Haisborough, Hammond and Winterton candidate Special Area of Conservation

Formal advice under Regulation 35(3) of The Conservation of Habitats and Species Regulations 2010 (as amended), and Regulation 18 of The Offshore Marine Conservation Regulations (Natural Habitats, &c.) Regulations 2007 (as amended)

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Summary of Conservation Objectives and Advice on Operations for Haisborough, Hammond and Winterton candidate Special Area of Conservation (cSAC)

This advice is based on information on the SAC presented in Natural England (NE)/Joint Nature Conservation Committee's (JNCC) 'Haisborough, Hammond and Winterton: SAC Selection Assessment' (v 6.0 August 2010). These Conservation Objectives and Advice on Operations are site- and feature-specific, and have been developed using best available scientific information and expert interpretation as at March 2013. The advice is generated through a broad grading of sensitivity and exposure of site interest features to physical, chemical and biological pressures associated with human activity. Sensitivity and exposure scores have been combined to give a measure of the vulnerability of an interest feature to operations that may cause damage or deterioration, and which may therefore require management action.

The Conservation Objective for the Haisborough, Hammond and Winterton cSAC is to maintain the Annex I Sandbanks which are slightly covered by seawater all the time in Favourable Condition, and maintain or restore the Annex I reefs in Favourable Condition.

The exact impact of any operation will be dependent upon the nature, scale, location and timing of events. This advice on operations for the Haisborough, Hammond and Winterton site will be kept under review and will be periodically updated to reflect new evidence that suggests changes in condition or changes in sensitivity and exposure.

Management actions should enable the submarine structures made by leaking gases to achieve favourable condition. This will require assessment and management of human activities likely to affect the feature adversely, and of activities likely to impact natural environmental quality and environmental processes upon which the features are dependent.

There is a lack of detailed information on levels of exposure to human activities and their ecological impact on the feature at this site. Further information will be required to assess and monitor favourable condition of Annex I habitat Sandbanks which are slightly covered by seawater all the time and Annex I habitat Reefs at this offshore SAC.

The Haisborough, Hammond and Winterton sandbank and reef features are currently vulnerable to:

- Physical loss by removal (aggregate dredging) and obstruction (oil, gas and windfarm infrastructure) (moderate level –sandbank; high level-reef)

- Physical damage by surface and shallow abrasion (demersal fishing, aggregate dredging) (moderate level – sandbank, high level-reef)

The features are also sensitive to further pressures, outlined in Appendix E.

Therefore to fulfil the conservation objectives for these Annex I features, the Competent Authorities for this area are advised to manage human activities within their remit such that they do not result in deterioration or disturbance of the site's features from the pressures outlined above.

As demersal fishing is not subject to prior authorisation or licensing, this pressure is currently considered to pose a high risk of damage to the sandbank and reef habitats.

Haisborough, Hammond and Winterton candidate Special Area of Conservation

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

Contents

1. Introduction

Haisborough, Hammond and Winterton was formally submitted by the Government to the European Commission as a candidate SAC (cSAC) on 20 August 2010. Haisborough, Hammond and Winterton cSAC is with the European Commission awaiting 'moderation' (that is an assessment alongside all the other sites submitted by other Member States) for inclusion in the Natura 2000 network. If the European Commission approves the site, it becomes a Site of Community Importance and Government then has six years to designate it as a SAC.

The Haisborough, Hammond and Winterton cSAC is subject to full protection under the Habitats Directive[1]. Conservation of Habitats and Species Regulations 2010[2] (as amended) and the Offshore Marine Conservation Regulations (Natural Habitats, &c.) Regulations 2007 (as amended)[3] (collectively referred to in this document as the 'Habitats Regulations'). As a matter of Government policy, cSACs are afforded the same protection as Sites of Community Importance. Amongst other things, the Habitats Regulations place an obligation on Competent[4] and Relevant[5] Authorities[6] to take measures to protect the sites from damage or deterioration.

This advice is given in fulfilment of the duty of Natural England and JNCC under Regulations 35(3)[7], and 18[8] of the respective Habitats Regulations (referred to in this document as "Regulation 35/18 advice"), to provide Relevant and Competent Authorities as to (a) the conservation objectives for Haisborough, Hammond and Winterton: and (b) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the Haisborough, Hammond and Winterton cSAC has been designated.

This advice constitutes one element of NE's/JNCC's advisory role in relation to this site. The current information must be used by Relevant Authorities[9] to explore and put in place management measures (if required), and by Competent Authorities[10] to fulfil their duties under the Habitats Regulations in making the necessary determinations on the impact of activities on the site. Developers may also use this advice when operating within a site, and when providing information to Relevant/Competent Authorities as part of an application for new plans and projects. However, should Relevant or Competent Authorities or others require any further advice, they are not limited to taking account of the formal conservation advice contained here, and would be expected to make further enquiries as required in order to make determinations or implement management measures. Further information/reference should be made to the site Selection Assessment Document[11] for Haisborough, Hammond and Winterton.

An independent review of Natural England's marine SAC selection process carried out in 2011 made a number of recommendations as to how Defra and Natural England should

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[1] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

[2] http://www.legislation.gov.uk/uksi/2010/490/contents/made

[3] http://www.legislation.gov.uk/uksi/2007/1842/contents/made

[4] as defined under Regulation 6 of The Conservation of Habitats and Species Regulations 2010 and Regulations 5 & 6 of the Offshore Marine Conservation Regulations (Natural Habitats, &c.) Regulations 2007 (as amended)

[5] as defined under Regulation 6 of The Conservation of Habitats and Species Regulations 2010

[6] as defined under Regulation 6 of The Conservation of Habitats and Species Regulations 2010

[7] http://www.legislation.gov.uk/uksi/2010/490/regulation/35/made

[8] http://www.legislation.gov.uk/uksi/2007/1842/regulation/18/made

[9] as defined under Regulation 7 of The Conservation of Habitats and Species Regulations 2010

[10] http://www.legislation.gov.uk/uksi/2007/1842/regulation/23/made

[11] http://www.naturalengland.org.uk/Images/HHW-sad_tcm6-21630.pdf; and http://jncc.defra.gov.uk/pdf/HHW_SAC_SAD_v6.0.pdf

modify their approach to future evidence based work[12]. This resulted in Natural England adopting the Government Chief Scientific Adviser's (GCSA) guidelines on using evidence[13] through the development of a suite of Evidence Standards[14]. Implementation of these standards has included Natural England working with JNCC to develop a protocol[15], which has been subject to independent expert review, setting out the processes and requirements for the development of conservation advice packages, to ensure that these fully comply with the GCSA's guidelines. Whilst the conservation advice provided here was developed prior to the finalisation of the protocol, it has been assessed for compliance with the protocol and a detailed report can be found on the Natural England website[10].

During 2011/12 Government instigated a review of the implementation of the Habitats and Wild Birds Directive. The review concluded that all conservation objectives (marine and terrestrial) should be up-to date, accessible and allow applicants to assess the impact of their proposed development against them. The report[16] requested Natural England with JNCC to develop a new approach to improve the information contained in conservation objectives. Natural England and JNCC published their intended approach in June 2012, with Natural England committing to review and update its conservation objectives for all European Marine Sites to make them more definitive and explicit. We will be consulting with stakeholders on the approach, as well as how we can make our Regulation 35/18 advice more accessible and easier to use. The review of conservation advice will then begin in 2013 on a prioritised basis. We will use this review to update the advice contained within this document, to take account of new evidence that subsequently becomes available, and improved scientific understanding.

[12] http://www.defra.gov.uk/publications/files/pb13598-graham-bryce-independent-review-marine-sacs-110713.pdf

[13] http://www.bis.gov.uk/assets/goscience/docs/g/10-669-gcsa-guidelines-scientific-engineering-advice-policy-making.pdf

[14] http://www.naturalengland.org.uk/ourwork/research/default.aspx

[15] http://www.naturalengland.org.uk/ourwork/marine/sacconsultation/default.aspx

[16] http://www.defra.gov.uk/publications/2012/03/22/pb13724-habitats-wild-birds-directives/

2. Roles and responsibilities

2.1 The role of Natural England and JNCC

The Haisborough, Hammond and Winterton candidate SAC, as outlined in the SAC Selection Assessment Document[17] (version 6.0, 20 August 2010), prepared by Natural England and JNCC, lies across both English territorial waters and UK offshore waters.

The Conservation of Habitats and Species Regulations 2010 (as amended) transpose the Habitats Directive into law on land and in territorial waters of Great Britain (out to 12 nautical miles from the baseline). The Regulations give Natural England a statutory responsibility to advise Relevant and Competent Authorities on the conservation objectives and operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the sites have been designated, for European marine sites in England.

The Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended) transpose the Habitats Directive into law for UK offshore waters (from 12 nautical miles from the coast out to 200 nm or the UK Continental Shelf). These Regulations give JNCC a statutory responsibility to advise Competent Authorities of the conservation objectives for offshore Special Areas of Conservation and to advise them of operations which may adversely affect the integrity of the site.

This advice is also required under the Offshore Petroleum Activities 2001 (Conservation of Habitats) Regulations (as amended); and the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

Natural England and JNCC will provide additional advice for each site to Relevant and Competent Authorities in order for them to fulfil their duties under the Habitats Regulations, for example when a Competent Authority wishes to assess the implications of any plans or projects on a cSAC, SAC, or Special Protection Area (SPA).

2.2 The role of Relevant and Competent Authorities

2.2.1 Inshore (0 – 12 nautical miles):

The Habitats Regulations require Relevant and Competent Authorities to exercise their functions so as to secure compliance with the Habitats Directive. A single management scheme, based on this advice, which the Relevant Authorities *may* draw up under Regulation 36[18] of the Habitats Regulations would provide a framework for such a scheme. Relevant Authorities must, within their areas of competence, have regard to both direct and indirect effects on interest features of the site. This may include consideration of issues outside the boundary of the site.

2.2.2 Offshore (12 – 200 nautical miles):

Regulations 22,23, 25 and 27[19] of the Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended) outline the responsibilities of Competent Authorities to ensure compliance with the Habitats Directive. Regulation 22 requires Competent Authorities to consider appropriate conservation measures for Annex I habitats and Annex II species present within the SAC. Regulation 23 requires Competent Authorities to take appropriate steps to avoid the deterioration or disturbance of interest features for which the Offshore SAC is designated. Regulation 25 requires Competent Authorities to consider if a plan or

[17] http://www.naturalengland.org.uk/Images/HHW-sad_tcm6-21630.pdf

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

[19] http://www.legislation.gov.uk/uksi/2007/1842/contents/made

project could be likely to have a significant effect on a European Offshore Marine Site and, if necessary, undertake an appropriate assessment for the plan or project. Regulation 27 requires Competent Authorities to review existing consents, permissions or authorisations and if necessary, affirm, modify or revoke them, undertaking an appropriate assessment where necessary. Competent Authorities must, within their areas of jurisdiction, have regard to both direct and indirect effects on interest features of the site. This may include consideration of issues outside the boundary of the SAC.

2.2.3 Activity outside the control of Relevant/Competent Authorities

Nothing within Regulation 35/18 advice will require Relevant Authorities to undertake any actions or ameliorate changes in the condition of interest features if it is shown that the changes result wholly from natural causes. Having issued Regulation 35/18 advice for this site, Natural England and JNCC will work with Relevant and Competent Authorities and others to agree, within a defined time frame, a protocol for evaluating observed changes in the site's condition and to develop an understanding of natural change and provide further guidance as appropriate and possible. This does not, however, preclude Relevant and Competent Authorities from taking any appropriate action to prevent deterioration to the interest features, and indeed such actions should be undertaken when required.

2.3 The role of conservation objectives

Conservation objectives are the starting point from which management schemes and monitoring programmes may be developed as they provide the basis for determining what may currently, or in the future, result in damage or deterioration to the features of the site and therefore prevent the feature(s) of the site from achieving/maintaining 'Favourable Condition'.

The UK conservation agencies use the term 'Favourable Condition' to represent the concept of 'Favourable Conservation Status' for the interest features of an individual SAC (Davies *et al.,* 2001). For an Annex I habitat, 'Favourable Conservation Status' under the Habitats Directive occurs when: i) its natural range and area it covers within that range are stable or increasing; and ii) 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; and iii) the conservation status of its typical species is favourable[20] (Article 1e).

2.4 The role of advice on operations

The advice on operations set out in Section 4 of this document provides the basis for discussion about the nature and extent of the operations taking place within or close to the site and which may have an impact on its interest features. This advice should also be used to help identify the extent to which existing activities are, or can be made, consistent with the conservation objectives, and thereby focus the attention of Relevant and Competent Authorities and surveillance to areas that may need management measures.

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

[20] The term Favourable Conservation Status relates to the individual habitats and species over their natural range within the European Union. However, because the selection of the European network of SACs is seen as fundamental to achieving Favourable Conservation Status, the European Commission considers that the concept should also be applied at the site level.

2.5 Precautionary principle

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

3. Conservation objectives

3.1 Background to conservation objectives

The conservation objectives and definitions of favourable condition for features on the site should inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations[21,22]. An appropriate assessment will also require consideration of issues specific to the individual plan or project.

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

Following an appropriate assessment, Competent Authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in paragraph 20 of ODPM Circular 06/2005 (DEFRA Circular 01/2005)[23] as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition, at least in the short term.

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

3.2 Haisborough, Hammond and Winterton cSAC conservation objectives

The formal conservation objectives for Haisborough, Hammond and Winterton cSAC interest features are provided in sections 3.2.4 and 3.2.6. These are high-level objectives for the site's features; Natural England and JNCC may refine them in future as our understanding of the features improves and further information becomes available, such as survey work. They should be read in the context of other information, particularly:

[21] The Conservation of Habitats and Species Regulations 2010: Regulation 61 and 63 by a competent authority and Regulation 21 by Natural England.
[22] Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007 (as amended): Regulation 25 and 27 by a competent authority.
[23] http://www.communities.gov.uk/documents/planningandbuilding/pdf/147570.pdf

- the site Selection Assessment Document[24] (for Haisborough, Hammond and Winterton) which provides more detailed information about the site and evaluates its interest features according to the Habitats Directive selection criteria and guiding principles;

- the Favourable Condition Table (Appendix A) which provide information on how to recognise favourable condition for each of the features and which will act as a basis from which the monitoring programme will be developed; and

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

3.2.1 Site features

The following Annex I habitats and features are present in the site:

- Sandbanks which are slightly covered by seawater at all time; consisting of the subfeatures:
    - Low diversity dynamic sand communities
    - Moderate diversity gravelly muddy sand communities
- Reef (*Sabellaria spinulosa* reefs)

3.2.2 Sandbanks which are slightly covered with seawater all the time

Definition

Sandbanks are elevated, elongated, rounded or irregular topographic features, permanently submerged and predominantly surrounded by deeper water. They consist mainly of sandy sediments, but larger grain sizes, including boulders and cobbles, or smaller grain sizes including mud may also be present on a sandbank. Banks where sandy sediments occur in a layer over hard substrata are classed as sandbanks if the associated biota are dependent on the sand rather than on the underlying hard substrata. "Slightly covered by sea water all the time" means that above a sandbank the water depth is seldom more than 20 m below chart datum. Sandbanks can, however, extend beneath 20 m below chart datum. It can, therefore, be appropriate to include in designations such areas where they are part of the feature and host its biological assemblages. Guidance by Klein (2006) was followed for identification of the geographical extent of the sandbank features.

3.2.3 Key sandbank sub-features of Haisborough, Hammond and Winterton cSAC

The sandbank habitat of Haisborough, Hammond and Winterton cSAC can be divided into subfeatures (Entec 2008b) as follows:

Dynamic sand communities

Tidal currents are strong within the site, and sediment mobility around the crests of sandbanks in the site is high as a result of the predominantly sandy sediments in the area. The dynamic crests of the sandbanks are characterised by low diversity polychaete-amphipod communities of low biodiversity. The infaunal communities are adapted to this environment by being able to rapidly re-bury themselves into this dynamic environment.

[24] http://www.naturalengland.org.uk/Images/HHW-sad_tcm6-21630.pdf

Gravelly muddy sand communities

The flanks of the sandbanks are more stable than the tops with areas characterised by gravelly muddy sands. These areas show more diverse infaunal and epifaunal communities. Areas of reduced sediment movement support communities of attached bryozoans, hydroids and sea anemones. Sand mason worms *Lanice conchilega and* keel worms *Pomatoceros* sp. along with bivalves and crustaceans are also associated with this sub-feature.

3.2.4 The formal conservation objectives for Annex 1 Sandbanks which are slightly covered by seawater all the time:

Subject to natural change[25] maintain[26] the sandbanks in favourable condition[27], in particular the sub-features:

Low diversity dynamic sand communities
Gravelly muddy sand communities

3.2.5 Reef (*Sabellaria spinulosa* reefs)

Definition

Reefs can be either biogenic concretions (i.e. a structure created by the animals themselves, such as mussels) or of geogenic origin (i.e. where animal or plant communities grow on raised or protruding rock). Only a few invertebrate species are able to develop biogenic reefs. The most important biogenic reef forming species in inshore British waters are *Sabellaria alveolata*, *Sabellaria spinulosa*, *Mytilus edulis*, *Modiolus modiolus* and *Serpula vermicularis* (Holt *et al*., 1998). Of these species, current evidence shows *Sabellaria spinulosa* reefs to be present in the Haisborough, Hammond and Winterton cSAC. Biogenic reefs can have a number of important effects on the physical environment: they often stabilise sands, gravels and stones; the shells or tubes of the organisms themselves provide hard substrata for attachment of sessile organisms; they may provide a diversity of crevices, surfaces and sediments for colonisation; and accumulated faeces, pseudofaeces and other sediments may be an important source of food for other organisms (Holt *et al*., 1998; Limpenny *et al*., 2010, Hendrick *et al*., 2011). For these reasons many biogenic reefs have a very rich associated fauna and flora, which at least in terms of macrofauna is often much richer and more diverse than in surrounding areas (Holt *et al*., 1998; Hendrick *et al*., 2011; Pearce *et al*., 2007). Guidance by Gubbay (2007) was followed for identification of *Sabellaria spinulosa* reef features.

3.2.6 The formal conservation objectives for Annex 1 *Sabellaria spinulosa* reefs:

Subject to natural change maintain or restore[28] the reefs in favourable condition.

[25] **Natural change** refers to changes in the habitat which are not a result of human influences. Human influence on the interest features is acceptable provided that it is proved to be/can be established to be compatible with the achievement of the conditions set out under the definition of favourable condition for each interest feature. A failure to meet these conditions, which is entirely a result of natural process will not constitute unfavourable condition, but may trigger a review of the definition of favourable condition.

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

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

Acoustic and ground-truth data indicate that the Haisborough Tail reef and the Winterton Ridge reef are both un-impacted by anthropogenic activity at the time of designation. However, VMS data indicates that demersal trawl fishing activity is seen to overlap with the Haisborough Gat biogenic reef within the site. Where this occurs multibeam data indicates that damage or deterioration to the reef structure has resulted, as seen by trawl scars (Limpenny *et al.*, 2011). In addition, several examples of damaged reef were observed outside the site boundary. The Haisborough, Hammond and Winterton cSAC Annex I reefs currently have a conservation objective of 'maintain' or 'restore' to reflect this divergence. Future survey work will further refine the evidence base for this site and will help to determine whether any changes to the conservation objectives for the site are needed in future.

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

1. Extent of the habitat (and elevation and patchiness for reef)
2. Diversity of the habitat
3. Community structure of the habitat (e.g. population structure of individual species and their contribution to the functioning of the habitat)
4. Natural environmental quality (e.g. water quality, suspended sediment levels, etc.)

These Conservation objectives have been provided in association with a 'Favourable Condition' table (Appendix A), which outlines how to recognise favourable condition for the interest features/sub-features in question.

To improve knowledge on the existing condition of qualifying interest features, and the preferred or target condition of interest features, a baseline survey was undertaken in 2011. This may result in the revision/addition of reef categories in areas of the site, which are not currently stated in the favourable condition table nor the conservation objectives.

3.3 Background to favourable condition tables

The favourable condition table (Appendix A) further defines favourable condition for the interest features and sub-features of the site.

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

Where there are more than one year's observations on the condition of marine habitats, all available information will need to be analysed to determine, where possible, any natural environmental trends at the site. This will provide the basis for judgements of favourable condition to be determined in the context of natural change. Where it becomes clear that certain attributes may indicate a cause for concern, and if further investigation indicates this

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

is justified, we would advise that Relevant and/or Competent Authorities consider management action to restore the feature to favourable condition. Future advice may revise the assumptions about feature condition in light of monitoring results. This will be linked with any developments in our understanding of the structure and functioning of features and the pressures to which they are exposed.

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

The favourable condition table is the key source of information of the condition of site features. Other sources of information may also indicate the integrity and condition of the site. For example, variations within activity data may give an indication of the levels of pressure that may impact on the site features from which site condition can be inferred.

The condition monitoring programme will be developed through discussion with the Relevant and Competent Authorities and other interested parties, ideally as part of the management scheme. Natural England and JNCC 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. The condition assessment will take into account all available information, including other data on site integrity/condition that has been gathered by others for purposes such as appropriate assessment, licence applications etc. using the favourable condition table to guide the process.

4. Advice on operations

4.1 Background

In compiling this advice on operations Natural England and JNCC have considered the pressures that may be caused by activities, and the vulnerability of the sites interest features to those pressures. The following sections provide information to help relate general advice to each of specific interest features for the Haisborough, Hammond and Winterton cSAC to current levels of human usage. This is aimed at being a broad assessment of operations and the vulnerability of features.

Scores of relative vulnerability and their derivation are provided in Appendix C. A summary of the operations which may cause deterioration or disturbance is given in Appendix D, and detailed in Appendix E. Further explanation of the sensitivity of the interest features or sub-features follows with examples of their exposure and therefore their vulnerability to damage or disturbance from the listed categories of operations. This enables links to be made between the categories of operation and the ecological requirements of the features.

4.2 Purpose of advice

The purpose of this advice is to enable all Relevant Authorities to direct and prioritise their management of activities that pose a potential threat to the favourable condition of interest features at Haisborough, Hammond and Winterton cSAC.

The advice given here will inform, but is given without prejudice to, any advice provided under Regulation 61 or Regulation 63 (for the inshore), and Regulation 25 or Regulation 27 (for the offshore) (of the respective Habitats Regulations), on operations that qualify as plans or projects within the meaning of Article 6 of the Habitats Directive.

4.3 Methods for assessment

Six broad Pressure Categories which may cause i) deterioration of natural habitats within the site (either alone or in combination), are considered in this document:

- Physical Loss
- Physical Damage
- Non-physical disturbance
- Toxic contamination
- Non-toxic contamination
- Biological disturbance

Example sources of pressures are provided (see Appendices D and E), although these examples are not inclusive of all potentially detrimental activities.

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

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

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

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

This consistent three step process enables Natural England and JNCC to both explain the reasoning behind our advice and identify to Relevant and Competent Authorities those operations which pose the greatest current threats to the favourable condition of the interest features on the site.

The best-available site-specific data on biotopes and species associated with the Annex I features or sub-features (Appendix G) were used for this assessment.

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 broad categorisation to minimise uncertainty in information, reflecting the current state of our knowledge and understanding of the marine environment.

This approach therefore:

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

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

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

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

Features not vulnerable to a pressure either because they are not sensitive or not exposed to that pressure, are not considered further in this advice.

4.3.1 Sensitivity assessment

The sensitivity assessment used is an assessment of the relative sensitivity of the interest features or the component sub-features, i.e. sandbanks and biogenic reef, to the broad pressure categories.

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

The sensitivity of the sub-features was based on the sensitivities of their component biotopes (Appendix G), where sensitivity assessments were available. Biotope sensitivities for sandbanks were derived from the Marine Life Information Network (MarLIN) biology and sensitivity database (Tyler-Walters & Hiscock, 2003). Biotope sensitivities were assessed using the MarLIN approach (Hiscock & Tyler-Walters, 2006; Tyler-Walters & Hiscock, 2005; Tyler-Walters *et al*., 2001). Sensitivities are available from the MarLIN website[29].

Our assessment of the sensitivity of *Sabellaria spinulosa* reef is based on Tillin *et al*., 2010; Hendrick, Foster-Smith & Davies, 2011; and Last *et al*., 2011. The MarLIN website assesses the sensitivity of *Sabellaria spinulosa* individuals, and biotopes, but not specifically the reef feature itself.

4.3.2 Exposure assessment

This has been undertaken for Haisborough, Hammond and Winterton cSAC by assessing the relative exposure of the interest features, or their component sub-features, on, or adjacent to, the site to the effects of the broad pressure categories related to the human activities currently occurring on the site. These assessments were made on the basis of the best available information and advice. Appendix E contains the relative exposure of the Haisborough, Hammond and Winterton cSAC's sub-features to these physical, chemical and biological pressures, with further detailed information provided within section 5 below.

[29] www.marlin.ac.uk

As offshore sites cover a relatively large geographical area and precise information on operations within SAC boundaries is not available, assumptions need to be made about the spatial extent, frequency and intensity of the pressures associated with some offshore activities. Expert judgement was used to determine which activities on or near the site are likely to affect interest features physically, chemically or biologically. Spatial data on offshore industry activities has been provided by the Crown Estate for aggregate extraction and windfarm development, UK Deal for oil and gas industry activities, and the United Kingdom Cable Protection Committee for submarine cable distribution. UK-wide fisheries data for offshore waters are not yet available to JNCC at sufficient resolution to enable a precise assessment of exposure to different types of fishing activities.
Fishing exposure data was also derived from work on a Defra marine biodiversity research programme (MB106)[30]. Estimations of fishing activity were derived from Vessel Monitoring System (VMS) data and are available for 2006-9. The data shows activity from all vessels (both UK and non-UK registered vessels) of at least 15m in length. MMO VMS data for UK vessels were linked to skipper logbook information in order to determine the fishing gear being employed (data anonomlysed before use). For non-UK registered vessels where logbook information is not available, information on fishing gear employed has been obtained from 'primary gear' listed on the EU vessel register. Unprocessed VMS data have been filtered using a simple speed rule of between 1 and 6 knots to indicate fishing activity for all gear types. Date and time information attached to unprocessed VMS data were used to determine elapsed time between consecutive VMS locations for each vessel (usually 2 hours) and summarised at a resolution of 0.05 decimal degrees. The same programme assessed distribution of potting activity, though this may not take account of potting from vessels less than 15m in length.

From landings data (for UK- and non-UK vessels landing to UK ports), provided by the Marine Management Organisation (MMO) information is also available on which target species are removed from the ICES rectangle within which the site is based using particular gear types and the size of the vessel used. In some instances this may prove useful in indicating whether or not the feature is exposed to biological disturbance through extraction of species. However, this information obviously cannot take account of non-target species which may be caught. Additional research is needed to assess the distribution of static/set demersal gear use and the intensity of its physical and biological impacts. Vulnerability to these gears has been broadly assessed but is possibly an underestimate with low confidence.

The exposure assessment is based on best available information on the levels of pressures associated with activities at the Haisborough, Hammond and Winterton site. While it is accepted that different gear types exert differing levels and types of pressures on the marine environment, it has not been possible to give consideration to this within the current assessment because there is insufficient information currently available to do so. For the purposes of this broad assessment of exposure to pressures associated with fishing activities, it has been assumed that all demersal gears interact with the feature in a similar way, exerting similar levels of pressures. JNCC and Natural England therefore have necessarily lower confidence in the assessment of interest feature exposure and vulnerability to pressures associated with demersal fishing activities.

If new information becomes available this may lead to modification of this advice.

[30] Cefas (2010) Report no. 1: Objective 1 – Provision of geo-database containing standardised layers showing the distribution of specified activities, sites and resources with associated metadata and comments. Project MB106: Further development of marine pressure data layers and ensuring the socio-economic data and data layers are developed for use in the planning of marine protected area networks.

Activities not currently occurring on the site may be proposed in future; Competent Authorities will need to take into account both the sensitivity of the feature and the conservation objectives outlined in sections 3.2.5 and 3.2.6 whenever assessing the potential effects of new activities

4.3.3 Vulnerability assessment

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

4.4 Update and review of advice

Information on operations which may cause deterioration of natural habitats for which the site has been designated, is provided in light of what Natural England and JNCC know about current and recent activities and patterns of usage in the vicinity of the Haisborough, Hammond and Winterton cSAC. Natural England and JNCC expect that the information on activities and patterns of usage will be refined as part of the process of developing any management scheme and through discussion with the Relevant and Competent Authorities. As part of this process the option of identifying a number of spatial zones with different activity levels may be appropriate. It is important that 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 information was gathered. In contrast, the information provided in this advice on the sensitivity of interest features or sub-features is relatively stable and will only change as a result of an improvement in our scientific knowledge, which will be a relatively long term process. Advice for sites will be kept under review and will be periodically updated through discussions with Relevant and Competent Authorities and others to reflect significant changes in our understanding of sensitivity together with the potential effects of plans and projects on the marine environment.

5. Specific advice on operations for Haisborough, Hammond and Winterton cSAC

The following sections provide information to help relate the general advice on those activities likely to result in damage or deterioration of features to each of the specific interest features of the Haisborough, Hammond and Winterton cSAC.

This advice relates to the vulnerability of the interest features and sub-features of the Haisborough, Hammond and Winterton cSAC as summarised in Appendix D and detailed in the Appendix E. Further explanation of the sensitivity of the interest features or sub-features follows with examples of their exposure and therefore their vulnerability to damage or disturbance from the listed categories of operations. This enables links to be made between the categories of operation and the ecological requirements of the features.

Appendix E shows the sensitivity assessments for the features and sub-features of the Haisborough, Hammond and Winterton candidate SAC. They are drawn from the MarLIN (MarLIN, 2011) for sandbanks and from MCZ sensitivity advice for habitats FOCI for *Sabellaria spinulosa* reef. The evaluations presented are directly associated with sensitivities of biotopes known to be present within the SAC. The evaluations do not cover biotopes that are potentially present (Entec, 2008b).

5.1 Sandbanks which are slightly covered with sea water all the time

Sub-feature 1 - Dynamic sand communities

There is no direct assessment of the 'dynamic sand communities' on the MarLIN website (the widely used reference database for information on habitat ecology, distribution, species composition and likely sensitivity to human activities and natural events). Site-specific biotopes associated with dynamic sand communities were used to assess this sub-feature. Assessment relied on the availability of a MarLIN sensitivity assessment and, in line with the precautionary principle, when more than one biotope was present in a sub-feature, the highest MarLin sensitivity value present was used to represent this sub-feature.

Sub-feature 2 – Gravelly muddy sand communities

There is no direct assessment of the sandbanks which are slightly covered by seawater all the time sub-feature 'Gravelly muddy sand communities' on MarLIN website. Site-specific biotopes associated with Gravelly muddy sand communities were used to assess this sub-feature. Assessment relied on the availability of a MarLIN sensitivity assessment and, in line with the precautionary principle, when more than one biotope was present in a sub-feature, the highest MarLin sensitivity value present was used to represent this sub-feature.

The applicability of the MarLIN assessments of sensitivity is dependent on the quality of available scientific information on these biotopes and their characterising species. In addition, both the biotope classification system and the MarLIN sensitivity assessments primarily rely on inshore biological data, so although they are applicable to habitats in offshore waters, confidence in these assessments in an offshore context is necessarily lower. Further detail on our approach to evaluating sensitivity can be provided on request.

5.1.1 Physical loss

Sensitivity

The interest features are sensitive to physical loss through removal at moderate levels; obstruction at high levels; and smothering at low levels.

Low diversity dynamic sand communities and gravelly muddy sand communities are relatively high energy habitats, often with a good ability to recover from physical disturbance, however, loss of distinct assemblages within the habitat sub-features through removal of sediment habitat may result in a decrease in the overall diversity of the interest feature. Any construction over the sandbank feature would lead to its (partial) removal. The natural development (shift in location and shape of a sandbank) and recovery of the feature may be prevented by any permanent infrastructure itself, but also through changes in the local hydrographic regime, caused by the obstruction. Lowering of the seabed through aggregate dredging can cause hydrographic changes which has the potential to impact sandbank form and function.

The feature's ecological communities are also sensitive to smothering at a low level, particularly the lower lying or encrusting typical species.

Exposure
The sandbank features are exposed to physical loss through removal at low levels (gas industry infrastructure, aggregate industry), obstruction at low levels (gas industry and windfarm infrastructure), and smothering at low levels (aggregate dredging).

The primary impact of aggregate extraction will result in the removal and lowering of seabed surface (along with associated infauna and epifauna) within the path of the dredgehead. Two active aggregate licensed areas overlap very slightly with the sandbank feature (southern tip of Middle Cross Sand). A number of gas fields overlap the northern and eastern boundaries of the site. Associated surface and seabed infrastructure, and pipelines carrying gas and other chemicals to shore are found throughout the site. There are four windfarm companies, either operating, under construction or have the lease within the site, with associated cables.

Vulnerability
Overall the vulnerability of dynamic sand communities and gravelly muddy sand communities within the Haisborough, Hammond and Winterton cSAC to physical loss through removal and smothering is considered to be low and; through obstruction is considered to be moderate.

5.1.2 Physical damage

Sensitivity
The sandbank features are sensitive to physical damage through changes in suspended sediment at low levels, and surface abrasion (<25mm) and shallow abrasion (>25mm) at low levels

Studies have shown that high suspended sediment loads would be unlikely to affect the communities in this area as they are evolved to exist in high turbidity waters.

Low diversity dynamic sand communities are characterised by frequent disturbance by tidal currents, and contain organisms which are adapted to recurrent erosion and accretion (for example, polychaetes and amphipods which are able to re-burrow rapidly following disturbance). Following significant disturbance, communities can re-establish relatively quickly from the planktonic larval pool or migration from areas nearby, particularly as communities are largely composed of opportunistic species. Indications are that this re-establishment can occur within a few tidal cycles (Sherman & Coull 1980, Palmer 1988, Giere, 1993).

Gravelly muddy sand communities are generally based on more stable sediments with higher levels of organic matter. Whilst exposed to tidal currents, the habitats tend to be more diverse and contain a wide range of infauna and epifauna. These communities are more sensitive to physical damage as it takes longer for sediments and ‘climax’ communities to re-establish.

Exposure
The site features are exposed to physical damage through changes in suspended sediment at low levels (aggregate dredging, demersal trawling) and to surface abrasion (<25mm) and shallow abrasion (>25mm) at low levels (demersal trawling).

Studies have shown that the production of sediment plumes from aggregate dredging can be negligible in context of background suspended sediment concentrations (Hitchcock & Drucker, 1996; Newell *et al.*, 1998; Newell *et al.*, 2002). This may be the case here as strong tidal currents characterise the area (HR Wallingford *et al,* 2002).

Physical damage by abrasion is likely to be caused by demersal fishing gear, particularly towed demersal gear. Bottom trawling on a sandy seabed can reduce sediment cohesion (which affects the structure and function of the sandbank), and affect the composition of the associated communities, causing a reduction in diversity. Gill nets and pots have some interaction with the seabed but this is considered minimal. There is evidence that part of the reef (Gat reef) has been damaged by benthic trawling, as evidenced by trawl scars observed on survey conducted for East Coast Regional Environmental Characterisation assessments.

VMS data (2006-2009) and information supplied by the MMO (formerly the Marine and Fisheries Agency (MFA) indicate that within the site gillnetting, dredging, potting, bottom otter trawling and beam trawling by UK vessels takes place at low levels. Dutch, Belgian, French and possibly Danish vessels operate around Smith's Knoll. Dutch and Belgian beam trawlers target flat fish such as Dover sole and a wide variety of other demersal species. About five French vessels use otter trawls to target demersal and pelagic species whilst Danish vessels usually target cod with gill nets. There is also some long-lining but as it is not clear whether this is anchored, it is not possible to assess its potential impact.

Vulnerability
Overall the vulnerability of dynamic sand communities and gravelly muddy sand communities within the Haisborough, Hammond and Winterton cSAC to physical damage is considered to be low for both sub-features.

5.1.3 Toxic contamination

Sensitivity
The site features are exposed to toxic contamination through synthetic and non-synthetic compounds at low levels.

For many benthic communities, the sensitivity of exposure to different chemicals is unknown, or limited to a small number of toxicity studies on specific species. Based on available published information considered by the MarLIN sensitivity assessment, the sensitivity of low diversity dynamic sand communities and gravelly muddy sand communities has been classified as low.

There is insufficient evidence available to determine whether the interest feature is sensitive to toxic contamination through the introduction of radionuclides.

Exposure
The site features are exposed to toxic contamination through synthetic and non-synthetic compounds at low levels (onsite oil and gas industry activities and shipping).

Vessel traffic passes through the site on route to and from the inner and outer Wash ports, and the Thames ports. Whilst this increases the risk of contamination by accidental spillages of fuel or cargo, vessel traffic through the site is not heavy. It is possible that the extraction of gas from fields in the outer sections of the site will contribute to the level of toxic contamination to which the benthic communities are exposed.

Vulnerability
Overall the vulnerability of dynamic sand communities and gravelly muddy sand communities within the Haisborough, Hammond and Winterton cSAC to toxic contamination is considered to be low for both sub-features.

5.1.4 Non-Toxic contamination

Sensitivity
In accordance with the MarLIN sensitivity assessment, the dynamic sand communities are assessed to be sensitive to non-toxic contamination through changes in nutrient loading and organic loading at low levels. The gravelly muddy sand communities assessed to be sensitive to non-toxic contamination through changes in nutrient loading and organic loading at moderate levels. Both sand communities are sensitive to increases in turbidity at low levels, but not to decreases in turbidity. They are also sensitive to changes in thermal regime at low levels and to changes in salinity at moderate levels.

Exposure
The sandbank features are exposed to non-toxic contamination through changes in turbidity at low levels (aggregate dredging, demersal trawling).

The sandbanks are considered to be exposed to changes in turbidity due to cable laying. As the duration of these activities is short, the exposure is considered to be low.

Land run-off and sewage from shipping and platforms could potentially lead to changes in water quality at sea and in turn impact on the resident biology. Although the western section of the Haisborough, Hammond and Winterton site is located close to the shore, there are no significant point sources of nutrient or organic input to the site, or any thermal or low salinity discharges.

Vulnerability
Overall the vulnerability of dynamic sand communities and gravelly muddy sand communities within the Haisborough, Hammond and Winterton cSAC to non-toxic contamination through changes in turbidity is considered to be low for both sub-features.

5.1.5 Biological disturbance

Sandbank sub-features are sensitive to biological disturbance through the selective extraction of species at a moderate level.

Removal of fish and crustacean species can have significant impacts on the structure and functioning of some benthic communities over and above the physical effects of fishing methods, particularly as some fish species fill upper roles in the trophic web, and shrimp are important prey items.

Exposure
The site features are exposed to selective extraction of species at unknown levels (demersal fishing).

Some sections of the site are actively trawled, for sand eel and shrimp, and static gear is used in other parts of the site (largely for crab) (Royal Haskoning/LPC Norfolk Offshore Wind, 2002). However, landings information for this site cannot be accurately assessed as such information is collated for all fisheries in the two ICES rectangles in which the site is located.

In addition, bottom trawling, and static gear to a lesser extent, may also result in a significant bycatch of non-target species.

Vulnerability

Overall the vulnerability of dynamic sand communities and gravelly muddy sand communities within the Haisborough, Hammond and Winterton cSAC to biological disturbance is considered to be low for both sub-features.

It has not been possible to determine the degree to which the interest feature is exposed to Noise (acoustic), the Introduction of radionuclides, microbial pathogens or non-native species.

5.2 *Sabellaria spinulosa* reef

There is no direct assessment of *Sabellaria spinulosa* reef on the MarLIN website. The closest biotope, *Sabellaria spinulosa* on stable circalittoral mixed sediment (SS.SBR.PoR.SspiMx), does not have a full sensitivity assessment, and covers regions of crust and loose lying layers of *Sabellaria spinulosa* as well as reef. Our assessment of the sensitivity of Sabellaria spinulosa reef is based on Tillin *et al*., 2010; Hendrick, Foster-Smith & Davies, 2011; and Last *et al*., 2011. Further detail on our approach to evaluating sensitivity can be provided on request.

5.2.1 Physical loss

Sensitivity
The interest feature is sensitive to physical loss through removal at high levels, and obstruction at high levels

Sabellaria spinulosa reefs are considered to be highly sensitive to physical loss through removal. *Sabellaria spinulosa* reef provides an important hard substrate within a predominately soft-sediment environment, which provides unique refuge for certain species. Biogenic reefs increase habitat heterogeneity and offer associated species a surface for attachment (e.g. tubeworms, hydroids, bryozoans, sponges and ascidians), and a place to escape from predation (Bruno & Bertness, 2001). Any construction on the reef feature would lead to its (partial) removal.

The reef is highly sensitive to obstruction. Any permanent infrastructure may prevent their natural recovery through obstruction.

As *Sabellaria spinulosa* reefs are adapted to moderate sediment loads, they are not considered sensitive to smothering.

Exposure
The reef feature is exposed to physical loss through obstruction at moderate levels (gas industry infrastructure).

See exposure information provided under ‘Physical Loss’ for sandbanks above.

Aggregate extraction does not take place in/near mapped reef areas and is therefore not contributing to the removal or smothering of reef features.

Vulnerability
Overall the vulnerability of *Sabellaria spinulosa* reef within the Haisborough, Hammond and Winterton cSAC to physical loss through obstruction is considered to be high.

5.2.2 Physical damage

Sensitivity

The reef feature is sensitive to physical damage through surface abrasion (<25mm), and shallow abrasion (>25mm) at high levels.

Studies have shown that high suspended sediment loads would be unlikely to affect *Sabellaria spinulosa* reef as they are evolved to exist in, and are dependent on such waters to promote reef growth. Therefore, the reef is not considered to be sensitive to changes (increases) in suspended sediments loads. However a decrease in suspended sediment loads may affect the ability for reef generation/evolution and/or maintenance.

If the physical structure of the reef is damaged or destroyed the habitat will reduce in diversity. In general, whilst the reef is able to recover, this recovery may take some time, and is dependent on the prevailing environmental conditions (Pearce *et al.*, 2007; Limpenny *et al*., 2010; Hendrick *et al*., 2011). *Sabellaria spinulosa* reef is considered highly sensitive to both physical disturbance or abrasion, and displacement.

Exposure
The site features are exposed to changes in suspended sediment at low levels (demersal trawling) and to surface abrasion (<25mm) and shallow abrasion (>25mm) at low levels (demersal trawling).

See exposure information provided under 'Physical Damage' for sandbanks above.

Aggregate extraction does not take place in/near mapped reef areas and is therefore not considered to impact the reef features.

Vulnerability
Overall the vulnerability of *Sabellaria spinulosa* reef within the Haisborough, Hammond and Winterton cSAC to physical damage through surface abrasion (<25mm) and shallow abrasion (>25mm) is considered to be moderate.

5.2.3 Non-toxic contamination

Sensitivity
Sabellaria spinulosa is considered to be sensitive to non-toxic contamination through changes in salinity at low levels**.**

Sabellaria spinulosa is also considered to have low sensitivity to changes in salinity but no exposure to this pressure hence no vulnerability to salinity changes. *Sabellaria spinulosa* is not sensitive to the other non-toxic contamination pressures (i.e. changes in nutrient loading, changes in organic loading, changes in thermal regime, or changes in turbidity) and therefore has no vulnerability to these pressures.

Exposure
The reef is exposed to changes in turbidity at low levels (demersal trawling).

See exposure information provided under 'Non-Toxic Contamination' for sandbanks above.

Vulnerability
Overall the vulnerability of *Sabellaria spinulosa* reef within the Haisborough, Hammond and Winterton cSAC to non-toxic contamination is considered to be none.

5.2.4 Biological disturbance

Sensitivity

The sensitivity of the Sabellaria reef feature to selective extraction of species (demersal fishing) is considered to be moderate.

See section 5.1.5 for more information

The interest feature is not sensitive to the introduction of microbial pathogens, or non-native species and translocation.

Exposure
The site features are exposed to selective extraction of species at unknown levels (demersal fishing).

See exposure information under ‘‘Physical Damage’ for sandbanks above

Vulnerability
Overall the vulnerability of *Sabellaria spinulosa* reef within the Haisborough, Hammond and Winterton cSAC to biological disturbance is considered to be low.

It has not been possible to determine the degree to which the interest feature is exposed to noise (acoustic), introduction of radionuclides, changes in nutrient loading, organic loading, thermal regime or turbidity, or the introduction of microbial pathogens or introduction of non-native species.

5.3 Risk Assessment

Natural England and JNCC have assessed the risk of damage to the features of the site from activities which may result in pressures to which a feature is highly or moderately vulnerable. This assessment takes account of the current management of that activity. This assessment highlights those activities that pose moderate or high risks of damage to the feature and can assist Competent Authorities in ensuring that the features achieve favourable condition.

In our assessments, high-risk activities are those to which the feature is highly or moderately vulnerable, and for which there is insufficient management. For example, industries or activities which are not location specific and not subject to prior consent procedures or reliable enforcement are more likely to cause damage/disturbance to the interest feature. These industries include fishing. However, clearly not all activities associated with these industries are detrimental to interest features.

Low-risk activities will be those where there is no feature vulnerability (i.e. the activity does not interact with the feature) or where the moderate or high vulnerability is mitigated by management measures. For example, industries that are location specific are always subject to prior consent (often including explicit environmental impact assessment) and have clear reliable methods of enforcement; there is generally a lower likelihood of causing damage or disturbance to interest features.

Under regulation 25 of the Offshore Regulations, before a Competent Authority undertakes or authorises a plan or project which may have a significant effect on the site, it is required to carry out an Appropriate Assessment to assess the implications for the site in view of its conservation objectives. The Competent Authority can only agree to the plan or project if it has ascertained that it will not adversely affect the integrity of the site but can agree to a plan or project for imperative reasons of overriding public interest (IROPI), notwithstanding its adverse effect, if there are no alternative solutions.

If consent has already been granted by a Competent Authority for a plan or project at the time a site becomes a European Offshore Marine Site, under the Offshore Habitats Regulations that consent will need to be reviewed against the conservation objectives for the site, and affirmed, modified or revoked. This includes the activities of the oil and gas, aggregates and renewable energy industry sectors.

Only high or medium risk activities are noted here, see Appendix F for the risk assessment.

Within the Haisborough, Hammond and Winterton cSAC, the following offshore activity is currently considered to pose a high risk to the interest features:

- **Demersal fishing**

Competent Authorities are advised to assess and, if necessary, consider management actions that might need to be taken to reduce the risk of damage associated with this activity to the SAC features.

6. References

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Favourable Condition Table (FCT) for Haisborough, Hammond and Winterton cSAC

Feature: Sandbanks which are slightly covered with sea water all the time
Sub-feature: General

Attribute	Measure	Target	Comment
Extent of sandbanks (Mandatory CSM attribute)	Overall area (ha) of sandbanks assessed at least once during the reporting cycle.	No decrease in extent from established baseline, subject to natural change. *Baseline partially established. Informed by Entec UK Ltd (2008a), Entec UK Ltd (2008b), Seazone Solutions Ltd (2009 a, b), MALSF (2010). Further surveys undertaken in 2011 to complete the baseline – analysis ongoing.*	Consideration of changes in extent will need to take account of the dynamic nature of the sandbank. The map (appendix B) shows the mapped extent of the features at time of publication.

Attribute	Measure	Target	Comment
Topography of sandbanks (Mandatory Common Standards Monitoring (CSM) attribute)	Depth distribution of sandbanks from selected sites, measured periodically, with frequency to be determined.	No alteration in topography of the sandbanks, subject to natural change. *Baseline partially established. Informed by Entec UK Ltd (2008a), Entec UK Ltd (2008b), Seazone Solutions Ltd (2009 a, b), MALSF (2010). Further surveys undertaken in 2011 to complete the baseline – analysis ongoing.*	The depth and distribution of the sandbanks reflects the energy conditions and stability of the sediment, which is key to the structure of the feature. However, it should be noted that subtidal sandbanks are naturally dynamic environments and sections of them may be subject to significant fluctuations in height over time, while other sections are more stable
Sediment character (Mandatory CSM attribute)	Assessed using Particle Size Analysis (PSA).Parameters include percentage sand/silt/gravel, mean and median grain size, and sorting coefficient, used to characterise sediment type.	Maintain distribution of dynamic and stable sand and mixed sediments allowing for natural fluctuations. Average PSA parameters should not deviate significantly from the baseline established for the sites, subject to natural change. *Baseline partially established.* *Preliminary data in BGS SB 250 dataset, Entec UK Ltd (2008a), Entec UK Ltd (2008b), Envision (2008), Seazone Solutions Ltd*	Sediment character is key to the structure of the sandbank, and reflects the physical processes acting on it. In addition to this, the sediment character is instrumental in determining the biological communities present on the sandbank.

Attribute	Measure	Target	Comment
		(2009 a,b), MALSF (2010).	
Distribution of sub-features and biotopes (Distribution of biotopes is Mandatory CSM attribute and Distribution of sub-features is Discretionary CSM attribute)	Distribution and extent of community types, measured by grab sampling or drop down video. Frequency and occurrence of component species of representative sandbank biotopes, SS.SSa.IMuSa.FfabMag, SS.SCS.ICS.MoeVen, SS.SMX.OMx.PoVen, SS.SMU.CSaMu.Lkor.Ppel, SSa.IFiSa.NcirBat, SS.SCS.CCS.PomB, SS.SCS.CCS.MedLumVen, SS.SSa.CFiSa.EpusOborApri, SS.SSa.IFiSa.ScupHyd, SS.SSa.IFiSa.IMoSa and SS.SCS.ICS.SLan measured once, during summer, within the reporting cycle. Distribution of has not yet been determined of the 'low diversity dynamic sand communities' and 'gravelly muddy sand	Maintain the distribution of subtidal sandbank communities, subject to natural change. *Baseline partially established for biotopes by Seiderer (2005), Entec UK Ltd (2008a), Entec UK Ltd (2008b), Gardline Environmental Ltd. (2010), (MALSF, 2010).*	Notable biotopes should be selected owing to their national significance, sensitivity, or representativity as a typical biotope for the biological zone. Where a biotope is lost from a baseline known area of presence (outside expected natural variation), leading to a loss of the conservation interest of the site, then condition should be considered unfavourable. Changes in the presence or distribution of biotopes may indicate long-term changes in the physical conditions at the site, and deterioration in the overall biological value of the site. Please refer to Appendix G for further details of the listed biotopes and where they are derived from.

Attribute	Measure	Target	Comment
	communities' sub-features		
Species composition of representative or notable biotopes (Discretionary CSM attribute)	Species composition of representative or notable biotopes is measured by grab sampling or drop down video.	No decline in biotope quality as a result of reduction in species richness or loss of species of ecological importance, subject to natural change. *Baseline yet to be established* *Preliminary data in Cooper et al. (2007), Seiderer (2005), Entec UK Ltd (2008a), Entec UK Ltd (2008b)*	Whilst some change in community composition over time is expected (for example, as part of cyclic changes or successional trends) changes in the overall nature of communities across the key representative biotopes sandbank, may indicate deterioration in the condition of the biodiversity of the sandbanks. Species composition of representative or notable biotopes is an important contributor to the structure of a biotope. The presence and abundance of a characterising species gives an indication of the quality of a biotope, and any change in composition may indicate a cyclic change or trend in the reef community. Where changes in species composition are known to be clearly attributable to natural succession, seasonal variability or mass recruitment or dieback of characterising species, then the target value should accommodate this variability. Where there is a change in biotope quality outside the expected variation or a loss of the conservation interest of the site, then condition should be considered unfavourable.

Feature: *Sabellaria spinulosa* reef
Sub-feature: General

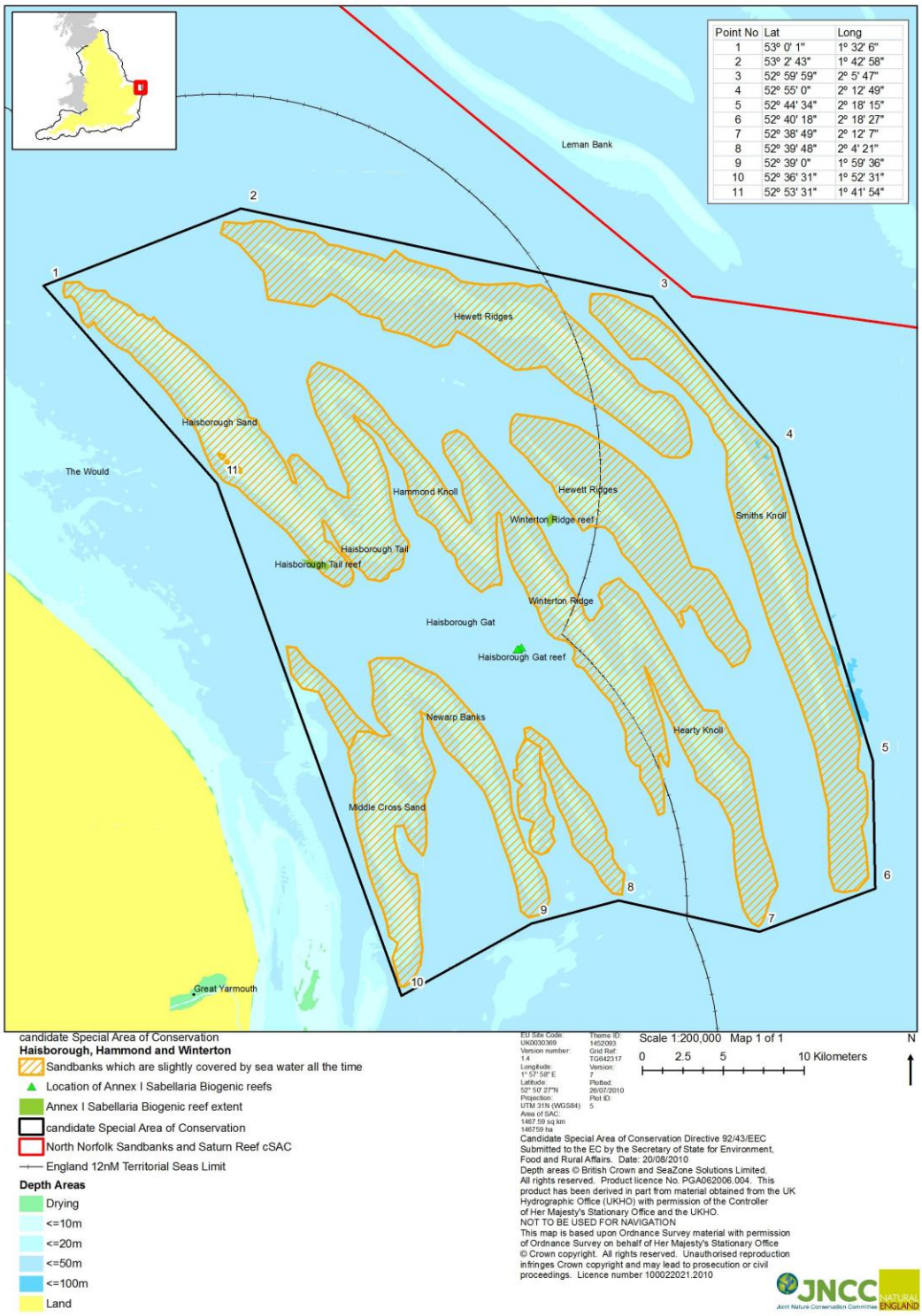
Attribute	Measure	Target	Comment
Extent of reef (Mandatory Common Standards Monitoring (CSM) attribute)	Extent of *Sabellaria spinulosa* reef, measured by side-scan sonar and ground truths by non-invasive drop down video and grab sampling if necessary once during the reporting cycle. Appropriate guidance should be followed such as that published by Limpenney *et al*., 2010 and Gubbay, 2008.	No reduction in extent of reef, subject to natural change. *Baseline partially established in Gardline Environmental Ltd. (2010) and MALSF (2010). Further survey work planned in 2011*	*Sabellaria spinulosa* reef is defined in Gubbay, 2008. Broadly speaking three core attributes need to be measured in order to establish whether reef is present and thus assess extent. These are extent itself, patchiness and elevation. At least these three attributes need to be measured using appropriate techniques and resolution in order to assess reef extent. Consideration of changes in extent will need to take account of the dynamic nature of the habitat itself and the sandbank habitats that support the reef. The map on page 7 of the site selection document shows the extent of the features.
Species composition of representative or notable biotopes / Age structure (Discretionary CSM attribute)	Species composition of representative or notable biotopes measured by non-invasive drop down video in previously sampled locations. Age structure may require limited grab sampling.	Reef shows no significant decline in community with different growth phases present subject to natural change. *Baseline yet to be established*	Whilst some change in community composition over time is expected (for example, as part of seasonal changes or successional trends) changes in the overall nature of the community across the reef, may indicate deterioration in its condition. Measurement of the Species composition of representative or notable biotopes of this feature is challenging. Remote sensing

Attribute	Measure	Target	Comment
			methods (such as side scan sonar) and drop down video although improving can be unreliable. Therefore limited grab sampling may be required to sample the benthic reef community
Presence and/or abundance of individual species (Discretionary CSM attribute)	Occurrence and frequency of species. Species to be determined.	No decline in abundance of specified species from an established baseline, subject to natural change. *Suitable species list yet to be established.*	Whilst some change in community structure over time is expected (for example, as part of seasonal changes or successional trends) changes in the overall nature of communities (including mobile species) associated with the reefs, e.g. fish, crustacean species, etc may indicate deterioration in the condition of the biodiversity of the reefs. Changes in presence and/or abundance of a species can critically affect the physical and functional nature of the habitat, leading to unfavourable condition. The species selected should serve an important role in the structure and function of the biological community. Where the field assessment judges changes in the presence and/or abundance of specified species to be unfavourable, and subsequent investigation reveals the cause is

Attribute	Measure	Target	Comment
			clearly attributable to natural succession and known seasonal change (such as mass recruitment and dieback of characterising species), the final assessment will require expert judgement by Natural England advisers to determine the reported condition of the feature. The feature's condition could be declared favourable where the expert judgement of Natural England/ JNCC advisers is certain that the conservation interest of the feature is not compromised by the failure of this attribute to meet its target condition. Where there is a change outside the expected variation or a loss of the conservation interest of the site, (e.g. due to anthropogenic activities or unrecoverable natural losses) then condition should be considered unfavourable.
Species population methods (Discretionary CSM attribute)	Limited grab sampling will be required.	Maintain age/size class structure of individual species, subject to natural change.	In a stable or increasing population all age phases are likely to be present. The presence of areas of variable stages of growth is important in ensuring larval supply and also enhances the species diversity of the reef.

Appendix B

Map showing interest features of Haisborough, Hammond and Winterton cSAC



Methods for deriving vulnerability

Sensitivity[31]	
None	-
Low	•
Moderate	••
High	•••

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

Vulnerability	
None detectable	
Low	
Moderate	
High	

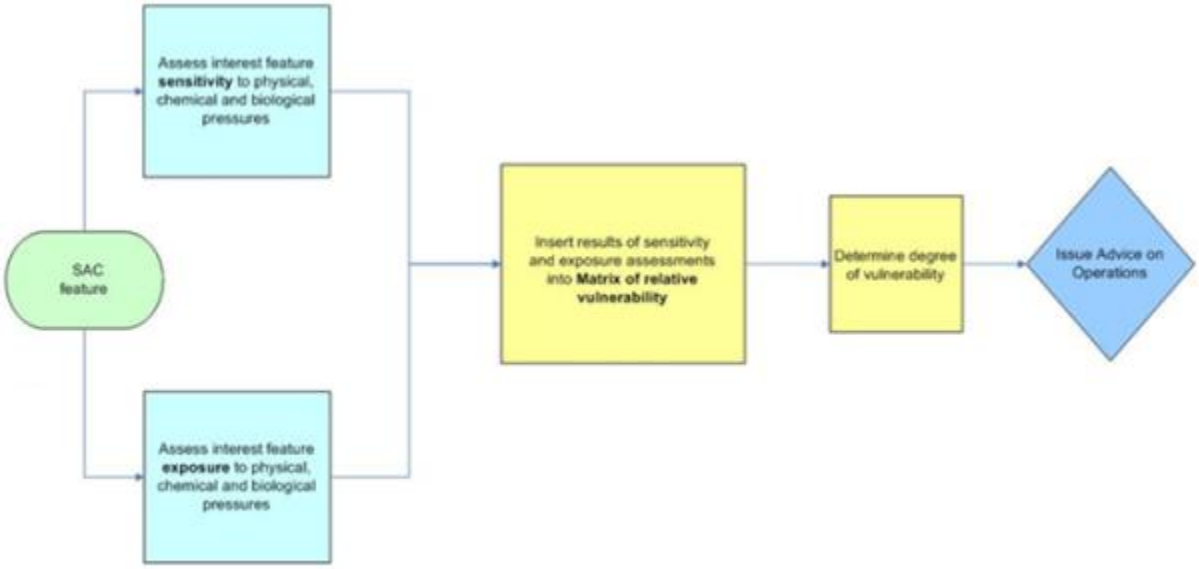
The relative vulnerability of an interest feature or sub-feature is determined by multiplying the scores for relative sensitivity and exposure, and classifying that total into categories of relative vulnerability. For the sandbank sub-features the sensitivity is as defined by MarLIN (2011) and for the *Sabellaria spinulosa* reef the sensitivity is as defined by *Sabellaria spinulosa* reef Habitat Marine Conservation Zone FOCI sensitivity determination (Tillin *et al.*, 2010). The sensitivity assessment for each activity in Appendix D for the sub-feature uses the highest (i.e. most precautionary) sensitivity for the range of biotopes used to define this sub-feature, where more than one biotope or species is related to a sub-feature (see Appendix G for list of biotopes and species sub-features consist of).

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

Categories of relative vulnerability	
High	6-9
Moderate	3-5
Low	1-2
Vulnerability identified, but not quantified as level of exposure unknown	
None detectable	0
Insufficient information to make any assessment	

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

An assessment of interest features' vulnerability helps to guide site management decisions by highlighting potentially detrimental activities that may need to be managed (or continue to be managed) by the Relevant Authorities.



Appendix D

Summary of operations which may cause deterioration or disturbance to Haisborough, Hammond and Winterton cSAC

Operations which may cause deterioration or disturbance	Haisborough, Hammond and Winterton cSAC Sandbanks slightly covered by seawater all the time	Haisborough, Hammond and Winterton cSAC *Sabellaria spinulosa* reef
Physical loss		
Removal e.g. aggregate/navigational dredging, cable/pipeline installation	✓	✓
Obstruction e.g. permanent constructions, wrecks	✓	✓
Smothering e.g. aggregate/navigational dredging and disposal of dredge spoil, bio prospecting, benthic trawling, hydraulic dredging, sewerage disposal	✓	✓
Physical damage		
Changes in Suspended Sediments e.g. aggregate/navigational dredging and disposal of dredge spoil, bio prospecting, benthic trawling, hydraulic dredging, sewerage disposal	✓	✓
Surface abrasion (<25mm) e.g. bio prospecting, benthic trawling, potting/creeling, shellfish harvesting, boating, anchoring	✓	✓
Shallow abrasion (>25mm) e.g. aggregate dredging)	✓	✓
Non-physical disturbance		
Noise e.g. boat activity, seismic	***X*** [2]	***X*** [2]
Visual presence e.g. recreational activity	***X*** [2]	***X*** [2]
Toxic contamination		
Introduction of synthetic compounds e.g. pesticides, TBT, PCBs, antifoulants, pharmaceuticals	✓	✓
Introduction of non-synthetic compounds e.g. heavy metals, hydrocarbons	✓	✓
Introduction of radionuclides	***X*** [2]	**(✓)**
Non-toxic contamination		
Changes in nutrient loading e.g. agricultural run-off, outfalls, aquiculture/mariculture, industrial/sewerage discharges	***X*** [2]	***X*** [1]

Operations which may cause deterioration or disturbance	Haisborough, Hammond and Winterton cSAC Sandbanks slightly covered by seawater all the time	Haisborough, Hammond and Winterton cSAC *Sabellaria spinulosa* reef
Changes in organic loading e.g. agricultural run-off, outfalls, aquiculture/mariculture, industrial/sewerage discharges	***X*** [2]	***X*** [1]
Non-toxic contamination (cont.)		
Changes in thermal regime e.g. power stations	***X*** [2]	***X*** [1]
Changes in turbidity e.g. run-off, aggregate/navigational dredging, benthic trawling, hydraulic dredging, cable/pipeline installation, coastal infrastructure (ports, marinas, coastal defences), oil & gas platforms, wind/wave turbines	✓	✓
Changes in salinity e.g. water abstraction, outfalls	***X*** [2]	***X*** [1]
Biological disturbance		
Introduction of microbial pathogens e.g. outfalls	***X*** [2]	**(✓)**
Introduction of non-native species and translocation e.g. ballast water, hull fouling	***X*** [2]	***X*** [2]
Selective extraction of species e.g. bait digging, wildfowling, commercial & recreational fishing), scientific research, bio-prospecting)	✓	✓

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

X [1] Represents where the feature of the SAC is sensitive to but not exposed to the activity.

X [2] Represents where the feature of the SAC is not sensitive to and is not exposed to the activity.

It should be noted that the above examples of operations are indicative and not comprehensive and does not preclude the need for all future activities to be considered by Relevant and Competent Authorities with regard to the feature conservation objective and its sensitivity to various pressures.

Appendix E

Assessment of relative vulnerability of interest features and sub-features of Haisborough, Hammond and Winterton cSAC to different categories of operations (see Appendix C for key)

Operations which may cause deterioration or disturbance	**Annex 1 Sandbanks which are slightly covered with seawater all the time**						**Annex 1 *Sabellaria spinulosa* reefs**		
Sub-feature	**Dynamic sand communities**			**Gravelly muddy communities**			**-**		
	Sensitivity	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**
Physical loss									
[32]Removal (e.g. harvesting, coastal development)	●●	+	Low	●●	+	Low	●●●	-	None
Obstruction (e.g. permanent constructions [oil & gas infrastructure, windfarms, cables] & wrecks)	●●●	+	Moderate	●●●	+	Moderate	●●●	++	High
Smothering (e.g. by artificial structures, disposal of dredge spoil)[33]	●	+	Low	●	+	Low	-	-	None
Physical damage									
Changes in suspended sediment (e.g. run off, channel dredging, outfalls)[34]	●	+	Low	●	+	Low	-	+	None detectable

[32] This is equivalent to 'Substratum loss' in MarLIN sensitivity analysis and 'Physical removal' in MCZ sensitivity analysis.
[33] This is equivalent to 'Smothering' in MarLIN sensitivity analysis and 'Siltation rate (High)' in MCZ sensitivity analysis.
[34] This is equivalent to 'Increase in turbidity' and 'Decrease in turbidity' in MarLIN sensitivity analysis and 'Siltation changes (Low)' in MCZ sensitivity analysis.

Operations which may cause deterioration or disturbance	Annex 1 Sandbanks which are slightly covered with seawater all the time						Annex 1 *Sabellaria spinulosa* reefs		
Sub-feature	**Dynamic sand communities**			**Gravelly muddy communities**			**-**		
	Sensitivity	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**
Physical damage									
Surface abrasion (<25mm) (e.g. mobile benthic fishing gear, anchoring, windfarm scour pits, pipeline burial)	•	+	Low	•	+	Low	•••	+	Moderate
[35]Shallow abrasion (>25mm) (e.g. aggregate dredging)	•	+	Low	•	+	Low	•••	+	Moderate
Non-physical disturbance									
Noise (e.g. boat activity, seismic, piling)	-	Unknown Level	None detectable	-	Unknown Level	None detectable	-	Unknown Level	Insufficient information
Visual presence (e.g. recreational activity)	-	-	None detectable	-	-	None detectable	-	-	None detectable
Toxic contamination									
Introduction of synthetic compounds (e.g. pesticides, TBT, PCBs)	•	+	Low	•	+	Low	•	+	None
Introduction of non-synthetic compounds (e.g. heavy metals, hydrocarbons)	•	+	Low	•	+	Low	•	+	None
Introduction of radionuclides	Insufficient information	Unknown level	Insufficient information	Insufficient information	Unknown level	Insufficient information	-	Unknown level	None

[35] This is equivalent to 'Displacement' in MarLIN sensitivity analysis and 'Penetration and/or disturbance of the substrate below the surface of the seabed' in MCZ sensitivity analysis.

Operations which may cause deterioration or disturbance	Annex 1 Sandbanks which are slightly covered with seawater all the time						Annex 1 *Sabellaria spinulosa* reefs		
Sub-feature	**Dynamic sand communities**			**Gravelly muddy communities**			**-**		
	Sensitivity	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**	**Sensitivity**	**Exposure**	**Vulnerability**
Non-toxic contamination									
Changes in nutrient loading (e.g. agricultural run-off, outfalls)	●	-	None	●●	-	None	-	-	None
Changes in organic loading (e.g. mariculture, outfalls)	●	-	None	●●	-	None	-	-	None
Changes in thermal regime (e.g. power stations)	●	-	None	●	-	None	-	-	None
Changes in turbidity (e.g. run-off, dredging)[36]	●	+	Low	●	+	Low	-	+	Low
Changes in salinity (e.g. water abstraction, outfalls)	●●	-	None	●●	-	None	●	-	None
Biological disturbance									
Introduction of microbial pathogens	●	Unknown level	Insufficient information	●	Unknown level	Insufficient information	-	Unknown level	None
Introduction of non-native species and translocation	-	Unknown level	None	Insufficient information	Unknown level	Insufficient information	-	Unknown level	None
Selective extraction of species (e.g. bait digging, wildfowling, commercial & recreational fishing)	●●	Unknown level	Vulnerability identified, but not quantified	●●	Unknown level	Vulnerability identified, but not quantified	●●	Unknown level	Vulnerability identified, but not quantified

[36] This is equivalent to 'Increase in turbidity' and 'Decrease in turbidity' in MarLIN sensitivity analysis and 'Siltation changes (Low)' in MCZ sensitivity analysis.

Risk of damage to Haisborough, Hammond and Winterton Sandbanks slightly covered by water all the time and Sabellaria Reefs from current or planned activities (based on vulnerability identified in Appendix E).

Risk key**:** Low=low risk of damage to feature; Moderate=moderate risk of damage to feature; High=high risk of damage to feature.

(High risk activities will be those to which the feature is highly or moderately vulnerable, and for which there is insufficient management)

List of pressures which may cause deterioration or disturbance		**Haisborough, Hammond and Winterton: Sabellaria Reefs**				
		Vulnerability	**Activity associated with pressure**	**Current management**	**Level of Risk**	**Action advised**
Physical Damage	**Surface (<25mm) and shallow (>25mm) abrasion**	**Moderate vulnerability**	Mobile demersal fishing	No site-specific management of this activity currently in place.	High	Competent Authority to assess and consider need for management measure(s) under Common Fisheries Policy

Appendix G

Haisborough, Hammond and Winterton cSAC biotopes used to determine site sensitivity

Haisborough, Hammond and Winterton cSAC Biotopes[37] used to determine site sensitivity		
Dynamic sand communities[38]		**Reference for biotope source in site**
SS.SSa.IMuSa.FfabMag	*Fabulina fabula* and *Magelona mirabilis* with venerid bivalves in infralittoral compacted fine sand	Emu (2004)
SS.SSa.IFiSa.NcirBat	*Nephtys cirrosa* and *Bathyporeia* spp. in infralittoral sand	Emu (2004), Entec (2008a)
SS.SCS.CCS.PomB	*Pomatoceros triqueter* with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles	Entec (2008a)
SS.SCS.CSS.MedLumVen	*Mediomastus fragilis*, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel	Entec (2008a)

[37] Biotopes used are according to MarLIN 2004 codes (see www.marlin.ac.uk). These listed biotopes may be reviewed to reflect new evidence/survey results.

[38] SS.SSa.CFiSa.EpusOborApri, SS.SSa.IFiSa.IMoSa and SS.SSa.IFiSa.ScupHyd are listed as biotopes on dynamic sand communities but were not use for sensitivity since no sensitivities were available for these biotopes on MarLIN website.

Gravelly muddy sand communities[39]		
SS.SCS.ICS.SLan	Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand	Envision (2008), Entec (2008a)
SS.SCS.ICS.MoeVen	*Moerella* spp. with venerid bivalves in infralittoral gravelly sand	Entec (2008a)
***Sabellaria spinulosa* reef**		
Not Applicable	Not Applicable	Limpenny *et al*. (2011)

[39] SS.SMX.OMx.PoVen and SS.SMU.CSaMu.LkorPpel are listed as biotopes on gravelly muddy sand communities but were not use for sensitivity since no sensitivities were available for these biotopes on MarLIN website.