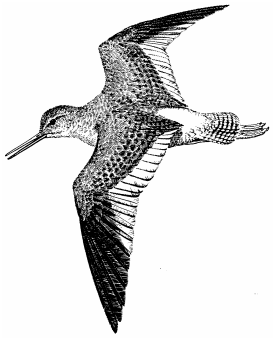
ENGLISH NATURE

Alde-Ore Estuary
European marine site

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



Issued 25 May 2001

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

Preface

This document provides English Nature's advice to other relevant authorities as to (a) the conservation objectives and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for the Alde-Ore Estuary 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 Alde-Ore Estuary European marine site comprises a Special Protection Area (Alde-Ore Estuary) and a candidate Special Area of Conservation (Orfordness to Shingle Street) and our advice within this document is being prepared to cover the marine elements of both the SPA and SAC interests.

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

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

- understand the international nature conservation importance of the site, underlying physical processes and the ecological requirements of the habitats and species involved;

- advise relevant authorities as to the conservation objectives for the site and operations which may cause deterioration or disturbance

- set the standards against which the condition of the site's interest features can be determined and undertake compliance monitoring to establish whether they are in favourable condition; and

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

In addition, the Regulation 33 package will provide a basis to inform on the scope and nature of 'appropriate assessment' required in relation to plans and projects (Regulations 48 & 50 and by English Nature under Regulation 20). English Nature will keep this advice under review and may update it every six years or sooner, depending on the changing circumstances of the European marine site. In addition, we will provide more detailed advice to competent

and relevant authorities to assess the implications of any given plan or project under the Regulations, where appropriate, at the time a plan or project is being considered. If as a result of the European Union's moderation process or the UK SPA Network Review (led by JNCC) interest features are added to this European marine site or the site boundaries change, English Nature will amend this advice, as appropriate.

Tim Bines
General Manager
English Nature
25 May 2001

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1. Introduction

1.1 Natura 2000

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

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

Further guidance on European marine sites is contained in the Department of the Environment Transport and Regions/Welsh Office document: *European marine sites in England & Wales: A guide to the Conservation (Natural Habitats &c.) Regulations 1994 and to the preparation and application of management schemes.*

1.2 English Nature's role

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

This document is English Nature's advice for the Alde-Ore Estuary 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

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

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

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

document are held at the English Nature local office, Suffolk Team, Regent House 110 Northgate Street, Bury St Edmunds, Suffolk, IP33 1HP.

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

1.3 The role of relevant authorities

The Conservation (Natural Habitats &c.) Regulations 1994 require all competent authorities to exercise their functions so as to secure compliance with the Habitats Directive. This European marine site is managed through existing SSSI mechanisms under the Wildlife and Countryside Act 1981, as amended 1985. However, relevant authorities may, if deemed necessary, draw up a management scheme under Regulation 34 for the European marine site. If such a management scheme is developed, it will provide the framework through which relevant authorities exercise their functions so as to secure compliance with the Habitats Directive and must be based on the advice in this package. Irrespective of this decision, relevant authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on an interest feature of the site as well as cumulative effects. This may include consideration of features and issues outside the boundary of the European marine site and above the highest astronomical tide.

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

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

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

1.4 Activity outside the control of relevant authorities

Nothing within this Regulation 33 package will require relevant authorities to undertake any actions or ameliorate changes in the condition of interest features if it is shown that the changes result wholly from natural 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

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

outside their control. Having issued Regulation 33 advice for European marine sites, English Nature will work with relevant authorities and others to agree, within a defined time frame, a protocol for evaluating all observed changes to baselines and to develop an understanding of natural change and provide further guidance as appropriate and possible.

On the Alde-Ore Estuary European marine site a management group is being set up and, once established, should be used to alert all the relevant authorities to such issues so that they may be assessed and any appropriate measures taken. This does not, however, preclude relevant authorities from taking action to prevent deterioration to the interest features, for example by introducing or promoting codes of practice through the Steering Group.

1.5 Responsibilities under other conservation designations

In addition to its SPA and candidate SAC status, parts of Alde-Ore Estuary are 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.

1.6 Role of conservation objectives

Section 5 of this document sets out the conservation objectives for the Alde-Ore Estuary European marine site. They are the starting point from which management schemes and monitoring programmes may be developed as they provide the basis for determining what is currently or may cause a significant effect, and for informing on the scope of appropriate assessments of plans or projects. The conservation objectives set out what needs to be achieved and thus deliver the aims of the Habitats Directive.

1.7 Role of advice on operations

The advice on operations set out in Section 7 provides the basis for discussion about the nature and extent of the operations taking place within or close to the site and which may have an impact on its interest features. It is given on the basis of the working assumption that sites were in favourable condition at the time they were identified. In the 2000-2006 reporting period an assessment of the condition of the site will be made to support this assumption, and ensure that favourable condition is being maintained. The advice should also be used to identify the extent to which existing measures of control, management and use are, or can be made, consistent with the conservation objectives and thereby focus the attention of relevant authorities and surveillance to areas that may need management measures.

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

2. Identification of interest features under the EU Birds and Habitats Directives

The boundary of the Alde-Ore Estuary Special Protection Area (SPA) is shown in Figure 1. The boundary of Orfordness to Shingle Street Special Area of Conservation is shown in Figure 2

2.1 SPA interest features under the EU Birds Directive

Alde-Ore Estuary SPA qualifies under Article 4.1 of the EU Birds Directive by supporting:

- Internationally important populations of regularly occurring bird species listed on Annex 1 of the Bird Directive.

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

- Internationally important populations of regularly occurring migratory bird species

Qualifying species of Alde-Ore Estuary SPA that utilise habitats above highest astronomical tide and hence outside the European marine site are internationally important breeding populations of marsh harrier *Circus aeruginosus* and lesser black-backed gull *Larus fuscus graellsii*. Marsh harriers are unlikely to make significant use of the habitats within the European marine site and no objectives are included in this advice package. Within the Alde-Ore Estuary SPA marsh harriers breed in locally abundant areas of rough vegetation on dyke edges and river walls and lesser black-backed gulls nest on medium to tall vegetated shingle. Objectives to maintain these aspects of bird interest in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SPA boundary and will be dealt with through relevant procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

Alde-Ore Estuary SPA citation was written in January 1996 and was classified as an SPA on 25 August 1998 and it is that citation on which this advice is based. Alde-Ore Estuary was also listed in October 1996 as a Ramsar site under the Ramsar convention for its internationally important wetland status.

2.2 SAC interest feature under the EU Habitats Directive

Orfordness to Shingle Street candidate SAC, as designated under the EU Habitats Directive, qualifies as a SAC for the following Annex 1 habitat:

- Annual vegetation of drift lines

Orfordness to Shingle Street candidate SAC also qualifies for the Annex I habitats **perennial vegetation of stony banks** and **lagoons**. However, these habitats do not occur within the European marine site as they occur above highest astronomical tide. As a consequence there are no specific conservation objectives within this document for these habitats. Objectives to maintain coastal shingle outside the reach of waves (perennial vegetation of stony banks) and

lagoons in favourable condition are identified within English Nature's conservation objectives for the relevant SSSIs within the SAC boundary and will be dealt with through procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994.

The features on this site are inextricably linked so that, for example, as the system accretes or erodes the exact location of saline lagoons may change and the area of perennial vegetation of stony banks will alter but it will always be fronted by a fringe of annual vegetation of drift lines. It is important therefore to maintain the systems that maintain these features and relevant authorities will need to have regard to such adjacent interests as they may be affected by activities taking place within, or adjacent to the site.

3. SPA interest features of the European marine site

This section describes and explains the importance of the SPA interest features of the Alde-Ore Estuary European marine site.

The Alde-Ore Estuary SPA includes both marine areas (ie. land covered continuously or intermittently by tidal waters) and land which is not subject to tidal influence. The marine part of the SPA is termed a European marine site. The extent of the Alde-Ore Estuary European marine site is illustrated in Figure 3. The seaward boundary of the European marine site is concurrent with that of the SPA. The landward boundary of the European marine site is the upper boundary of the SPA, or where that extends above land covered continuously or intermittently by tidal waters it is at the limit of the marine habitats.

Where SPA qualifying species occur within the European marine site they are referred to as interest features. Sub-features (habitats) have also been identified to highlight the ecologically important components of the European marine site for each interest feature. The interest features and sub-features for the Alde-Ore Estuary European marine site are described below and the sub-features are mapped at Figure 4 to show their distribution and extent.

3.1 Background and context

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

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

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

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

In addition to focusing on avoiding deterioration to the habitats of the qualifying species, the Habitats Directive also requires that actions are taken to avoid significant disturbance to the

species for which the site was designated. Such disturbance may include alterations in population trends and/or distribution patterns. Avoiding disturbance to species requirements is mentioned in the favourable condition table underpinning the conservation objectives for the SPA. In this context, five year peak mean information on populations will be used as the basis for assessing whether disturbance is damaging.

Attention is, however, also directed to the inclusion of disturbance in the advice on operations provided in Section 7. Where disturbance is highlighted in such advice, relevant authorities need to avoid damaging disturbance to qualifying species when exercising their functions under the Directive.

3.2 Reductions in organic inputs

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

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

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

3.3 General description

In recognition that bird populations may change as a reflection of national or international trends or events, this advice on the bird interests of the European marine site focuses on the condition of the habitats necessary to support the bird populations. Sub-features are identified which describe the key habitats within the European marine site necessary to support the birds that qualify within the SPA. Detailed information and targets for habitat condition are listed in the favourable condition table in Section 6. Bird usage of the site varies seasonally, with different areas being favoured over others at certain times of the year. However, annual counts for qualifying species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether this SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of the species across Europe.

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

- Current extent and distribution of suitable feeding and roosting habitat (eg saltmarsh, mudflats);
- Sufficient prey availability (eg small fish, crustaceans and worms);
- Levels of disturbance consistent with maintaining conditions for bird feeding and roosting;
- Water quality necessary to maintain intertidal plant and animal communities; and
- Water quantity and salinity gradients necessary to maintain saltmarsh conditions suitable for bird feeding and roosting.

3.4 Internationally important populations of the regularly occurring Annex 1 species

The species listed in Annex 1 of the Birds Directive are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. Species listed on Annex 1 are in danger of extinction, rare or vulnerable. Annex 1 species that regularly occur at levels over 1% of the national population meet the SPA qualifying criteria. The qualifying species of the Alde-Ore Estuary SPA that occur in the European marine site are breeding and wintering avocets *Recurvirosta avosetta,* wintering ruff *Philomachus pugnax,* breeding Sandwich tern *Sterna sandvicensis* and little tern *Sterna albifrons.*

Some of the habitat required for terns to nest - bare and sparsely vegetated shingle, occurs within the European marine site, however, many birds nest above highest astronomical tide. Likewise ruff are, to varying degrees, dependent on non-intertidal as well as intertidal habitats. These non-intertidal habitats do not occur within the European marine site, as they occur above the highest astronomical tide. Objectives to maintain these aspects of bird interest in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SPA boundary and will be dealt with through relevant procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. Some of the feeding habitat for terns - coastal waters above intertidal mud and sand - does occur within the European marine site and an objective is included within this advice package, however terns will also exploit feeding habitat below mean low water, outside the boundary of both the SPA and the European marine site. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

3.4.1 Key sub-features

Shingle areas - The strip of shingle along the Suffolk Coast is highly mobile and longshore drift, coupled with the action of the waves, results in the constant movement of material along the coast. Because of this mobility, vegetation has little chance to establish on the shingle and these sparsely vegetated shingle areas are an important nesting area for the little terns on Orfordness in the Alde-Ore Estuary European marine site. The size of the shingle

varies from coarse material to finer sands. Little terns, which nest in a shallow scrape in the sand or shingle, prefer areas with little vegetation so that they can see any approaching predators. The terns tend to nest around the transient annual vegetation such as yellow horned poppy and they sometimes use sea pea as a nest marker. The main nesting areas for the little terns are along the spit of Orfordness on the seaward side in the splash zone. Sandwich terns have not been known to breed on the Ness since 1996 although they do breed on Havergate Island.

Shallow coastal water - The shallow waters of the Suffolk coast provide an important feeding area for the little and Sandwich terns. The main prey items include sprats, sandeels and the small fry of other fish. The terns feed both within the estuary and along the coastal strip within the European marine site. They also feed further out to sea along the coast. Little terns will also feed on small crustaceans, molluscs and marine worms.

Intertidal mudflat - There are extensive areas of intertidal mudflats exposed in the estuary at low tide. The mudflats provide an important feeding and roosting area for avocet and ruff. Both species feed and roost along the estuary from Snape to North Weir Point. They feed communally on a range of organisms but in particular on the ragworm, *Nereis diversicolor, Corophium* and *Hydrobia.* Both ruff and avocet have been seen feeding and roosting on the estuary in association with black-tailed godwit.

Saltmarsh communities - Narrow fringes of saltmarsh occur along the length of the estuary with wider expanses at Shingle Street, Havergate Island, Stony Ditch, the upper reaches of the Butley river and in places by the Alde river. These are mostly dominated by sea purslane, *Halimione portulacoides* and sea lavender, *Limonium vulgare,* but a wide range of other saltmarsh species also occur including sea heath, *Frankenia laevis,* glasswort, *Salicornia pusilla* and small cord grass, *Spartina maritima.* Higher saltmarsh grading into neutral grassland, dominated by sea couch grass, *Elymus pungens*, occurs on Havergate Island and Orfordness and on the extensive system of clay embankments throughout the site. These habitats provide important roosting areas for avocets and ruff.

3.5 Internationally important populations of regularly occurring migratory bird species

The Alde-Ore estuary supports internationally important populations of two migratory species; lesser black-backed gull *Larus fuscus graellsii* and redshank *Tringa totanus*.

The nesting habitat for lesser black backed gull - medium to tall vegetated shingle does not occur within the European marine site. Lesser black-backed gulls are also dependent on non-intertidal as well as intertidal habitats. These non-intertidal habitats do not occur within the European marine site, as they occur above the highest astronomical tide. Objectives to maintain these aspects of bird interest in favourable condition are found within English Nature's conservation objectives for the relevant SSSI within the SPA boundary and will be dealt with through relevant procedures outlined in the Conservation (Natural Habitats &c.) Regulations 1994. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

Some of the feeding habitat for lesser black-backed gull - coastal waters above intertidal mud and sand - does occur within the European marine site and an objective is included within this

advice package. However, gulls will predominantly exploit feeding habitat below mean low water, out to sea where they eat squid, fish and scraps from boats. The pig rearing units on the mainland are also an important food source for the gulls, although currently there are no pigs in the area as a result of the recent swine fever outbreak.

These habitats are outside the boundary of both the SPA and the European marine site and relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site.

3.5.1 Key sub-features

Shallow coastal water - The shallow waters of the Suffolk coast provide a feeding area for lesser black-backed gulls. They are generalists, feeding in a variety of habitats. The combination of these habitats is required to maintain the internationally important breeding population. For this reason, shallow coastal waters have been identified as a sub-feature. The lesser black-backed gull's diet will include a range of species or items that they can catch or scavenge within the coastal strip of the European marine site.

Intertidal mudflat - There are extensive areas of intertidal mudflats exposed in the estuary at low tide. The mudflats provide an important feeding and roosting area for redshank and lesser black-backed gulls. The redshank feed in the estuary and in Stony Ditch. They feed predominantly on ragworm and lugworm, largely on the tideline, following the tide in and out. The lesser black-backed gulls feed throughout the estuary on various prey items.

Saltmarsh communities - Narrow fringes of saltmarsh occur along the length of the estuary with wider expanses at Shingle Street, Havergate Island, Stony Ditch, the upper reaches of the Butley river and in places by the Alde river. These are mostly dominated by sea purslane, *Halimione portulacoides* and sea lavender, *Limonium vulgare,* but a wide range of other saltmarsh species also occur including sea heath, *Frankenia laevis,* glasswort, *Salicornia pusilla* and small cord grass, *Spartina maritima.* Higher saltmarsh grading into neutral grassland, dominated by sea couch grass, *Elymus pungens*, occurs on Havergate Island and Orfordness and on the extensive system of clay embankments throughout the site. These habitats provide important breeding and roosting areas for redshank. Compared to other wading birds, redshank will feed on the higher areas of intertidal mudflat, in muddy creeks found within saltmarsh and on the saltmarsh itself. In addition, areas of saltmarsh are occasionally used by feeding lesser black-backed gulls.

4. SAC interest features of the European marine site

The Orfordness to Shingle Street SAC includes both marine areas (ie. land covered continuously or intermittently by tidal waters) and land which is not subject to tidal influence. The marine part of the SAC is termed a European marine site. The extent of the Orfordness to Shingle Street European marine site is illustrated in Figure 3.

The Alde-Ore Estuary European marine site includes an interest feature qualifying under Annex I of the Habitats Directive. This section describes and explains the importance of this SAC interest feature. The interest feature is mapped in Figure 4.

4.1 Annual vegetation of drift lines

4.1.1 General description

Approximately a third of the coastline of the UK is fringed by a shingle or sand/shingle beach, but much of this is devoid of vegetation. Sites where drift line vegetation does occur may have vegetative cover one year, but not another. Therefore, although widespread in terms of total area, sites where this habitat type is persistent are rare. The habitat is dominated by annual vegetation which grows each summer, lying at or above mean high water spring tides of shingle and sandy beaches. It is important to note that this interest feature is very dynamic. The extent and location of the vegetation depends upon the naturally occurring processes of erosion and accretion of the substrate. Therefore, mobility is an over-riding consideration, and colonising species are able to withstand periodic disturbance, which may involve the total removal of the surface by storms.

Alde-Ore Estuary European marine site has been chosen to reflect the more constant occurrence of the vegetation in association with larger, more stable areas of stony banks. The site exhibits good conservation of structure and function (ie they are relatively unmodified and are less prone to human disturbance) and represents variation in the habitat type in terms of substrate type.

At this site the annual vegetation occurs on the shingle lying at or above mean high water spring tides. Varying amounts of sand are interspersed in the shingle matrix and the type found at the Alde-Ore Estuary European marine site generally lies at the higher end of the size range of shingle. The pebbles are flint and have been derived from offshore sources and from erosion of glacial cliffs in East Anglia.

The spit of Orfordness is composed of a series of ridges which have been deposited almost parallel to the coast and have resulted in the formation of an extensive area of stable shingle fringed by a dynamic coastal ridge. The area is in dynamic equilibrium with cycles of accretion and erosion. Shingle Street is located opposite the distal end of Orfordness on the west bank of the Rive Ore. There is an accumulation of shingle on the seaward side of the sea wall in the northern part of the village. It comprises of a series of shingle ridges which have been deposited on top of London Clay. The vegetation on the coastal ridges is ephemeral, composed of annual or short-lived perennial species, and is very distinctive. Species are also tolerant of saltwater inundation, as the beaches are often over-topped by the tide or subject to spray from waves breaking over the beach (Brown and others 1997).

4.1.2 Importance at Alde-Ore Estuary European marine site

This area of annual vegetation of drift lines is one of only four outstanding localities in the UK. This interest feature is considered to be rare as its total extent in the UK is thought to be less than 100 hectares.

This site includes long shingle banks (some 15km in length) at Orfordness and Shingle Street which have been subject to relatively little human intervention. It has been selected as one of two representatives of this habitat type on the east coast of England, the other being Minsmere-Walberswick. The shingle bank of Orfordness supports extensive drift line vegetation dominated by sea kale *Cakile maritima*, sea beet *Beta vulgaris* subsp. *maritima,* sea pea, *Lathryus japonicus,* yellow horned poppy, *Glaucium flavum* and orache *Atriplex* spp.. Shingle Street supports an open *Lathyrus japonicus* dominated community with *Arrhenatherum elatius*, *Rumex crispus* and *Crepis vesicaria.*

5. Conservation objectives for European marine site interest features

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

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

5.1 SPA interest features

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

Subject to natural change, maintain in favourable condition[5] the habitats for the **internationally important populations of the regularly occurring Annex 1 bird species**, under the Birds Directive, in particular:

- **Shingle areas**
- **Intertidal mudflats**
- **Saltmarsh communities**
- **Shallow coastal waters**

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

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

Subject to natural change, maintain in favourable condition[5] the habitats for the **internationally important populations of regularly occurring migratory bird species**, under the Birds Directive, in particular:

- **Intertidal mudflats**
- **Saltmarsh**
- **communities**
- **Shallow coastal waters**

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

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

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

Table 1 Information on populations of internationally important species of birds under the Birds Directive using the Alde-Ore Estuary European marine site at the time the SPA was classified.

Internationally important populations of regularly occurring Annex 1 species.

Breeding populations

Species	Population (5 yr mean)*	
Avocet (*Recurvirostra avosetta*)	104 birds	(1989 - 1993/4)
Sandwich tern (*Sterna sandvicensis)*	169 pairs	(1989 - 1993/4)
Little tern (*Sterna albifrons*)	155 pairs	(1989 - 1993/4)

Wintering populations

Species	Population (5 yr peak mean for 1989/90 - 1993/94)*
Avocet (*Recurvirostra avosetta*)	749 birds
Ruff *(Philomachus pugnax)*	12 birds

Internationally important populations of regularly occurring migratory bird species.[6]

Importance	Population (5 yr mean for 1989/90 - 1993/94)*
Redshank (*Tringa totanus*)	1662 birds
Lesser black-backed gull (*Larus fuscus graellsii*)	8223 birds

* SPA citation dated January 1996 held on Register of European marine sites for Great Britain/ WeBs Counts/ JNCC Seabirds Group seabird colony register/ Suffolk county bird report

6 Alde-Ore Estuary is regularly used by 1% or more of the biogeographical population of a regularly occurring species (other than those listed on annex 1) in any season (Cranswick and others 1995).

5.2 SAC interest feature

5.2.1 The conservation objective for annual vegetation of drift lines

Subject to natural change, maintain the **annual vegetation of drift lines** in favourable condition[5]

6. Favourable condition table

The favourable condition table is supplied as an integral part of English Nature's Regulation 33 advice package. It is intended to supplement the conservation objectives only in relation to management of activities and 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 principle source of information that English Nature will use to assess the condition of an interest feature and as such comprises indicators of condition. On many terrestrial European sites, we know sufficient about the preferred or target condition of qualifying habitats to be able to define measures and associated targets for all attributes to be assessed in condition monitoring. Assessments as to whether individual interest features are in favourable condition will be made against these targets. In European marine sites we know less about habitat condition and find it difficult to specify favourable condition. Individual sites within a single marine habitat category are also all very different, further hampering the identification of generic indicators of condition. Accordingly, in the absence of such information, condition of interest features in European marine sites will be assessed against targets based on the existing conditions, which may need to be established through baseline surveys in many cases.

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

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

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

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

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

Table 2 Favourable Condition Table for Alde-Ore Estuary European marine site

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

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

Feature	Sub - Feature	Attribute	Measure	Target	Comments
Internationally important populations of regularly occurring Annex 1 bird species	All sub features: shingle, saltmarsh intertidal mudflat, shallow coastal waters.	Disturbance	Reduction or displacement of birds	No significant reduction in numbers or displacement from an established baseline[7], subject to natural change.	All qualifying species. Breeding terns are particularly vulnerable to disturbance.
		Extent and distribution of habitat	Area (ha) measured once during reporting cycle	No decrease in extent from an established baseline[7], subject to natural change.	Shingle is important for nesting terns, saltmarsh is important for roosting waders, intertidal mudflat is important for feeding waders and shallow coastal waters are important for feeding terns.
	Shingle	Vegetation characteristics	Predominantly open ground with sparse vegetation and bare surfaces, measured periodically, frequency to be determined.	Vegetation cover <10% and the remainder bare during the breeding season, subject to natural change.	In areas used by breeding little and Sandwich terns. Areas of largely bare shingle important for nesting little and Sandwich terns
	Saltmarsh	Vegetation characteristics	Open, short vegetation or bare ground predominating in areas used for roosting measured periodically, frequency to be determined.	Vegetation height throughout areas used for roosting should not deviate from an established baseline[7], subject to natural change.	Vegetation of <10cm is required at roost sites by avocets and ruff.

7 Baselines to be determined during the first reporting cycle.

Feature	Sub - Feature	Attribute	Measure	Target	Comments
Internationally important populations of regularly occurring Annex 1 bird species	Intertidal mudflat	Food availability	Abundance of fish, insects, worms, crustaceans and molluscs measured periodically, frequency to be determined.	Average biomass during the winter should not deviate significantly from an established baseline level[7] subject to natural change.	Important feeding areas for wintering avocets may occasionally be used by ruff. Prey items include *Gammarus, Corophium*, flies, beetles, *Nereis, Hydrobia, Cardium*, and gobies
	Saltmarsh and Intertidal mudflat	Absence of obstruction to viewlines.	Openness of terrain unrestricted by obstructions, measured periodically, frequency to be determined.	No increase in obstruction to existing bird viewlines, subject to natural change.	Avocets and ruff require unrestricted views over >200m to allow early detection of predators when feeding and roosting.
	Shallow coastal waters	Food availability	Presence and abundance of fish, small crustaceans, molluscs and worms measured periodically, frequency to be determined.	Presence and abundance of prey species should not deviate significantly from an established baseline level[7], subject to natural change.	Sandeel and sprats are important for Sandwich tern. Crustaceans, annelids, sandeel, sprats and *Clupeidae* are important for little terns.
Internationally important populations of regularly occurring migratory bird species	All sub features: Saltmarsh, Intertidal mudflat and Shallow coastal waters.	Disturbance	Reduction or displacement of birds.	No significant reduction in numbers or displacement from an established baseline[7], subject to natural change.	Applicable to redshank and lesser-black backed gull.
		Extent and distribution of habitat	Area (ha) measured once during reporting cycle	No decrease in extent from an established baseline[7], subject to natural change.	Redshank and lesser black-backed gulls
		Food availability	Presence and abundance of fish, mammals, birds, ground-surface and aquatic invertebrates measured periodically, frequency to be determined.	Presence and abundance of prey species should not deviate significantly from an established baseline[7], subject to natural change.	Voles, waders, sandeel, cod, herring and invertebrates are an important food source for lesser black-backed gulls during the breeding season.
	Saltmarsh	Vegetation	Open, short vegetation	Vegetation height	Vegetation of >10cm is required at roost sites by

Feature	Sub - Feature	Attribute	Measure	Target	Comments
		characteristics	or bare ground predominating in areas used for roosting measured periodically, frequency to be determined.	throughout areas used for roosting should not deviate significantly from an established baseline[7], subject to natural change.	redshank.
	Saltmarsh and Intertidal mudflat	Absence of obstruction to viewlines	Openness of terrain unrestricted by obstructions, measured periodically, frequency to be determined.	No increase in obstruction to existing bird viewlines, subject to natural change.	Redshank require unrestricted views over >200m to allow early detection of predators when feeding and roosting.
		Food availability	Presence and abundance of worms, crustaceans and molluscs measured periodically, frequency to be determined.	Presence and abundance of prey species should not deviate significantly from an established baseline[7] level, subject to natural change.	*Hydrobia, Macoma* and *Corophium* are the main food source for redshank during the non-breeding season.
Annual vegetation of drift lines		Extent	Linear extent of annual vegetation of drift lines and the geomorphological structures that support this feature, measured once per reporting cycle in late summer (July-September)	No decrease in linear extent from an established baseline[7], subject to natural change. Extent must take account of natural variation of this habitat as a result of dynamic coastal processes. Indicative target is for 10% of vegetation maintained seasonally over structure that could support it.	This attribute is dependent on there being sufficient shingle available through coastal processes to maintain the form of the shingle bank in its short and long-term development. Judgements in changes to linear extent will have to take particular care to distinguish changes as a result of natural functions, from those caused by anthropogenic actions because of the highly variable nature of this habitat. As there is likely to be significant seasonal variations in the area covered, assessment of the average width may be valuable. The 10% is an initial estimate which may be modified as a result of monitoring.
		Mobility	Percentage of extent of substrate suitable for colonisation by annual vegetation of drift lines not immediately	No increase in extent constrained by introduced structures, landforms or operations.	An important aspect of this habitat is its ability to modify its distribution in response to natural dynamic coastal processes. Introduction of physical constraints or operations such as shingle recycling would reduce the extent and quality of

Feature	Sub - Feature	Attribute	Measure	Target	Comments
			constrained by introduced structures, landforms or operations measured once per reporting cycle.		this community and affect the overall structure of the drift line communities.
		Coastal processes	Number and location of coastal defence operations within sediment cell influencing coastal processes. Measured once per reporting cycle.	Maintain sediment supply to and within the site through naturally operating coastal processes to allow a balance of accretion and erosion. A net balanced sediment budget should prevail, subject to natural change.	Sediment budget within the site is, in part, influenced by sediment supply into the site from long shore drift within the sediment cell, which also forms a significant part of natural sediment recycling within the site. If coastal processes are operating freely there should be a balance of erosion and accretion which will help to maintain the shingle structures which support the annual vegetation of drift lines interest feature. Information on coast processes should be available from SMPs.
		Substrate composition	Presence of shingle and fine matrix in combination with surface or buried organic material	Maintain substrate composition through natural processes with sufficiently low levels of human-induced disturbance to allow drift line vegetation to complete its vegetation cycle. As an indicative target, drift line organic materials should be present along at least 10% of length surveyed, with artificial (non-organic) debris not at levels restricting or suppressing vegetation establishment and growth. Targets appropriate to site should not deviate significantly from an	The combination of inorganic and organic substrate is an important precursor to development of annual vegetation of drift lines. Substrate supply should be regulated by natural coastal processes. Drift line organic materials (tidal-derived seaweed, driftwood etc.) on the surface of and in combination with the shingle matrix are important sources of nutrients and anchoring points essential for vegetation development and survival and may play a part in maintaining a seed bank.

Feature	Sub - Feature	Attribute	Measure	Target	Comments
				established baseline[7], subject to natural change.	
		Characteristic species of annual vegetation of drift lines	Presence of characterising species, particularly *Cakile maritima, Lathyrus japonicus, Crambe maritima* and including *Glaucium flavum, Beta vulgaris* ssp *maritima* and *Atriplex* spp. Assessments will need to be made during late summer (July-Sept) at least once per reporting cycle.	Maintain the presence and broad distribution of stands of *Cakile maritima* (sea rocket), *Crambe maritima* (sea kale),*Glaucium flavum* (Yellow horned poppy) and *Lathyrus japonicus* (sea pea) and other local variants of drift line vegetation across the feature, allowing for natural variation. These communities can be very variable, but should not be lower than 10% of the extent of shingle structure that could be colonised. Targets appropriate to site should not deviate significantly from an established baseline[7], subject to natural change.	These communities are found in a narrow strip at the extreme high water mark. Changes in the frequency and abundance of these species should be expected to occur seasonally as a result of natural disturbance by storm events, but the communities are sensitive to disturbance by human activities. Some communities do not fit well into the NVC but are nevertheless an important part of the regional variation. The NVC is currently under review. Primarily annual plants, but perennials may occur in areas with greater stability.

NB. Extreme events (such as storms reducing or increasing salinities, exceptionally cold winters or warm summers) also need to be recorded as they may be critical in influencing ecological issues in the Alde-Ore Estuary and may well be missed by routine monitoring.

7. 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 7.2, and on how it may be reviewed and updated in the future, in Section 7.4.

The advice is provided in summary form in Table 3 and Section 7.5 and 7.6 and with more detail in Table 5 and Section 7.9, including advice in relation to specific interest features and their sub-features.

7.1 Purpose of advice

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

7.2 Methods for assessment

To develop this advice on operations English Nature has used a three step process involving:

- an assessment of the **sensitivity** of the interest features or their component sub-features to operations;

- an assessment of the **exposure** of each interest feature or their component sub-features to operations; and

- a final assessment of **current vulnerability** of interest features or their component sub-features to operations.

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

All the scores of relative sensitivity, exposure and vulnerability are derived using best available scientific information and informed scientific interpretation and judgement. The process uses sufficiently coarse categorisation to minimise uncertainty in information, reflecting the current state of our knowledge and understanding of the marine environment.

Information has been gathered from a range of sources including reports such as ABP Research (1999).

7.2.1 Sensitivity assessment

The sensitivity assessment used is an assessment of the relative sensitivity of the interest features or the component sub-features of the Alde-Ore Estuary European marine site to the effects of broad categories of human activities. In relation to this assessment, sensitivity has been defined as the intolerance of a habitat, community or individual (or individual colony) of a species to damage, or death, from an external factor (Hiscock, 1996). The sensitivity has been assessed in relation to the use of habitats by birds. As an example, wintering birds are highly sensitive to loss of their roosting or feeding grounds.

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

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

7.2.2 Exposure assessment

This has been undertaken for the Alde-Ore Estuary European marine site by assessing the relative exposure of the interest features or their component sub-features to the effects of broad categories of human activities currently occurring on the site. This was done through a series of workshops with relevant and competent authorities and stakeholders and may be subject to further refinement in the future. The exposure has been assessed in relation to the use of habitats by birds. As an example, wintering birds' feeding and roosting grounds may be considered highly exposed to toxic contamination from synthetic compounds due to the locations and intensity of discharges into an area.

7.2.3 Vulnerability assessment

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

7.3 Format of advice

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

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

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

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

These broad categories provide a clear framework against which relevant authorities can assess activities under their responsibility. The more detailed information in Table 5 provides relevant authorities with a context against which to consider an assessment of 'significant effect' or any plans or projects which may affect the site and a basis to inform on the scope and nature of appropriate assessments required in relation to plans and projects. It is important to note that this advice is only a starting point for assessing impacts. It does not remove the need for the relevant authorities to consult English Nature formally over individual plans and projects where required to do so under the Regulations.

7.4 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 Alde-Ore Estuary European marine site. English Nature expects that the information on current activities and patterns of usage (which was used to derive Table 4) will be supplemented as part of the process of developing the management of the site through further discussion with the relevant authorities. The option of zoning this information may be appropriate. As such, it is important that future consideration of this advice by relevant authorities and others takes account of changes in the usage patterns that have occurred at the site, over the intervening period, since the advice was issued. In contrast, the information provided in this advice on the sensitivity of interest features or sub-features (Table 5) is relatively stable and will only change as a result of an improvement in our scientific knowledge, which will be a relatively long term process. Advice for sites will be kept under review and may be periodically updated through discussion with relevant authorities and others to reflect significant changes in our understanding of sensitivity together with the potential effects of plans and projects on the marine environment.

7.5 Summary of advice on operations for the SPA interest features

7.5.1 Internationally important populations of regularly occurring Annex 1 species

In pursuit of the conservation objective for 'habitats supporting internationally important populations of regularly occurring Annex 1 species' (Section 5.1.1), the relevant and competent authorities for Alde-Ore Estuary European marine site are advised to manage human activities within their remit such that they do not result in deterioration or significant disturbance to habitats or species for which the site has been selected, through any of the following:

- Physical loss from removal
- Physical damage from abrasion
- Non-physical disturbance through noise and/or visual presence
- Toxic contamination from the introduction of synthetic and/or non-synthetic compounds
- Non-toxic contamination through changes in nutrient and organic loading
- Biological disturbance through the selective extraction of species

7.5.2 Internationally important populations of regularly occurring migratory bird species

In pursuit of the conservation objective for 'habitats supporting the internationally important populations of regularly occurring migratory bird species' (Section 5.1.2), the relevant and competent authorities for Alde-Ore Estuary European marine site are advised to manage human activities within their remit such that they do not result in deterioration or disturbance to habitats or species for which the site has been selected, through any of the following:

- Physical loss from removal
- Non-physical disturbance through noise and/or visual presence
- Toxic contamination from the introduction of synthetic and non-synthetic compounds
- Non-toxic contamination through changes in nutrient and organic loading

7.6 Summary of advice on operations for the SAC interest feature

7.6.1 Annual vegetation of drift lines

In pursuit of the conservation objective for annual vegetation of drift lines (Section 5.2.1), the relevant and competent authorities for Alde-Ore Estuary European marine site are advised to manage human activities within their remit such that they do not result in deterioration or disturbance to habitats or species for which the site has been selected, through any of the following:

- Physical loss through removal
- Physical damage resulting from abrasion
- Toxic contamination through the introduction of non-synthetic compounds

7.7 Plans and Projects

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

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

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

English Nature's 'Habitats regulations guidance note 1: The Appropriate Assessment (Regulation 48)', is at Appendix II for further information.

Tables 4 and 5 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.

7.8 Review of consents

Regulation 50 of the Conservation (Natural Habitats, &c.) Regulations 1994 requires a competent authority to undertake a review of any existing consent or permission to which Regulation 48(1) would apply if were being reconsidered as of the date on which the site became a European site. Where a review is required under these provisions it must be carried out as soon as reasonably practicable. This will have implications for discharge and other consents, which will need to be reviewed in light of these objectives and may mean that lower targets for background levels of contaminants etc. will need to be set.

Table 3 Showing operations which may cause deterioration or disturbance to the Alde-Ore Estuary European marine site interest features at current levels of use[8]

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

Standard list of categories of operation which may cause deterioration or disturbance	SPA INTEREST FEATURES		SAC INTEREST FEATURE
	Internationally important populations of regularly occurring Annex 1 birds	Internationally important populations of regularly occurring migratory bird species	Annual vegetation of drift lines
Physical loss Removal Smothering	✓	✓	✓
Physical damage Siltation Abrasion Selective extraction	✓		✓
Non-physical disturbance Noise Visual	✓ ✓	✓ ✓	
Toxic contamination Introduction of synthetic compounds Introduction of non-synthetic compounds Introductionof radionuclides	✓ ✓	✓ ✓	✓
Non-toxic contamination Changes in nutrient loading Changes in organic loading Changes in thermal regime Changes in turbidity Changes in salinity	✓ ✓	✓ ✓	

Standard list of categories of operation which may cause deterioration or disturbance	SPA INTEREST FEATURES		SAC INTEREST FEATURE
	Internationally important populations of regularly occurring Annex 1 birds	Internationally important populations of regularly occurring migratory bird species	Annual vegetation of drift lines
Biological disturbance Introduction of microbial pathogens Introductiion of non-native species & translocation Selective extraction of species	✓		

[8]This advice has been developed using best available scientific information and informed scientific interpretation and judgement (as at July 2000). This process has used a coarse grading of relative sensitivity, exposure and vulnerability of each interest feature to different categories of operation based on the current state of our knowledge and understanding of the marine environment. This is shown in the sensitivity and vulnerability matrices at Table 4. The advice is indicative only, and is given to guide relevant authorities and others on particular operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the site has been designated. The advice, therefore, is not a list of prohibitions but rather a check list for operations which may need to be subject to some form of management measure(s) or further measures where actions are already in force.

The precise impact of any category of operation occurring on the site will be dependant upon the nature, scale, location and timing of events. More detailed advice is available from English Nature to assist relevant authorities in assessing actual impacts and cumulative effects. Assessment of this information should be undertaken in the development of management of the site 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 July 2000. As such, it is important that future consideration of this advice by relevant authorities, and others, takes account of changes in usage patterns that have occurred at the site over the intervening period. Advice for sites will be kept under review and may be periodically updated through discussions with relevant authorities, and others, to reflect significant changes in our understanding of sensitivity together with the potential effects of plans or projects on the marine environment. The provision of the statutory advice given here, on operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated, under Regulation 33(2), is provided without prejudice to specific advice given under Regulation 48(3) or Regulation 50 on individual operations that qualify as plans or projects within the meaning of Article 6 of the Habitats Directive.

7.9 Interest feature and sub-feature specific advice on operations for the Alde-Ore Estuary European marine site

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

This advice relates to the vulnerability of the interest features and sub-features of the Alde-Ore Estuary European marine site as summarised in Table 3 and set out in more detail in Table 5. An explanation of the sensitivity of the interest features or sub-features follows with an explanation of their exposure and therefore their vulnerability to damage or disturbance from the listed categories of operations. This enables links between the categories of operation and the ecological requirements of the European marine site=s interest features, as set out in Section 3 and 4, to be made.

7.9.1 SPA interest features

Internationally important populations of regularly occurring Annex 1 species

i) Physical Loss

- The Alde-Ore Estuary provides roosting and feeding habitats for internationally important populations of avocets and ruff. The estuary also provides roosting, feeding and nesting habitats for internationally important populations of Sandwich and little tern. Birds are sensitive to habitat loss through removal and current exposure levels are considered to be high for saltmarsh and medium for mudflats. Operations or activities such as shingle recycling that result in the physical loss of the shingle habitat may adversely affect the Annex 1 species. The shingle is used by the birds as a roosting area and as a nesting site by the little terns. However, the exposure score to removal of the shingle habitat has been described as low due to the limited area where shingle recycling is occurring. These exposures, combined with the high sensitivity scores leads to high and moderate vulnerabilities.

- Much of the saltmarsh in the estuary has been lost due to erosion, possibly as a result of sea level rise and this is being investigated by the Environment Agency.

- The Environment Agency have recently produced a flood defence strategy for the estuary which proposes managed realignment in several areas. Careful consideration will be required before this is implemented to ensure that it will not further increase erosion of the intertidal areas. The Environment Agency, as a competent authority is required to consult English Nature under Regulation 48 in relation to possible effects on the European site of any proposals for managed retreat in the estuaries.

ii) Physical Damage

- The habitats of Alde-Ore Estuary and their associated food supplies, support the avocet, Sandwich tern, little tern and ruff populations. Any operations or activities that would adversely affect these habitats may be detrimental to the species. The current exposure levels to physical damage for the whole estuary are considered to be low. However, there are a small number of areas where this category of operation is

occurring, mainly through abrasion from trampling by people and dogs. Also, nest destruction by vandals, particularly when off road bikes are driven over nests has been a problem at this site. However, it now appears to be minimal, but will require continued monitoring and control.

The high sensitivity of the shingle area leads to a moderate vulnerability. This high sensitivity, along with the moderate sensitivity of the saltmarsh to abrasion means that this activity will need continued monitoring.

iii) Non-physical Disturbance

- Avocets, Sandwich and little tern and ruff are disturbed by unpredictable movements of objects and increases in noise disturbance. This can displace the birds from their nesting, roosting or feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Such a response affects energy budgets and thus survival. Breeding terns are particularly vulnerable to disturbance. The little terns are a target for egg thieves and also vandals who have been known to drive off-road bikes over the nests. During the breeding season this may result in disturbance to the nesting little terns causing eggs or chicks to be abandoned. Boats sailing up and down the estuary are not considered a problem in terms of visual disturbance to the birds. At present, the issues contributing to the high vulnerabilities of the birds to this category of operation appear to be boats landing and taking off on Orfordness and associated disturbance from people and uncontrolled dogs. There may also be some disturbance from military helicopters flying over the site. The impact of all these activities needs further investigation.

iv) Toxic contamination

- Avocets, little terns, Sandwich terns and ruff are sensitive to the accumulation of toxins through the food chain or through direct contact with toxic substances when feeding. Their ability to feed can also be affected by changes in the palatability or abundance of prey items caused by toxic contamination. It is recognised that diffuse agricultural pollution occurs in the Alde-Ore and so there is a possibility of synthetic compounds such as pesticides entering the estuary via this route. Although there is no evidence to suggest this is having a detrimental affect on bird numbers it is an issue which will need to be assessed.

- Birds can also be exposed to another source of toxic contamination through the re-mobilisation of contaminants such as TBT in the mudflats/sandflats. Activities such as bait digging which could contribute to this category of operation will need further investigation.

- Avocet, little tern, Sandwich tern and ruff are moderately sensitive to toxic contamination and the exposure is currently believed to be medium. This results in a moderate vulnerability score for the introduction of synthetic and non-synthetic compounds.

v) Non-toxic contamination

- Organic or nutrient enrichment can reduce the availability of food for birds by increasing growth of algal mats on the intertidal area. It can also cause a reduction in water clarity, thereby reducing the visibility of prey items. On the other hand, a reduction in nutrient levels may cause a reduction in the biomass of invertebrates. There is a perception amongst estuary users (anecdotal) that agricultural run-off, particularly that associated with pigs, is a problem. However, there are currently no pigs in the area as a result of the recent swine fever outbreak.

- Birds are moderately sensitive to changes in nutrient and organic levels in the intertidal mudflats and shallow coastal waters. The mudflats used by the birds have a medium exposure to changes in organic and nutrient levels, thus leading to a moderate vulnerability score. This will require ongoing assessment.

vi) Biological disturbance

- Bait digging can result in the selective extraction of species from the intertidal area. This may result in a localised reduction of food availability for feeding birds. The quantitative impacts of bait collection are unclear at present.

- Wildfowling also occurs on the estuary but is, to a large extent well managed and unlikely to be impacting on the Annex 1 species.

- Little terns nest on the shingle and are highly sensitive to the site specific activities of egg collection. Although the exposure score is low, it combines with the high sensitivity to give a moderate vulnerability score.

Internationally important populations of regularly occurring migratory bird species.

1) Physical loss

- The Alde-Ore Estuary provides roosting and feeding habitats for internationally important populations of lesser black-backed gull and redshank. Birds are sensitive to any habitat loss through removal and current exposure levels are considered to be high for saltmarsh and medium for intertidal mudflats. These exposures, combined with the high sensitivity leads to high vulnerability scores for these sub-features.

- Much of the saltmarsh in the estuary has been lost due to erosion, possibly as a result of sea level rise and this is being investigated by the Environment Agency.

- The Environment Agency have recently produced a flood defence strategy for the estuary which proposes managed realignment in several areas. Careful consideration will be required before this is implemented to ensure that it will not further increase erosion of the intertidal areas. The Environment Agency, as a competent authority is required to consult English Nature under Regulation 48 in relation to possible effects on the European site of any proposals for managed retreat in the estuaries.

ii) Physical Damage

- The habitats of Alde-Ore Estuary and their associated food supplies support internationally important populations of lesser black-backed gull and redshank. Therefore, any operations or activities that would adversely affect these habitats may be detrimental to the species. The current exposure levels to physical damage for the whole estuary are considered to be low. However, there are a small number of areas where this category of operations is occurring, mainly through abrasion from trampling by people and dogs and this will require further investigation.

- The moderate sensitivity of the saltmarsh and intertidal mudflats to physical damage mean these activities will need continued monitoring.

iii) Non-physical Disturbance

- Water birds are disturbed by unpredictable movements of objects and increases in noise disturbance. This can displace the birds from their roosting or feeding grounds. Disturbance can prevent the birds from feeding and in response they either a) decrease their energy intake at their present (disturbed) feeding site through displacement activity, or b) move to an alternative less favoured feeding site. Such a response affects energy budgets and thus survival. At present, the issues contributing to the medium exposures on the intertidal mudflats and saltmarsh to noise and visual disturbance, appear to be boats landing and taking off on Orfordness, and associated disturbance from people and uncontrolled dogs. There may also be some disturbance from military helicopters flying over the site. The impact of all these activities needs further investigation. Boats sailing up and down the estuary are not considered a problem in terms of visual disturbance to the birds. The exposure scores, together with the high sensitivities result in high vulnerability scores for noise and visual disturbance.

iv) Toxic contamination

- Water birds are sensitive to the accumulation of toxins through the food chain or through direct contact with toxic substances when feeding. Their ability to feed can also be affected by changes in the palatability or abundance of prey items caused by toxic contamination. It is recognised that diffuse agricultural pollution occurs in the Alde-Ore Estuary, and so there is a large possibility of synthetic compounds such as pesticides and other chemicals entering the estuary via this route. Although there is no evidence to suggest this is having a detrimental affect on bird numbers it is an issue which requires ongoing assessment.

- Birds can also be exposed to another source of toxic contamination through the re-mobilisation of contaminants such as TBT in the mudflats/sandflats. Activities such as bait digging which could contribute to this category of operation will need further investigation.

- Redshank and lesser black-backed gulls are moderately sensitive to toxic contamination and the exposure is currently believed to be medium. This gives a moderate vulnerability score for the introduction of synthetic and non-synthetic compounds for all sub-features.

v) Non-toxic contamination

- Organic or nutrient enrichment can reduce the availability of food for birds by increasing growth of algal mats on the intertidal area. It can also cause a reduction in water clarity, thereby reducing the visibility of prey items. There is a perception amongst estuary users (anecdotal) that agricultural run-off, particularly that associated with pigs, is a problem, although there are currently no pigs in the area as a result of the recent swine fever outbreak. On the other hand, a reduction in nutrient levels may cause a reduction in the biomass of invertebrates Birds are moderately sensitive to changes in nutrient and organic levels in the intertidal mudflats and shallow coastal waters. The intertidal mudflats used by the birds have a medium exposure to this type of non-toxic contamination, thus leading to moderate vulnerability scores. This will require ongoing assessment.

vi) Biological disturbance

- Bait digging can result in the selective extraction of species from the intertidal area. This may result in a localised reduction of food availability for feeding birds and the intertidal mudflats are moderately sensitive to this operation. The quantitative impacts of bait collection are unclear at present. There is also well established mariculture on the Butley River but this is not perceived as a problem.

- Wildfowling occurs on the estuary but neither the gulls nor the redshank are target species.

7.9.2 SAC interest feature

Annual vegetation of drift lines

i) Physical Loss

- Deterioration or disturbance by physical removal can be the result of either one-off events or the cumulative effect of continuous activities. Coastal defence measures both on and off site have the potential to change erosional and depositional patterns of the shoreline and so could impact on this type of vegetation.

- Shingle recycling for coastal defence works is carried out at the northern end of Orford Ness. Shingle is removed from within the site and placed further north near Slaughden which is outside the SAC. As a result of the removal of the substrate and other activities associated with the coastal defence works the annual vegetation is unable to establish on this part of the SAC. The shingle recycling is being considered as part of the Environment Agency review of consents under the Habitats Regulations.

- The physical loss of the substrate may also lead to a reduction in the extent of the interest feature through the eradication of the seed bank. This will also impact on the recolonisation of adjacent areas. In addition, smothering can prevent seed germination and interrupt the annual cycle of vegetation.

- Annual vegetation of drift lines are highly sensitive to physical loss through removal and smothering. The current level and location of the shingle recycling on the Alde-Ore European marine site results in a high exposure of the annual vegetation to removal. This results in high vulnerability score.

ii) Physical damage

- Annual vegetation is highly sensitive to abrasion through excessive, long term, trampling. Shingle Street is widely used for recreation and there is localised trampling of vegetation. However, there is limited public access to Orfordness and so trampling of this feature is not considered a problem here.

- The annual vegetation may be also be damaged through abrasion from lorries which drive onto the site as part of the shingle recycling operations.

- The annual vegetation is highly sensitive to physical damage through abrasion. The current level of trampling at Shingle Street and damage from lorries results in a moderate vulnerability score for abrasion.

iii) Toxic contamination

- Oil or chemical spills could have a direct impact on this low growing vegetation which occurs at the top of the shore. The dispersants which are sometimes used in oil spills would also be likely to cause damage to growth and recovery rates. However, current levels of oil and chemical spills do not present a significant risk of this occurring.

- Although there is a low exposure to the introduction of non-synthetic compounds, the high sensitivity of the annual vegetation results in a moderate vulnerability.

iv) Non-toxic contamination

- Changes in salinity or nutrient and organic availability could reduce the ability of this type of vegetation to out-compete more vigorous plant growth of more common species. However, at present there is no risk of this occurring.

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

Key: High = High exposure Med = Medium exposure Low = Low exposure None = No exposure

	SPA INTEREST FEATURES							SAC INTEREST FEATURE
Categories of operation which may cause deterioration or disturbance	**Internationally important populations of regularly occurring Annex 1 species**				**Internationally important populations of regularly occurring migratory bird species**			**Annual vegetation of drift lines**
	Shingle	Intertidal mudflat	Saltmarsh	Shallow coastal waters	Intertidal mudflat	Saltmarsh	Shallow coastal waters	
Physical loss								
Removal	Low	Med	High	None	Med	High	None	High
Smothering	Low	Low	Low	None	Low	Low	None	None
Physical damage								
Siltation	Low	Low	Low	None	Low	Low	None	Low
Abrasion	Low	Low	Low	None	Low	Low	None	Low
Selective extraction	None	Low	Low	None	Low	Low	None	None
Non-physical disturbance								
Noise	Med	Med	Med	Low	Med	Med	Low	None
Visual	Med	Med	Med	Low	Med	Med	Low	None
Toxic contamination								
Introduction of synthetic compounds	Low	Med	Med	Med	Med	Med	Med	Low
Introduction of non-synthetic compounds	Low	Med	Med	Med	Med	Med	Med	Low
Introduction of radionuclides	None	Low	Low	Low	Low	Low	Low	None
Non-toxic contamination								
Changes in nutrient loading	Low	Med	Med	Low	Med	Med	Low	Low
Changes in organic loading	Low	Med	Med	Low	Med	Med	Low	Low
Changes in thermal regime	None	None	None	None	None	None	None	None

	SPA INTEREST FEATURES							SAC INTEREST FEATURE
Categories of operation which may cause deterioration or disturbance	**Internationally important populations of regularly occurring Annex 1 species**				**Internationally important populations of regularly occurring migratory bird species**			**Annual vegetation of drift lines**
	Shingle	Intertidal mudflat	Saltmarsh	Shallow coastal waters	Intertidal mudflat	Saltmarsh	Shallow coastal waters	
Changes in turbidity	None	Low	Low	Low	Low	Low	Low	None
Changes in salinity	None	Low	Low	Low	Low	Low	Low	Low
Biological disturbance								
Introduction of microbial pathogens	Low	Low	Low	None	Low	Low	None	None
Introduction of non-native species & translocation	Low	Low	Low	Low	Low	Low	Low	None
Selective extraction of species	Low	Low	Low	Low	Low	Low	Low	None

Table 5. Assessment of the relative vulnerability of interest features and sub-features of Alde-Ore Estuary European Marine site to different categories of operations. Categories of operations to which the features or sub-features of the site are highly or moderately vulnerable are indicated by shading. Table also incorporates relative sensitivity scores used in part to derive vulnerability.[9]

Key

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

	SPA INTEREST FEATURES							SAC INTEREST FEATURE
Categories of operations which may cause deterioration or disturbance	**Internationally important populations of regularly occurring Annex 1 species**				**Internationally important populations of regularly occurring migratory bird species**			**Annual vegetation of drift lines**
	Shingle area	**Intertidal mudflat**	**Saltmarsh**	**Shallow coastal waters**	**Intertidal mudflats**	**Saltmarsh**	**Shallow coastal waters**	
Physical Loss								
Removal	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●●●●
Smothering	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●●
Physical Damage								
Siltation	●●	●●	●●	●●	●●	●●	●●	●●●
Abrasion	●●●●	●●	●●●	●●	●●	●●●	●●	●●●●
Selective extraction	●●●●	●●●	●●	●●	●●●	●●	●●	●●●●
Non-physical disturbance								
Noise	●●●●	●●●●	●●●●	●●●	●●●●	●●●●	●●	●
Visual presence	●●●●	●●●●	●●●●	●●	●●●●	●●●●	●●	●
Toxic contamination								
Introduction of synthetic compounds	●	●●●	●●●	●●●	●●●	●●●	●●●	●●
Introduction of non-synthetic compounds	●	●●●	●●●	●●●	●●●	●●●	●●●	●●●●

	SPA INTEREST FEATURES							SAC INTEREST FEATURE
Categories of operations which may cause deterioration or disturbance	**Internationally important populations of regularly occurring Annex 1 species**				**Internationally important populations of regularly occurring migratory bird species**			**Annual vegetation of drift lines**
	Shingle area	**Intertidal mudflat**	**Saltmarsh**	**Shallow coastal waters**	**Intertidal mudflats**	**Saltmarsh**	**Shallow coastal waters**	
Introduction of radionuclides	●	●●	●●	●●	●●	●●	●●	●
Non-toxic contamination								
Changes in nutrient loading	●	●●●	●●	●●●	●●●	●●	●●●	●●●
Changes in organic loading	●	●●●	●●	●●●	●●●	●●	●●●	●●●
Changes in thermal regime	●	●	●	●●	●	●	●●	●
Changes in turbidity	●	●	●	●●●	●	●	●●●	●●
Changes in salinity	●	●●	●	●●●	●●	●	●●●	●●●
Biological disturbance								
Introduction of microbial pathogens	●	●●	●	●●	●●	●	●●	●
Introduction of non-native species & translocation	●	●●●	●●●	●●	●●●	●●●	●●	●●
Selective extraction of species	●●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●

[9] 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 December 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 contract the sensitivity of interest features, or sub-features, is relatively stable with alterations reflecting improvement in our scientific knowledge and understanding. To this end, information on sensitivity has been included in this table to assist the management and advisory groups with the future management of the site.

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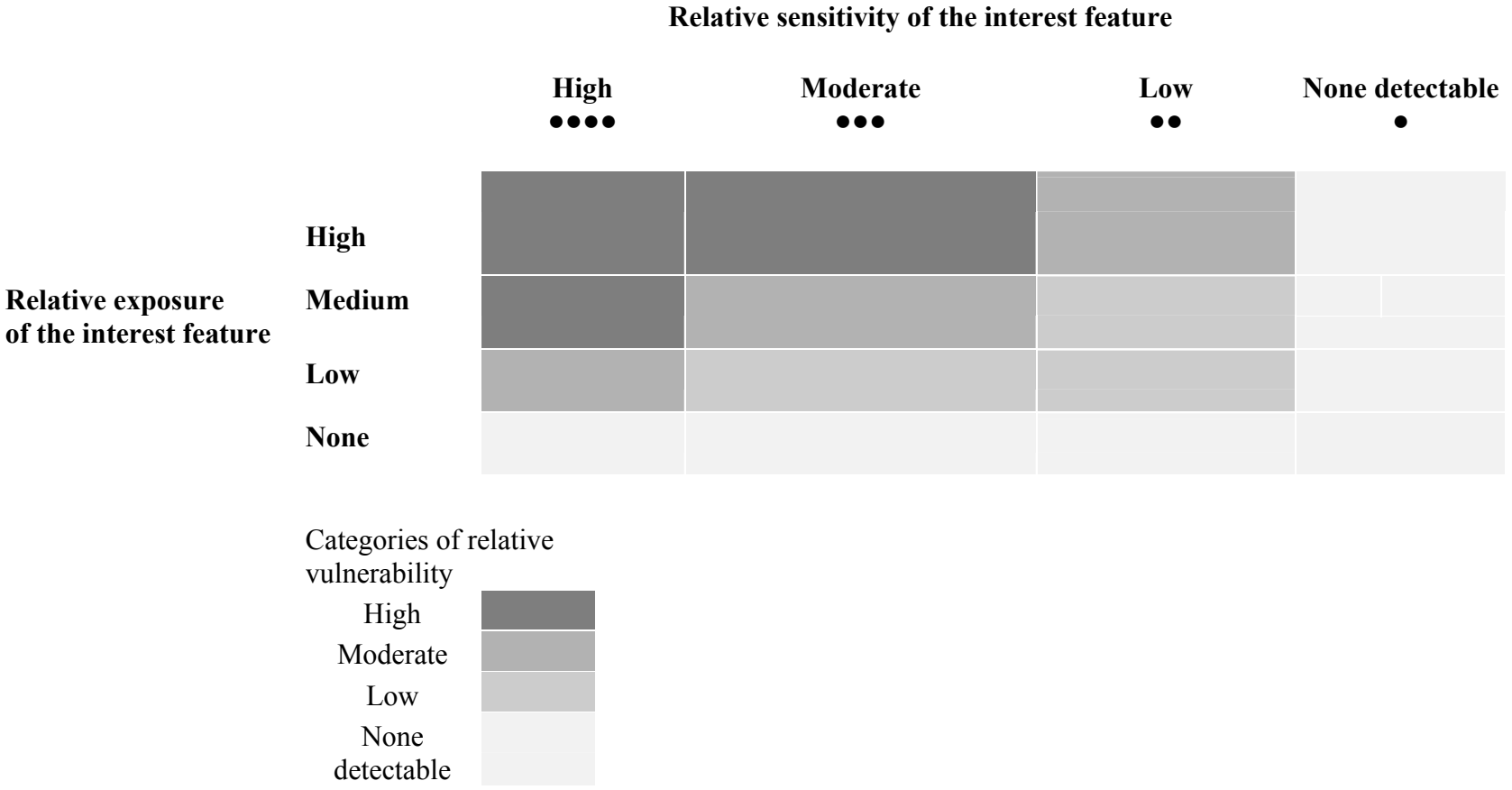
9. Glossary

Advisory Group	The body of the representatives from local interests, user groups and conservation groups, formed to advise the management group
Annex 1 Bird species	The species listed in Annex 1 of the Birds Directive are the subject of special conservation measures concerning their habitat. These measures ensure the survival and reproduction of the birds in their area of distribution. Species listed on Annex 1 are in danger of extinction, rare or vulnerable
Annex I habitat type(s)	A natural habitat(s) listed in Annex I of the Habitats Directive for which Special Areas of Conservation can be selected.
Annex II species	A species listed in Annex II of the Habitats Directive for which Special Areas of Conservation can be selected.
Annex V	The listing, in the Habitats Directive, of the animal and plant species whose taking in the wild and exploitation may be subject to management measures.
Assemblage	A collection of plants and/or animals characteristically associated with a particular environment.
Attribute	Characteristic of an interest feature/sub-feature which provides an indication of the condition of the feature or sub-feature to which it applies.
BAP	Biodiversity Action Plan.
Benthos	Those organisms attached to, or living on, in or near, the seabed, including that part which is exposed by tides.
Biotope	The physical habitat with its biological community; a term which refers to the combination of physical environment and its distinctive assemblage of conspicuous species.
Biodiversity	The total variety of life on earth. This includes diversity within species, between species and ecosystems.
Characteristic	Special to, or especially abundant in, a particular situation or biotope. Characteristic species should be immediately conspicuous and easily identified.
Circalittoral	The rocky subtidal zone below that which is dominated by algae (Animal dominated subtidal zone).
Community	A group or organisms occurring in a particular environment, presumably interacting with each other and with the environment, and identifiable by means of ecological survey from other groups.
Competent authority	Any Minister, government department, public or statutory undertaker, public body or person holding a public office that exercises legislative powers.
Conservation objective	A statement of the nature conservation aspirations for a site, expressed in terms of the favourable condition that we wish to see the species and/or habitats for which the site has been selected to attain. Conservation objectives for European marine sites relate to the aims of the Habitats Directive.
Eulittoral	The main part of the intertidal zone characterised by limpets, barnacles, mussels, fucoid algae and with red algae often abundant on the lower part.
Epifauna	Benthic animals living on the seabed.
European Marine Site	A European site which consists of, or in so far as it consists of, areas covered intermittently or continuously by seawater.
European Site	A classified SPA, designated SAC, site of Community importance (a site selected as a candidate SAC, adopted by the European Commission but not yet designated), a candidate SAC (in England only) or a site hosting a priority species in respect of which Article 5 of the Habitats directive applies.
Favourable conservation status	A range of conditions for a natural habitat or species at which the sum of the influences acting upon that habitat or species are not adversely affecting its distribution, abundance, structure or function throughout the EC in the long term. The condition in which the habitat or species is capable of sustaining itself on a long-term basis.

Favourable condition	A range of conditions for a natural habitat or species at which the sum of the influences acting upon that habitat or species are not adversely affecting its distribution, abundance, structure or function within an individual Natura 2000 site in the long term. The condition in which the habitat or species is capable of sustaining itself on a long-term basis.
Habitat	The place in which a plant or animal lives.
Habitats Directive	The abbreviated term of *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.
Halophilous	Plants which thrive in, or tolerate the presence of saline conditions.
Infauna	Benthic animals which live within the sediment.
Infralittoral	The subtidal zone in which upward facing rocks are dominated by erect algae, typically kelps.
Interest feature	A natural or semi-natural feature for which a European site has been selected. This includes any Habitats Directive Annex I habitat, or 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, in relation to that site, compliance with the requirements of the Habitats Directive.
Nationally scarce/rare	For marine purposes, these are regarded as species of limited national occurrence.
Natura 2000	The European network of protected sites established under the Birds Directive and the Habitats Directive.
Notable species	A species that is considered to be notable due to its importance as an indicator, and may also be of nature conservation importance, and which is unlikely to be a 'characteristic species'
Operations which may cause deterioration or disturbance	Any activity or operation taking place within, adjacent to, or remote from a European marine site that has the potential to cause deterioration to the natural habitats for which the site was designated, or disturbance to the species and its habitats for which the site was designated.
Plan or project	Any proposed development that is within a relevant authority's function to control, or over which a competent authority has a statutory function to decide on applications for consents, authorisations, licences or permissions.
Peak mean counts (5 yr)	Alde-Ore Estuary is broken down into count sectors. Over the winter months WeBs volunteers count all the birds which are visible within each sector. The yearly figures for each species in Alde-Ore Estuary are then averaged over a five year period to give the 5 yr peak mean count.
Relevant authority	The specific competent authority which has powers or functions which have, or could have, an impact on the marine environment, or adjacent to, a European marine site.
Restore	The action required for an interest feature when it is not considered to be in a favourable condition.
Sensitivity	The intolerance of a habitat, community or individual species to damage from an external force.
Sub-feature	An ecologically important sub-division of an interest feature.
Vulnerability	The exposure of a habitat, community or individual of a species to an external factor to which it is sensitive.
WeBS	Wetland Bird Survey: a collaborative national surveillance scheme of the UK's waterfowl based on counts undertaken once per month outside of the breeding season.

Appendix I Matrix of relative vulnerability -

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



Appendix II English Nature's 'Habitats regulation guidance note 1: The Appropriate Assessment (Regulation 48)'

Issued 25 May 2001

ENGLISH NATURE

Habitats regulations guidance note

NATURA 2000

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 English Nature 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

The key steps explained

These key steps are explained in more detail below.

I. Consulting English Nature

16. Under Regulation 48(3) the competent authority must consult English Nature and must have regard to any representations made by English Nature. It may be inferred from PPG 9 (box C10 and para C9) that the competent authority would be expected to follow the advice of English Nature and normally to decide the case "*in accordance with the recommendations of English Nature*". If it does not do so, the competent authority should be prepared to explain its reasons. In cases where it proposes to agree to a plan or project notwithstanding a negative assessment, the competent authority is required to notify the Secretary of State in advance of any decision.

II. Consulting the General Public

17. Under Regulation 48(4) the competent authority may (if it considers it appropriate) take the opinion of the general public, on the implications of the proposal for the site's conservation objectives, using whatever steps they consider necessary. This may usefully include taking the opinion of others with relevant knowledge or expertise.

III. The Site's Conservation Objectives

18. The Regulations do not define what is meant by the site's conservation objectives but PPG 9 box C10 describes them as:

"*the objectives.... / the reasons for which the site was classified or designated*"

English Nature will be able to give a clear statement of the site's conservation objectives in the light of its European Site Register entry (compiled by Government under Regulation 11), its citation, its reasons for recommendation, English Nature's knowledge of the site, national and international objectives for the international nature conservation interests (such as may be contained in the UK Biodiversity Action Plan) and any Management Plan or Management Statement for the site in so far as they relate to the interests for which the site was selected.

19. The site may also host habitats and/or species of Community interest (see Article 1 of the Habitats Directive) which are not mentioned in the European Site Register, the citation or the reasons for recommendation because they were not, at the time, a reason for classification or designation. Such features are not relevant to the appropriate assessment itself. Nevertheless their presence may be material to the decision as to whether or not to undertake or to consent to the plan or project.

IV. Requiring Further Information

20. The competent authority, taking the advice of English Nature where necessary, should require the applicant to provide such information as the competent authority may reasonably require for the purposes of making the assessment (Reg.48(2)). The information required may relate to any environmental information, or information about the proposal, relevant to the assessment and may include:

i. information already available, or
ii. new information from surveys that may need to be carried out, or
iii. data analysis, predictions, comparisons or assessments of a technical nature.

V. Identifying the Effects

21. Having regard to English Nature's advice and other consultation responses and, where relevant, taking account of the ES or any other information supplied by the developer/proposer, or otherwise available, the competent authority should identify what the effects of the proposal are likely to be. The effects considered should be those of the plan or project, either alone or in combination with other plans or projects, on the habitats and species of international importance and how those effects are likely to affect the site's conservation objectives. This will involve considering, for example, the nature, scale, geographic extent, timing, duration and magnitude of direct and indirect effects; considering the degree of certainty in the prediction of effects; considering all mitigating measures already contained in the proposal and the extent to which these measures are likely to avoid, reduce or ameliorate adverse effects on the international nature conservation interests. It is the residual effects, after mitigation, that are considered at this stage.

VI. Integrity of the Site

22. Having regard to English Nature's advice, other consultation responses and any other information available, the competent authority should decide whether the plan or project, as proposed, would adversely affect the integrity of the site, in the light of its conservation objectives. That is, whether the plan or project would adversely affect the "*coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified*" (PPG 9 box C10). An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation.

23. The form of words used in Regulation 48(5) implies that a precautionary approach should be taken in considering effects on integrity, in line with the Government's principles for sustainable development (see *Sustainable Development: the UK strategy* page 33). Regulation 48(5) says that (subject to Regulation 49) projects may only proceed if the competent authority has ascertained that it **will not adversely affect** the integrity of the European site.

VII. Considering How To Avoid Adverse Effects

24. If the proposal would adversely affect the integrity of the site then, having regard to English Nature's advice, the competent authority should consider the manner in which it is proposed to be carried out and whether the plan or project could be modified, or whether conditions or restrictions could be imposed, so as to avoid the adverse effects. This may include, for example, changes to the siting, layout, timing or use of the proposal and the use of obligations or legal agreements. (Reg. 48(6)).

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.

Appendix III List of Relevant Authorities

English Nature - Ms H Smith, Conservation Officer, English Nature, 110 Northgate Street, Bury St Edmunds, Suffolk IP33 1HP

Environment Agency - Ms M Leeds, Conservation Officer, Environment Agency, Cobham Road, Ipswich, Suffolk IP3 9JE

Eastern Sea Fisheries Joint Committee - Mr R Gay, Sea Fisheries Officer, Eastern Sea Fisheries Joint Committee, 6 North Lynn Business Village, Bergen Way, Kings Lynn, Norfolk PE30 2JG

Suffolk County Council - Mr J Hindle, Countryside Manager, Suffolk County Council, Environment and Transport, St Edmund House, County Hall, Ipswich, Suffolk IP4 1LZ

Waveney District Council - Mr P Patterson, Engineer, Waveney District Council, Town Hall, Mariners Street, Lowestoft. Suffolk NR32 1JT

Suffolk Coastal District Council - Mr J Davies, Countryside Recreation Manager, Suffolk Coastal District Council, Melton Hill, Woodbridge, Suffolk IP12 1AU

Anglian Water - Ms L Taylor, Catchment Planner, Anglian Water Services Ltd., Endurance House, Chivers Way, Histon, Cambridgeshire CB4 9ZY

Middle Alde, Lower Alde Internal Drainage Boards - Mr I Hart, Clerk to Norwich Group of IDBs, The Old School House, 4 Church Walk, Shelfanger, Diss IP22 2DU

Alderton, Hollesley & Bawdsey Internal Drainage Boards - Rebecca Barrington-Phillips, Clerk to the IDB, Alderton, Hollesley & Bawdsey IDB, High House, Bawdsey, Woodbridge, Suffolk IP12 3AW

Trinity House - Ms A Thorogood, Trintiy House, Tower Hill, London EC3N 4DH

Orford Town Trust, c/o Mr K. Bennett, Avocets, 63, Quay St, Orford, Woodbridge, Suffolk IP12 2NV

Figure 1 Location map of Alde-Ore Estuary SPA

(Note: Orfordness-Havergate SPA has been subsumed within the Alde-Ore Estuary SPA)