those dominated slender spike rush *Eleocharis uniglumis*. Stands of sea club rush *Bolboschoenus maritimus* swamp, common reed *Phragmites australis* swamp and occasionally reed canary grass *Phalaris arundinacea* fen also occur where conditions allow.

The transitions from saltmarsh to sand dune and mire communities are a particularly important part of the estuary system as a whole, providing increased diversity with mosaics of habitats. There is a complete transition from species rich saltmarsh grass *Puccinellia maritima* marsh to a narrow band of saltmarsh rush *Juncus gerardii* to mire communities in the runnels of freshwater seepage, acidic grassland and sand dune communities dominated by either sand couch *Elytrigia juncea* or Lyme grass *Leymus arenarius*. Complete transition communities to freshwater, sand dune and mire habitats are largely absent on other estuaries and rare in north west England.

## 4 Conservation objective for the interest feature

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 objective for Drigg Coast European marine site is provided below and should be read in the context of other advice given in this package, particularly

- the attached map at Figure 1 showing the extent of the interest feature and 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 the feature and which will act as a basis from which the monitoring programme will be developed.

**The conservation objective for estuaries:**

Subject to natural change, maintain the **estuaries** in favourable condition[6], in particular:

- Intertidal mudflat and sandflat communities
- Saltmarsh communities
- Boulder and cobble scar communities

6 For a detailed definition of how to recognise favourable condition see attached table (Section 5).

## 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 established and ongoing activities and future reporting 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 principal source of information that English Nature will use to assess the condition of an interest feature and as such comprises indicators of condition. Monitoring will be carried out over a 6 year cycle (of more frequently if necessary) for each feature, the results of which will feed into the 6 year reporting cycle for Member States. 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 far less about habitat condition and find it difficult to predict what favourable condition may look like. 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 English Nature's 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 English Nature's intention 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 or features 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**

**Feature** The habitat or species for which the site has been selected.

**Sub-feature** An ecologically important sub-division of the 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 the selection of the attribute.

## Table 1 Favourable condition table for the Drigg Coast 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 |
|---|---|---|---|---|---|
| **Estuaries** | | Extent | Area of Drigg Coast measured periodically (frequency to be determined). | No decrease in extent from an established baseline, subject to natural change. | Extent is an attribute on which reporting is required by the Habitats Directive. The extent of the estuary is unlikely to change significantly over time, but still needs to be measured periodically. |
| | | Morphological equilibrium | Intra and inter-estuarine Tidal Prism/Cross Section ratio (TP/CS ratio) measured every second reporting cycle. | The intra- and inter-estuarine TP/CS relationship should not deviate significantly from an established baseline subject to natural change. | TP = Tidal Prism = total volume of water crossing a given cross section during the flood tide ($m^3$).<br><br>CS = Area of a given cross section at high water springs ($m^2$).<br><br>The relationship between TP & CS provides a measure of the way the estuary has adjusted to tidal energy. Substantial departures from this characteristic relationship (determined on a regional basis) may the indicate the influence of anthropogenic factors and this would trigger more detailed evaluation of potential problems. |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | | Morphological equilibrium | Long term trends in the horizontal boundary of the saltmarsh/mudflat interface, measured during the reporting cycle. | The horizontal boundary of the saltmarsh/mudflat interface should not deviate significantly from an established baseline, subject to natural change. | Monitoring the saltmarsh boundary is a practical means of securing data which indicate changes in the TP/CS relationship. Deviation from long-term trends would act as a trigger for a second tier response involving detailed bathymetric survey and evaluation of changes in the TP/CS relationship (determined on a regional basis). In the absence of saltmarsh, vertical change in mudflat position can act as a surrogate for, or in addition to, the saltmarsh boundary. |
| | | Water density - salinity and water temperature. | Regular measurement of salinity and water temperature throughout the estuary, measured periodically throughout the reporting cycle (frequency to be determined). | Average temperature & salinity gradient throughout the estuary should not deviate significantly from an established baseline, subject to natural change. | Temperature and salinity are characteristic of the overall hydrography of the area. Changes in temperature and salinity influence the presence and distribution of species. |
| | Intertidal boulder and cobble scar communities | Extent of characteristic biotopes | Area (ha) measured once during reporting cycle. | No decrease in extent from the established baseline (Woombs 1999), subject to natural change. | Boulder and cobble scars provide an important habitat for a range of different species of marine organisms and thus contribute to the structure of the estuary. |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | | Species composition of characteristic rocky scar biotopes: -<br><br>mussel beds and<br><br>tideswept boulders with *Fucus ceranoides* | Presence and abundance of characterising species, measured once during reporting cycle. | Presence and abundance of composite species should not deviate significantly from the established baseline (Woombs 1999), subject to natural change. | Rocky scars provide a hard substratum for colonisation by a number of species not found in the sediments of the other parts of the estuary. Changes in species composition may indicate cyclic changes in the condition of the biotopes and habitats. |
| | Saltmarsh communities | Extent | Area (ha) measured once per reporting cycle. | No decrease in extent of saltmarsh communities from the established baseline (Harwood 1999), subject to natural change. | For dynamic coastlines fluctuations in extent may be great, but are attributable to natural coastal processes. The whole system will need to be assessed to take account of the dynamic nature of some of these habitats. A reduction in extent could be further indicated by ground survey to assess signs for erosion toppled vegetation blocks; stepping of saltmarsh edge; signs of stress/damage to plants. |
| | | Range and distribution of characteristic saltmarsh NVC communities and transitional communities (identified in Appendix II). | Presence and distribution of characteristic communities, sub-communities and transitional communities, measured once during reporting cycle. | Presence and distribution of characteristic saltmarsh communities, sub-communities and transitional communities, should not deviate significantly from the established baseline (Harwood 1999), subject to natural change. | Saltmarshes can be described using the National Vegetation Classification (NVC). The complete sequences of transition to landward communities (sand dune and freshwater swamps) are important. The range of NVC communities present reflects past and present management. |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | | Vegetation structure | Range and distribution of vegetation heights, measured periodically (frequency to be determined). | Range and distribution of vegetation heights should not deviate significantly from the established baseline (Harwood 1999), subject to natural change. | Vegetation structure of saltmarsh is determined by different grazing intensities. Not all saltmarshes are grazed, but where it is an established practice, the stocking levels need to be appropriate to the interest of the site. Overgrazing can lead to the loss of rare plant species and affect bird breeding and feeding habitats. Removal or introduction of grazing can result in changes to plant community composition. |
| | | Species composition of low and low mid marsh:<br><br>1. Transitional low marsh vegetation with annual *Salicornia* spp. (mainly SM8), *Suaeda maritma*, *Salicornia* spp. and *Puccinellia maritima* (SM9, 10).<br><br>2. *Puccinellia maritima* saltmarsh (SM13), *Juncus maritimus* (SM15). | Frequency and abundance of characterising species, measured once during reporting cycle. | Frequency and abundance of component species should not deviate significantly from the established baseline (Harwood 1999), subject to natural change. | Grazing determines species composition and type. The lowest areas of marsh are generally ungrazed. These communities cover large areas in Drigg Coast.<br><br>The site is unusual in the North West for the amount of *Juncus maritimus* (SM15) marsh in the low to mid zone. |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | | Species composition of sea purslane community (NVC SM14) | Frequency and abundance of characterising species, measured once during reporting cycle. | Frequency and abundance of composite species should not deviate significantly from the established baseline (Harwood 1999), subject to natural change. | This community is uncommon in the North West and indicative of ungrazed saltmarsh. |
| | Mid and mid upper marsh | Species composition of *Festuca rubra* saltmarsh (SM16). | Frequency and abundance of characterising species, measured once during reporting cycle. | Frequency and abundance of composite species should not deviate significantly from an established baseline (Harwood 1999) subject to natural change. | Covers large areas within Drigg Coast. Usually present on grazed marshes. Can be variable according to local conditions. |
| | Upper Marsh | Species composition of sea rush community (SM18) | Frequency and abundance of characterising species, measured once during reporting cycle. | Frequency and abundance of composite species should not deviate significantly from the established baseline (Harwood 1999) subject to natural change. | An important upper marsh community. Drigg is unusual in the North West for having much *Juncus maritimus* (SM18) |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | Transitional communities | Extent of freshwater transitions - sea club rush and swamp communities (S4, S19c, S21, S28a, S26c) | Area of freshwater transition communities, measured once during the reporting cycle. | No decrease in extent from the established baseline (Harwood 1999), subject to natural change. | Freshwater transitions are rare in north west England and very well represented at Drigg Coast. |
| | | Extent of transitions to sand dune habitats including mire (SD2, SD4, SD8, M23, MG10) | Area of transition to sand dune and mire communities, measured once during the reporting cycle. | No decrease in extent from the established baseline (Harwood 1999), subject to natural change. | Transitions to sand dune and mire communities are rare in north west England and are very well represented at Drigg Coast. |
| | | Species composition of transitions to sand dune habitats including mire | Frequency and abundance of characterising species measured once during the reporting cycle. | Frequency and abundance of composite species should not deviate significantly from the established baseline (Harwood 1999) subject to natural change. | Freshwater transitions and transitions to sand dune and mire communities are rare in the north west and are very well represented at Drigg Coast. |
| | Intertidal mudflat and sandflat communities | Extent | Area (ha) measured at same time during the year, once during reporting cycle. | No decrease in extent from an established baseline, subject to natural change. | On dynamic coastlines, fluctuations in extent may be great, but are attributable to natural processes. An equilibrium should be maintained between mudflat, pioneer saltmarsh and saltmarsh habitats. |

| FEATURE | SUB-FEATURE | ATTRIBUTE | MEASURE | TARGET | COMMENTS |
|---|---|---|---|---|---|
| | | Nutrient status - macro algal mats | Extent and seasonal abundance of macro algae on the foreshore, measured periodically (frequency to be determined). | Extent and abundance of macro algae should not deviate from an established baseline, subject to natural change. | Increased growth of certain macro algae due to increased nutrients may reduce the quality of sediments and their associated communities (infauna and epifauna/flora), primarily through smothering and deoxygenation. |
| | | Range and distribution of characteristic communities | Presence of characteristic mudflat and sandflat biotopes, measured periodically (frequency to be determined). | Presence of characteristic biotopes should not deviate significantly from an established baseline, subject to natural change. | Drigg coast has a range of diverse sediment communities typical of coarser sandy sediments on the open coast, as well as extensive sheltered muddy sands within the estuary complex. These contribute to the diversity of the estuary complex. |

# 6 Advice on operations

English Nature has a duty under Regulation 33(2)(b) of The Conservation (Natural Habitats &c.) Regulations 1994 to advise other relevant authorities as to any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. Information on how English Nature has developed this advice is given in Section 6.2, and on how it may be reviewed and updated in the future, in Section 6.4.

The advice is provided in summary form in Table 2 and Section 6.5 and with more detail in Table 3 and Table 4 and Section 6.8, 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 relevant authorities to direct and prioritise their work on the management of activities that pose the greatest potential threat to the favourable condition of the interest feature on the Drigg Coast European marine site. The advice is linked to the conservation objective for the interest feature 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 to be given subsequently 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 **sensitivity** of the interest feature or its component sub-features to operations;

- an assessment of the **exposure** of the interest feature or its 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 feature 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, whilst enabling refinements. 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 feature or the component sub-features of the Drigg Coast 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). As an example, saltmarshes are highly sensitive to physical loss through removal for coastal developments.

The sensitivity assessments of the interest feature or its component sub-features of the Drigg Coast European marine site are based primarily upon a series of UK Marine SACs *Life* Project Task Reports (Elliott *et al*., 1998), and the Marine Habitats Reviews (Jones *et al*., in prep.).

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 Drigg Coast European marine site by assessing the relative exposure of the interest feature or its component sub-features on the site to the effects of broad categories of human activities currently occurring on the site (Table 3, as at January 2000). For example, the exposure of saltmarsh to changes in thermal regime is low whilst the exposure to physical loss by removal caused by activities such as land claim, is high. Information to help assess relative exposure was gathered during a series of interviews with relevant authorities.

### 6.2.3 Vulnerability assessment

The third step in the process is to determine the vulnerability of interest feature or its 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 (McLeod, 1996). For example, intertidal sediment communities are sensitive to physical loss through removal, but within the Drigg Coast European marine site, intertidal sediments are not currently exposed to removal and hence their vulnerability to this operation is also currently low. 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 feature of the site and should have sufficient stability to need only infrequent review and updating by English Nature.

These broad categories provide a clear framework against which relevant authorities can assess activities under their responsibility. The more detailed information in Table 3 and 4 provides relevant authorities with a context against which to consider an assessment of 'significant effect' of any plans or projects which may affect the site and a basis to inform on the scope and nature of appropriate assessments required in relation to plans and projects. It is important to note that this advice is only a starting point for assessing impacts. It does not remove the need for the relevant authorities to 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 Drigg Coast European marine site. English Nature expects that the information on current activities and patterns of usage (which was used to derive Table 3) will be refined as part of the process of developing the management scheme through further discussion with the relevant authorities. The option of zoning this information 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 the interest feature or sub-features (Table 4) is relatively stable and will only change as a result of an improvement in our scientific knowledge, which will be a relatively long term process. Advice for sites will be kept under review and may be periodically updated through discussions with relevant authorities and others to reflect significant changes in our understanding of sensitivity together with the potential effects of plans and projects on the marine environment.

### 6.5 Summary of advice on operations

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

- Increased radionuclide toxic contamination
- Nutrient and/or organic enrichment.

### 6.6 Plans and Projects

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

a. either alone or in combination with other plans or projects would be likely to have a ***significant effect*** on a European Site; and

b. is not directly connected with the management of the site for nature conservation.

An appropriate assessment is required by law for all European Sites (Regulation 48). A European Site is any classified SPA and any SAC from the point where the Union and the Government agree the site as a Site of Community Importance. Appropriate assessment is also required, currently as a matter of Government policy, for potential SPAs, candidate SACs and listed Ramsar Sites for the purpose of considering development proposals affecting them. (PPG 9 paras 13 and C7). It should be noted, however, that amendments to the Habitats Regulations for England are currently before Parliament which will result in a statutory requirement for Appropriate Assessments to be conducted for candidate SACs before they become Sites of Community Importance.
ent is also required, currently as a matter of Government policy, for potential SPAs, candidate SACs and listed Ramsar Sites for the purpose of considering development proposals affecting them. (PPG 9 paras 13 and C7). It should be noted, however, that amendments to the Habitats Regulations for England are currently before Parliament which will result in a statutory requirement for Appropriate Assessments to be conducted for candidate SACs before they become Sites of Community Importance.

English Nature's Habitats Regulations Guidance Note: The Appropriate Assessment (Regulation 68) is at Appendix IV for further information.

Tables 2, 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 competent authorities to undertake a review of all existing consents and permissions affecting SAC and SPAs, as soon as possible after the site officially becomes a Site of Community Importance. This will have implications for discharge and other consents, which will need to be reviewed in the light of these objectives and may mean that lower targets for background levels of contaminants etc. will need to be set.

**Table 2 showing operations which may cause deterioration or disturbance to the Drigg Coast European marine site interest feature at current levels of use**[7]

[7]

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 (or some component of them) that are considered to be highly or moderately vulnerable to the effects of the operations.

| **Standard list of categories of operations which may cause deterioration of disturbance** | **Estuaries** |
|---|---|
| **Physical Loss** | |
| Removal (e.g. harvesting, land claim) | |
| Smothering (e.g. disposal of dredged spoil) | |
| **Physical Damage** | |
| Siltation (e.g. dredging, outfalls) | |
| Abrasion (e.g. mobile benthic fishing, anchoring) | |
| 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. TBT, PCBs) | |
| Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons) | |
| Introduction of radionuclides | ✓ |
| **Standard list of categories of operations which may cause deterioration of disturbance** | **Estuaries** |

| | |
|---|---|
| **Non-toxic contamination** | |
| Nutrient enrichment (e.g. agricultural run-off, outfalls) | ✓ |
| Organic enrichment (e.g. mariculture, outfalls) | ✓ |
| Changes in thermal regime (e.g. power stations) | |
| Changes in turbidity (e.g. dredging) | |
| Changes in salinity (e.g. water abstraction, outfalls) | |
| **Biological disturbance** | |
| Introduction of microbial pathogens | |
| Introduction of non-native species and translocation | |
| Selective extraction of species (e.g. commercial and recreational fishing) | |

[7] This advice has been developed using the best available scientific information and informed scientific interpretation and judgement (as at January 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 in Table 3. 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 dependent in the nature, scale, location and timing of events. More detailed advice is available from English Nature to assist relevant authorities in assessing actual impacts and cumulative effects. Assessment of this information should be undertaken in the development of the management scheme by the management group and 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 January 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 in 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 the specific interest feature of the Drigg Coast European marine site.

This advice relates to the vulnerability of the interest feature and sub-features of the Drigg Coast European marine site as summarised in Table 2 and set out in Table 3 and 4. An explanation of the sensitivity of the interest feature or sub-features follows with an explanation of their exposure and therefore vulnerability to damage or disturbance from the listed categories of operations. This enables links to be made between the categories of operation and the ecological requirements of the European marine site's interest feature, as set out in Section 3.

#### 6.8.1 Estuaries

I) Physical loss

- All the sub-features are sensitive to physical loss, particularly through removal. Removal of saltmarshes may occur through direct land claim, coastal construction, and, for the boulder and cobble scar communities, through the harvesting of species such as mussels. Coastal development could create a barrier to the inland expansion of saltmarsh in response to sea level rise, and thus may result in loss of the important transitions to terrestrial habitats which currently occur on the Drigg Coast European marine site. Changes to coastal processes can alter the tidal regime, which may also result in the loss of elements of the estuary complex. Whilst such activities have occurred on the site in the past and have affected the condition of the features, e.g. depletion of mussel populations, currently the sub-features of the site are not exposed to activities resulting in their physical loss, and hence are not currently considered to be vulnerable.

ii) Physical damage

- The boulder and cobble scars with mussel beds are highly sensitive to physical damage through siltation. These epifaunal communities can be damaged by siltation of fine material which may clog their feeding or respiratory structures. However the current exposure to siltation within the estuary is low, and hence the vulnerability score of estuaries to this form of operation is low.

iii) Toxic contamination

- Both intertidal mudflat and sandflat communities and boulder and cobble scar communities are highly sensitive to toxic contamination from introduction of synthetic and non-synthetic compounds such as PCBs and heavy metal based compounds. Saltmarsh communities are highly sensitive to the introduction of non-synthetic compounds. Such contaminants may have lethal or sub-lethal effects on marine organisms and this will vary according to the state and availability of the compound and the characteristics of the organisms of the receiving systems. Lethal effects can remove

more pollution sensitive individuals and species, leaving pollution tolerant and opportunistic species. Sub-lethal effects may alter functions of organisms such as reproduction, physiology, genetics and health which will ultimately reduce their fitness for survival (Elliot *et al*. 1998). Sheltered low energy areas such as estuaries tend to concentrate these pollutants which bind to fine particles and settle out onto mudflats and sandflats. Current exposure to toxic contamination within the Drigg Coast European marine site is low and hence the vulnerability is currently considered to be low.

- The Drigg Coast European marine site (the estuary at Ravenglass) is an area where fine sediments are deposited on the sheltered, low energy inter-tidal mudflats and the peripheral saltmarshes. It is known that such fine sediments have an enhanced capacity to adsorb radionuclides discharged to sea (e.g., from Sellafield) (IAEA, 1985; Cole *et al*., 1999). These habitats are, therefore, areas of increased radiation exposure from external sources. The local organisms can also accumulate the radionuclides either in association with ingested sediments or by metabolic incorporation into tissues (MAFF, 1999) leading to internal radiation exposure. The magnitude of the potential effects is dependent on the level of contamination. Historic radionuclide discharges from Sellafield (Woodhead, 1984, 1986) have resulted in increased levels of radionuclides in some locations of the north-east Irish Sea. Recent reviews have been published on the effects of increased radiation exposure on wild organisms, including effects on mortality rate, reproductive capacity and mutation rate (IAEA, 1992; UNSCEAR, 1996). These indicate that, on the basis of current understanding, and for those organisms where we have reliable radiation exposure information, the existing levels of contamination should not give rise to effects on populations in the Irish Sea.

iv) Non-toxic contamination

- Intertidal mudflat and sandflat communities are sensitive to nutrient and organic enrichment. An increase in the nutrient loading within the estuary, as a result of, for example, domestic sewage discharges, can result in increased growth of algae and phytoplankton. Increased levels of opportunistic algae such as *Enteromorpha* spp. may result in algal mats, with anoxic conditions in the sediment beneath the algal mats, and consequent reduction in diversity and abundance of infauna (Simpson, 1997). Increased organic material content of the water column and sediments can also result in reduced oxygen levels due to the increased activity of aerobic bacteria which break down organic material. This can have knock-on effects for marine animals which require oxygen for their healthy functioning. Given the current exposure of the estuary sub-features to nutrient enrichment, they are currently considered to be moderately vulnerable to this operation.

v) Biological disturbance

- Saltmarsh communities are sensitive to biological disturbance in the form of expansion of the invasive species cord grass *Spartina anglica*. This species currently occurs in very small amounts on the site, probably spread from elsewhere, and its current distribution within the site appears to be stable. However, given the right conditions, it can be a robust and aggressive plant, and there are concerns about any increases in its distribution on the site.

**Table 3. Assessment of the relative exposure of the interest feature and sub-features of Drigg Coast European marine site to different categories of operations based on current level of activities (as at January 2000)**

**Key: High = High exposure Med = Medium exposure Low = Low exposure**

| Categories of operation which may cause disturbance | Estuaries | | |
|---|---|---|---|
| | Intertidal mudflat and sandflat communities | Boulder and cobble scar communities | Saltmarsh communities |
| **Physical Loss** | | | |
| Removal (e.g. harvesting, land claim) | Low | Low | Low |
| Smothering (e.g. disposal of dredged spoil) | Low | Low | Low |
| **Physical Damage** | | | |
| Siltation (e.g. dredging, outfalls) | Low | Low | Low |
| Abrasion (e.g. mobile benthic fishing, anchoring) | Low | Low | Low |
| Selective extraction (e.g. aggregate dredging, entanglement) | Low | Low | Low |
| **Non-physical disturbance** | | | |
| Noise (e.g. boat activity) | None | None | None |
| Visual presence (e.g. recreational activity) | None | None | None |

| Categories of operation which may cause disturbance | Estuaries | | |
|---|---|---|---|
| | Intertidal mudflat and sandflat communities | Boulder and cobble scar communities | Saltmarsh communities |
| **Toxic contamination** | | | |
| Introduction of synthetic compounds (e.g. TBT, PCBs) | Low | Low | Low |
| Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons) | Low | Low | Low |
| Introduction of radionuclides | High | High | High |
| **Non-toxic contamination** | | | |
| Nutrient enrichment (e.g. agricultural run-off, outfalls) | Med | Med | Med |
| Organic enrichment (e.g. mariculture, outfalls) | Med | Med | Med |
| Changes in thermal regime (e.g. power stations) | Low | Low | Low |
| Changes in turbidity (e.g. dredging) | Low | Low | Low |
| Changes in salinity | Low | Low | Low |
| **Biological disturbance** | | | |
| Introduction of microbial pathogens | Low | Low | Low |
| Introduction of non-native species and translocation | Low | Low | Low |
| Selective extraction of species (e.g.commercial, recreational fishing) | Low | Low | Low |

**Table 4. Assessment of the relative vulnerability of the interest feature and sub-features of the Drigg Coast European marine site to different categories of operations. Categories of operations to which the feature or sub-features of the site are highly or moderately vulnerable are indicated by shading. The 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 operation which may cause disturbance** | **Estuaries** | | |
|---|---|---|---|
| | **Intertidal mudflat and sandflat communities** | **Boulder and cobble scar communities** | **Saltmarsh communities** |
| **Physical Loss** | | | |
| Removal (e.g. harvesting, land claim) | •••• | •••• | •••• |
| Smothering (e.g. disposal of dredged spoil) | ••• | •••• | ••• |

| Categories of operation which may cause disturbance | Estuaries | | |
|---|---|---|---|
| | **Intertidal mudflat and sandflat communities** | **Boulder and cobble scar communities** | **Saltmarsh communities** |
| **Physical Damage** | | | |
| Siltation (e.g. dredging, outfalls) | ●●● | ●●●● | ●● |
| Abrasion (e.g. mobile benthic fishing, anchoring) | ●●● | ●●● | ●●● |
| 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. TBT, PCBs) | ●●●● | ●●●● | ●●●● |
| Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons) | ●●● | ●●● | ●●●● |
| Introduction of radionuclides | ●● | ●● | ●● |
| **Non-toxic contamination** | | | |
| Nutrient enrichment (e.g. agricultural run-off, outfalls) | ●●● | ●● | ●● |
| Organic enrichment (e.g. mariculture, outfalls) | ●●● | ●● | ●● |

| **Categories of operation which may cause disturbance** | **Estuaries** | | |
|---|---|---|---|
| | **Intertidal mudflat and sandflat communities** | **Boulder and cobble scar communities** | **Saltmarsh communities** |
| Changes in thermal regime (e.g. power stations) | ●● | ●● | ●● |
| Changes in turbidity (e.g. dredging) | ●● | ●● | ●● |
| Changes in salinity | ●● | ●● | ●● |
| **Biological disturbance** | | | |
| Introduction of microbial pathogens | ●● | ●● | ● |
| Introduction of non-native species and translocation | ●●● | ●●● | ●●● |
| Selective extraction of species (e.g. commercial and 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 January 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.

## 7 Bibliography

ABP RESEARCH. 1999. Good practice guidelines for ports and harbours operating within or near UK European marine sites. English Nature, *UK Marine SACs Project* pp 120.

BROWN, A.E, BURN, A.J., HOPKINS, J.J. & WAY, S.F. 1997. The Habitats Directive: selection of Special Areas of Conservation in the UK. *JNCC Report No. 270.*

BURD, F. 1989. The saltmarsh survey of Great Britain. An inventory of British Saltmarshes.
Peterborough, NCC. *Research & Survey in Nature Conservation Series No.17.*

COLE, S., CODLING, I. D., PARR, W., and ZABEL, T. 1999. Guidelines for managing water quality impacts within UK European marine sites. WRc, Swindon, 441pp.

COVEY, R., and DAVIES, J. 1989. Littoral survey of South Cumbria (Barrow-in-Furness to St Bees Head). *Nature Conservancy Council, CSD Report, No 985. Marine Nature Conservation Review Report (MNCR/SR/007/89).*

ELLIOT, M., NEDWELL, S., JONES, N.V., READ, S.J., CUTTS, N.D. and HEMINGWAY, K.L. 1998. Intertidal sand and mudflats & subtidal mobile sandbanks An overview of dynamics and sensitivity characteristics for conservation management of marine SACs. (Volume II). *Scottish Association for Marine Sciences (UK Marine SACs Project), Oban, Scotland, UK.*

HALLIDAY, G. 1997. *A Flora of Cumbria.* Centre for North-West Regional Studies, University of Lancaster.

HARWOOD, T. 1999 *Survey of saltmarsh in Drigg Coast European marine site*. Unpublished report to English Nature.

IAEA, 1995. Sediment $k_d$s and concentration factors for Radionuclides in the marine environment. *Technical Report Series no 247*, IAEA, Vienna. 73pp.

IAEA, 1992. Effects of ionising radiation on plants ans animals at levels implied by current radiation protection standards. IAEA, Vienna. 74pp.

JONES, L. A., HISCOCK, K., CONNOR, D. W. In prep. Marine Habitats Review. JNCC.

MAFF, 1998. Radioactivity in food and the environment, 1997 (RIFE - 3), MAFF/SEPA. 162pp.

MCLEOD, C. 1996. *Appendix 1. Glossary of marine ecological terms* In: *Marine Nature Conservation Review; rationale and methods*. JNCC. (Coasts and Seas of the United Kingdom, MNCR series).

O'BRIEN, M.P. 1931. Estuary tidal prisms related to entrance areas. *Journal of Civil Engineering* 1(8): 738-739.

O'BRIEN, M.P. 1969. Equilibrium flow areas of inlets on sandy coasts. *Journal of Waterway, Port Coastal and Ocean Engineering Division ASCE* 95 (wwi): 43-52.

RODWELL, J.S. In press. *British plant communities. Volume 5: maritime and open vegetation*. Cambridge University Press.

STEWART, A., PEARMAN, D.A. AND PRESTON, C.D. 1994. *Scarce plants in Britain.* JNCC Peterborough.

UNSCEAR, 1996. Effects of radiation on the environment. United Nations Scientific Committee on the effects of atomic radiation. *UNSCEAR 1996 Report to the General Assembly*. United Nations, New York, 86pp.

WOODHEAD, D.S. 1984. Contamination due to radioactive materials, pp1111-1287 in: Marine Ecology, Volume V, Ocean Management Part 3, Pollution and Protection of the Seas - Radioactive Materials, Heavy Metals and Oil (Kinne, O., Ed). John Wiley and Sons, Chichester.

WOODHEAD, D.S. 1986. The radiation exposure of black-headed gulls (*Larus ridibundus*) in the Ravenglass Estuary, Cumbria, UK: a preliminary assessment. Sci.Tot.Environ. **58**, 273-281.

WOOMBS, M. 1999. *An intertidal survey of the biotopes of rocky scars in the Drigg Coast European marine site*. Unpublished report by W A Marine and Environment to English Nature.

## 8 Glossary

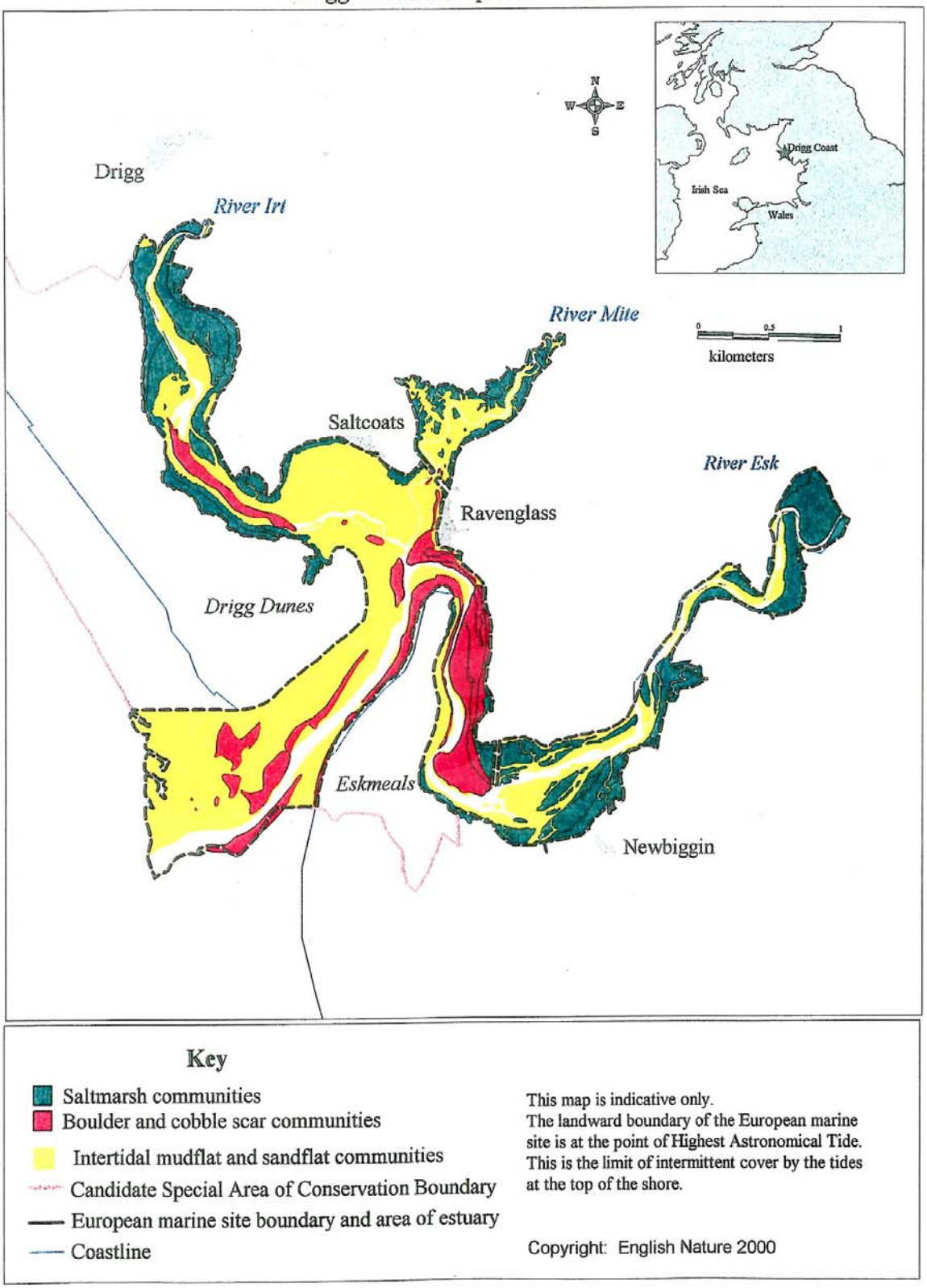
| | |
|---|---|
| **Advisory Group** | the body of representatives from local interests, user groups and conservation groups, formed to advise the management group |
| **Annex I habitat(s)** | a natural habitat(s) listed in Annex I of the Habitats Directive for which Special Areas of Conservation can be selected. |
| **Annex II species** | a species listed in Annex II of the Habitats Directive for which Special Areas of Conservation can be selected. |
| **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 of ecosystems. |
| **Characteristic** | special to or especially abundant in a particular situation or biotope. Characteristic species should be immediately conspicuous and easily identified. |
| **Community** | a group of organisms occurring in a particular environment, presumably interacting with each other and with the environment, and identifiable by means of ecological survey from other groups. |
| **Competent authority** | any Minister, government department, public or statutory undertaker, public body or person holding a public office that exercises legislative powers (see also relevant authority). |

| | |
|---|---|
| **Conservation objective** | a statement of the nature conservation aspirations for a site, expressed in terms of the favourable condition required for the habitats and/or species for which the site has been selected. |
| **European marine site** | a European site (SAC or SPA) which consists of, or in so far as it consists of, marine areas. |
| **Favourable condition** | a range of conditions for a natural habitat or species at which the sum of the influences acting upon it are not adversely affecting its distribution, abundance, structure or function within an individual Natura 2000 site. The condition in which the habitat or species is capable of sustaining itself on a long-term basis. |
| **Favourable conservation status** | a range of conditions for a natural habitat or species at which the sum of the influences acting upon it are not adversely affecting its distribution, abundance, structure or function throughout the biogeographic region. 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 for *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora.* It is the aim of this Directive to promote the conservation of certain habitats and species within the European Union. |
| **Holocene** | the most recent of the geological periods. |
| **Infauna** | benthic animals which live within the seabed. |
| **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 any Annex II species and any population of a bird species for which and SPA has been designated under the Birds Directive. |
| **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 compliance with the requirements of the Habitats Directive in relation to that site. |
| **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 an the Habitats Directive. |
| **NVC** | National Vegetation Classification - a classification system for plant communities to provide standardised descriptions of names and systematically arranged vegetation types from all natural, semi-natural and major artificial habitats in England, Scotland and Wales, using a standard methodology. |
| **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 has been designated, or disturbance to the species and its habitats for which the site has been designated. |
| **Plan or project** | in general, any operation which requires an application to be made for specific statutory consent, authorisation, licence or other permission. Specifically, 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. |
| **Relevant authority** | a body which has powers or functions which have, or could have, an impact on the marine environment within or adjacent to a European marine site. |
| **Reporting period** | the six year time period during which member states must report to the EU on the conservation status of Annex I habitats and Annex II species under the EC Habitats Directive. The first reporting period is 2000 - 2006. |
| **Restore** | the action required for an interest feature when it is not considered to be in a favourable condition. |

| | |
|---|---|
| **Scars** | areas of boulders and cobbles on predominantly sediment shores |
| **Sensitivity** | the intolerance of a habitat, community or individual (or individual colony) of a species to damage or disturbance from an external factor. |
| **Special Area of Conservation** | an area supporting certain habitats or species, designated under the Habitats Directive. |
| **Special Protection Area** | an area supporting internationally important bird populations and certain bird populations in nationally important numbers, designated under the Birds Directive. |
| **Sub-feature** | an ecologically important sub-division of an interest feature. |
| **Typical species** | a species that is considered to be a typical component of a feature or sub-feature. |
| **Vulnerability** | the exposure of a habitat, community or individual (or individual colony) of a species to an external factor to which it is sensitive. |

**Figure 1 Summary map showing the interest feature and sub-features in Drigg Coast European marine site**



## Appendix I Matrix of relative vulnerability

The relative vulnerability of an interest feature or sub-feature is determined by multiplying the scores for relative sensitivity and exposure, and classifying that total into categories of relative vulnerability.

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

**Categories of relative vulnerability**

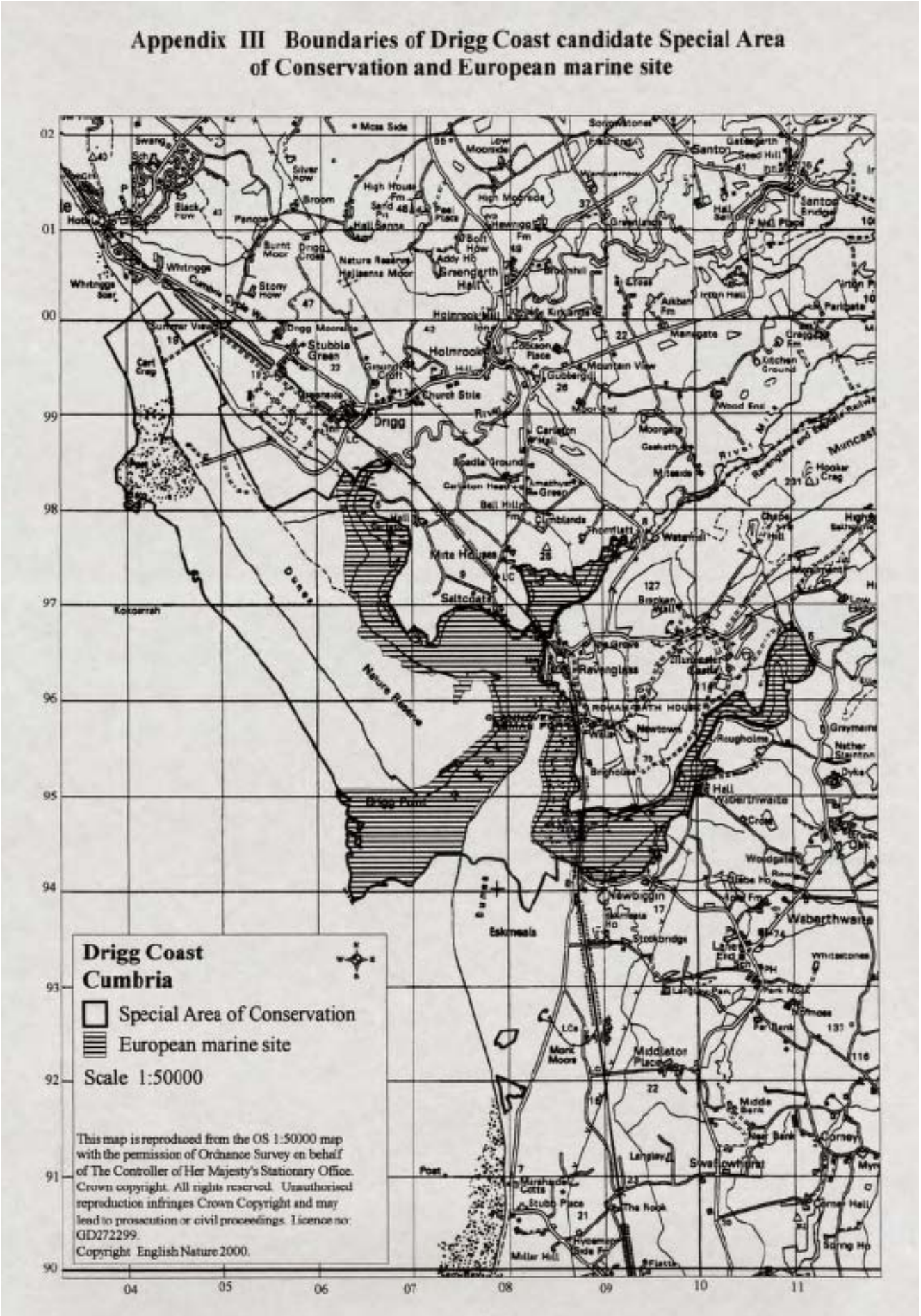
| | |
|---|---|
| High | 6 - 9 |
| Medium | 3 - 5 |
| Low | 1 - 2 |
| None detectable | 0 |

# Appendix II

## List of saltmarsh NVC communities in Drigg Coast European marine site

| | |
|---|---|
| SM6 | *Spartina anglica* saltmarsh |
| SM8 | Annual *Salicornia* saltmarsh |
| SM9 | *Suaeda maritima* saltmarsh |
| SM10 | "Transitional low marsh" vegetation |
| SM13 | *Pucinellia maritima* saltmarsh |
| SM13a | *Pucinellia maritima* sub-community |
| SM13b | *Glaux maritima* sub-community |
| SM13c | *Limonium vulgare - Armeria maritima* sub-community |
| SM13d | *Plantago maritima - Armeria maritima* sub-community |
| SM14 | *Halimione portulacoides* saltmarsh |
| SM15 | *Juncus maritimus* saltmarsh |
| SM16 | *Festuca rubra* saltmarsh |
| SM16a | *Pucinellia maritima* sub-community |
| SM16b | *Juncus gerardii* sub-community |
| SM16c | *Festuca rubra - Glaux maritima* sub-community |
| SM16d | *Leontodon autumnalis* sub-community |
| SM16e | *Carex flacca* sub-community |
| SM16f | Sub-community with tall *Festuca rubra* dominant |
| SM17 | *Artemesia maritima* saltmarsh |
| SM18 | *Juncus maritimus* saltmarsh |
| SM 28 | *Elymus repens* saltmarsh |

## Appendix III Boundaries of Drigg Coast candidate Special Area of Conservation and European marine site



ENGLISH NATURE

# Habitats regulations guidance note

HRGN 1

Issued by Greg Smith, Environmental Impacts Team, English Nature. Tel: 01733 455210

## The Appropriate Assessment (Regulation 48) The Conservation (Natural Habitats &c) Regulations, 1994

### Introduction

1. This Guidance Note has been prepared to assist competent authorities and English Nature staff when undertaking the *"appropriate assessment"* required by Regulation 48 of the *Habitats Regulations 1994* implementing Article 6(3) of the *Habitats Directive* (92/43/EEC). Only the Courts can provide authoritative interpretation of the Regulations, but these notes have been developed in the light of practical experience and a close examination of the Regulations, the Habitats Directive and central government guidance, particularly in PPG 9.

### When Does An 'Appropriate Assessment' Need To Be Undertaken?

#### Types of Proposal

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

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

3. Appropriate assessment is required by law for all European Sites (Regulation 48). A European Site is any classified SPA and any SAC from the point where the Commission and the Government agree the site as a Site of Community Importance. Appropriate assessment is also required, as a matter of Government policy, for potential SPAs, candidate SACs and listed Ramsar Sites for the purpose of considering development proposals affecting them. (PPG 9 paras 13 and C7).

#### Timing of the Assessment

4. An appropriate assessment needs to be undertaken in respect of a plan or project described above before any *"competent authority"*:

a. decides to undertake the plan or project, in cases where no consent, permission or other authorisation is required. (Reg. 48(1));
b. decides to give any consent, permission or other authorisation for the plan or project. (Regs. 48(1) *et al*);
c. reviews the decision to undertake a plan or project or reviews consents, permissions or other authorisations for plans or projects that are incomplete. (Regs. 50(2) *et al* - see also EN Habitats Regulations Guidance Note No. 2);
d. decides whether to approve an application for development that would otherwise be permitted development. (Reg. 62(6)).

#### Significant Effects

5. The plan or project does not have to be located within the designated area. Significant effects may occur even if the plan or project is some distance away and even outside any consultation area defined by English Nature (PPG 9 paras 30-32). The effects may be direct or indirect, temporary or permanent, beneficial or harmful to the site, or a combination of these.

6. The initial determination of likely significance is intended to ensure that all relevant plans and projects likely to have a material effect on these internationally important sites are subject to an appropriate assessment. In all but the most clear cut cases, competent authorities are likely to need advice. English Nature will advise, on request, as to whether any particular plan or project may be likely to have a significant effect on any of these sites. If the decision as to whether or not the development would have a significant effect on the designated site is inconclusive, on the information available, the competent authority should make a fuller assessment; in doing so they may ask the developer or other parties for more information. (PPG 9 para C10).

### Who Undertakes the Appropriate Assessment?

7. The appropriate assessment must be undertaken by the *competent authority*, as defined in Regulation 6(1) of the Habitats Regulations, which includes any Minister, Government Department, public or statutory undertaker, public body of any description or person holding a public office. The developer or proposer of the plan or project is required to provide relevant information. English Nature must be consulted, during the course of the assessment, but it is the duty of the competent authority to undertake the assessment itself.

8. Most competent authorities will not have the technical expertise "in house" to assess the effects of the plan or project on the international nature conservation interests. Most will need to rely heavily on the advice, guidance and recommendations of English Nature, at each stage, including the scope and content of the assessment, the site's conservation objectives, the information required from the developer or proposer and the effects on the integrity of the site, all of which are discussed below. The appropriate assessment, in many cases, is likely to be an iterative process. In the simplest cases a general statement in a single consultation response from English Nature may suffice to enable the competent authority to complete the assessment. However, in most cases, it is envisaged that a more detailed response from, and dialogue with, English Nature is likely to be necessary.

## What is an 'Appropriate Assessment'

9. It is a self contained step in a wider decision making process, required by the Habitats Regulations and described more fully in PPG 9, Annex C. Its conclusions must be based only on the scientific considerations under steps laid out in the Habitats Regulations. The assessment should not be influenced by wider planning or other considerations.

10. The Regulations do not specify how the assessment should be undertaken but describe it simply as "an appropriate assessment". This is taken to mean that the assessment must be appropriate to its purpose under the Regulations (and also the Directive, which originated the use of the term). Its purpose is to assess the implications of the proposal in respect of the site's "***conservation objectives***". The conclusions of the assessment should enable the competent authority to ascertain whether the proposal would adversely affect the integrity of the site.

### Scope and Content

11. PPG 9 indicates that the scope and content of an appropriate assessment will depend on the location, size and significance of the proposed plan or project (PPG 9 box C10). The PPG indicates that English Nature will advise on a case-by-case basis. According to the nature conservation interests of the site, English Nature will identify particular aspects that the appropriate assessment should address. Examples given are hydrology, disturbance and land-take, but there are clearly many other potential matters that may need to be addressed in particular cases.

12. Procedures under the Habitats Regulations should be confined to the effects on the internationally important habitats or species for which the site is or will be internationally designated or classified, including any indirect effects on these interests, for example, via their supporting ecosystems and natural processes. Notwithstanding a favourable assessment in respect of the plan or project's effects on the international nature conservation interests for which the site was classified or designated, decisions to undertake or give consent to the plan or project may need to take account of other international, national, regional or local nature conservation interests in the light of other policy and legislative provisions. (PPG 9 paras 4, 18 and 27).

### Environmental Assessment

13. The appropriate assessment is not the same as an environmental assessment under the provisions of the various *Environmental Assessment (EA) Regulations* (1988-95), in compliance with the Directive 85/337/EEC. In many cases, plans or projects that will be subject to an appropriate assessment will need an Environmental Statement (ES) to be prepared under the EA Regulations. (PPG 9 paras 38 and 39).

14. The ES will address all significant environmental effects. It will be appropriate to use the information assembled for the ES when carrying out the appropriate assessment under the Habitats Regulations. In view of this it would be helpful if the relevant ES clearly identified, under a specific subject heading, the likely significant effects on the internationally important habitats and/or species.

## How is an Appropriate Assessment Undertaken?

### Key Steps

15. Having established that an appropriate assessment is required, the following conclusions may be drawn (from the foregoing considerations and Government guidance) in respect of how it should be undertaken.

**The Key Steps in An Appropriate Assessment**

The competent authority:

I

Must consult English Nature

II

May consult the general public

III

Should clearly identify and understand the site's conservation objectives having regard to the advice of English Nature

IV

Should require the applicant to provide such information as may reasonably be required for the purposes of the assessment

V

Should identify the effects of the proposal on the habitats and species of international importance and how those effects are likely to affect the site's conservation objectives

VI

Should decide whether the plan or project, as proposed, would adversely affect the integrity of the site in the light of the conservation objectives

VII

Should consider the manner in which the plan or project is proposed to be carried out, whether it could be modified, or whether conditions or restrictions could be imposed, so as to avoid adverse effects on the integrity of the site

VIII

Should conclude whether the proposal, as modified by conditions or restrictions, would adversely affect the integrity of the site

IX

Should record the Assessment and notify English Nature of the conclusions

8. Most competent authorities will not have the technical expertise "in house" to assess the effects of the plan or project on the international nature conservation interests. Most will need to rely heavily on the advice, guidance and recommendations of English Nature, at each stage, including the scope and content of the assessment, the site's conservation objectives, the information required from the developer or proposer and the effects on the integrity of the site, all of which are discussed below. The appropriate assessment, in many cases, is likely to be an iterative process. In the simplest cases a general statement in a single consultation response from English Nature may suffice to enable the competent authority to complete the assessment. However, in most cases, it is envisaged that a more detailed response from, and dialogue with, English Nature is likely to be necessary.

## What is an 'Appropriate Assessment'

9. It is a self contained step in a wider decision making process, required by the Habitats Regulations and described more fully in PPG 9, Annex C. Its conclusions must be based only on the scientific considerations under steps laid out in the Habitats Regulations. The assessment should not be influenced by wider planning or other considerations.

10. The Regulations do not specify how the assessment should be undertaken but describe it simply as "an appropriate assessment". This is taken to mean that the assessment must be appropriate to its purpose under the Regulations (and also the Directive, which originated the use of the term). Its purpose is to assess the implications of the proposal in respect of the site's "*conservation objectives*". The conclusions of the assessment should enable the competent authority to ascertain whether the proposal would adversely affect the integrity of the site.

### Scope and Content

11. PPG 9 indicates that the scope and content of an appropriate assessment will depend on the location, size and significance of the proposed plan or project (PPG 9 box C10). The PPG indicates that English Nature will advise on a case-by-case basis. According to the nature conservation interests of the site, English Nature will identify particular aspects that the appropriate assessment should address. Examples given are hydrology, disturbance and land-take, but there are clearly many other potential matters that may need to be addressed in particular cases.

12. Procedures under the Habitats Regulations should be confined to the effects on the internationally important habitats or species for which the site is or will be internationally designated or classified, including any indirect effects on these interests, for example, via their supporting ecosystems and natural processes. Notwithstanding a favourable assessment in respect of the plan or project's effects on the international nature conservation interests for which the site was classified or designated, decisions to undertake or give consent to the plan or project may need to take account of other international, national, regional or local nature conservation interests in the light of other policy and legislative provisions. (PPG 9 paras 4, 18 and 27).

### Environmental Assessment

13. The appropriate assessment is not the same as an environmental assessment under the provisions of the various *Environmental Assessment (EA) Regulations* (1988-95), in compliance with the Directive 85/337/EEC. In many cases, plans or projects that will be subject to an appropriate assessment will need an Environmental Statement (ES) to be prepared under the EA Regulations. (PPG 9 paras 38 and 39).

14. The ES will address all significant environmental effects. It will be appropriate to use the information assembled for the ES when carrying out the appropriate assessment under the Habitats Regulations. In view of this it would be helpful if the relevant ES clearly identified, under a specific subject heading, the likely significant effects on the internationally important habitats and/or species.

## How is an Appropriate Assessment Undertaken?

### Key Steps

15. Having established that an appropriate assessment is required, the following conclusions may be drawn (from the foregoing considerations and Government guidance) in respect of how it should be undertaken.

**The Key Steps in An Appropriate Assessment**

The competent authority:

I

Must consult English Nature

II

May consult the general public

III

Should clearly identify and understand the site's conservation objectives having regard to the advice of English Nature

IV

Should require the applicant to provide such information as may reasonably be required for the purposes of the assessment

V

Should identify the effects of the proposal on the habitats and species of international importance and how those effects are likely to affect the site's conservation objectives

VI

Should decide whether the plan or project, as proposed, would adversely affect the integrity of the site in the light of the conservation objectives

VII

Should consider the manner in which the plan or project is proposed to be carried out, whether it could be modified, or whether conditions or restrictions could be imposed, so as to avoid adverse effects on the integrity of the site

VIII

Should conclude whether the proposal, as modified by conditions or restrictions, would adversely affect the integrity of the site

IX

Should record the Assessment and notify English Nature of the conclusions

25. Compensatory measures that may be offered in the proposal at this stage, seeking to redress but not remove residual harm to the international interests (such as the provision of land for habitat creation purposes), should not be considered in the appropriate assessment, but may be considered later in the decision making process. (See Reg. 53).

**VIII. Conclusion on Effects In The Light of Conditions and Restrictions**

26. The competent authority should reassess the conclusions in the light of any such modifications, conditions or restrictions that may be agreed or imposed.

**IX. Recording the Assessment**

27. It would be advisable for this conclusion, and the reasons for it, to be recorded. English Nature should be notified of the conclusion of the appropriate assessment and the authority's decision as to the effects on the integrity of the site, before the authority undertakes the plan or project or issues any permission, consent or other authorisation (PPG 9 para 30).

28. The subsequent courses of action open to a competent authority are set out in Regulations 48(5) - (7), 49 and 54(3). The Regulations prohibit a competent authority from undertaking or giving consent to any plan or project unless the appropriate assessment concluded that it would not have an adverse effect on the integrity of the site, or specific criteria are met and the Secretary of State has been informed.

## Good Practice Outline of an Appropriate Assessment Record

29. A suggested model or good practice outline record of an appropriate assessment is set out below. It may be contained in, for example, a planning officer's committee report or the minutes of a competent authority's decision. In other cases it may be a file note, clearly recording compliance with the Regulations. The record may take many different forms because each assessment needs to be appropriate to the type, scale, location and significance of the proposal and to the relevant nature conservation interests. It is provided here as a guide to assist competent authorities and English Nature staff, not as an authoritative legal formula. Any record made of an appropriate assessment should be copied to English Nature and to any other parties who were consulted on the assessment.

*Title of Plan or Project/Application*

*Location of Plan or Project/Application*

*[With location plan attached showing relationship to the international designation]*

*International Nature Conservation Site*

*Nature/Description of Plan or Project/Application*

*[Including brief description of manner in which plan or project is proposed to be carried out]*

*Date Appropriate Assessment Recorded*

*This is a record of the appropriate assessment, required by Regulation 48 of the Habitats Regulations 1994, undertaken by [name of competent authority] in respect of the above plan/project, in accordance with the Habitats Directive (Council Directive 92/43/EEC). Having considered that the plan or project would be likely to have a significant effect on the [name of international site] and that the plan or project was not directly connected with or necessary to the management of the site, an appropriate assessment has been undertaken of the implications of the proposal in view of the site's conservation objectives.*

*English Nature was consulted under Regulation 48(3) on [date] and their representations, to which this authority has had regard, are attached at Annex 1. The conclusions of this appropriate assessment * are/are not in accordance with the advice and recommendations of English Nature.*

**The applicant was required to submit further information reasonably necessary for this assessment on [date] under Reg.48(2) * and replied with the information on [date]/but did not supply the information.*

** The opinion of the general public was taken under Reg. 48(4) by way of *public advertisement/further consultation etc and the views expressed (attached at Annex 2) have been taken into account.*

*The site's conservation objectives have been taken into account, including consideration of the citation for the site and information supplied by English Nature (see Annex 1). The likely effects of the proposal on the international nature conservation interests for which the site was designated may be summarised as:*

*[List of Effects]*

*The assessment has concluded that:*

**a) the plan or project as proposed would not adversely affect the integrity of the site,*

*or*

**b) the plan or project as proposed would adversely affect the integrity of the site.*

*[If (b):]*

*The imposition of conditions or restrictions on the way the proposal is to be carried out has been considered and it is ascertained that:*

**a) conditions or restrictions cannot overcome the adverse effects on the integrity of the site.*

*or*

**b) the following conditions and/or restrictions would avoid adverse effects on the integrity of the site. [list conditions/restrictions]*

*Signed ..... Date .....* *(* delete as appropriate)*

*Annexes to also include relevant correspondence, minutes or meetings with English Nature, the applicant etc.*