



Offshore Special Area of Conservation: Hatton Bank

Draft Conservation Objectives and Advice on Operations



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* Cover photo illustrates live *Lophelia pertusa* coral on dead biogenic reef framework at the Hatton Bank site

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Summary of Draft Advice on Operations for Hatton Bank Special Area of Conservation (SAC)

This advice is based on information on the SAC presented in JNCC's 'Hatton Bank SAC Selection Assessment' (Version 0.4 October 2008). JNCC's Advice on Operations is site and feature specific, and has been developed using best available scientific information and expert interpretation as at October 2008. The Advice is generated through a coarse grading of sensitivity and exposure of site interest features to physical, chemical and biological pressures associated with human activity. Sensitivity and exposure have been combined to give a measure of the vulnerability of an interest feature to operations which may cause damage or deterioration, and which therefore require management.

The exact impact of any operation will be dependent upon the nature, scale, location and timing of events. This Advice on Operations for the Hatton Bank site will be kept under review and will be periodically updated to reflect changes in both sensitivity and exposure.

Management actions should enable the biological communities associated with the Hatton Bank Reefs to achieve their full natural biological diversity and the underlying physical structure of the interest feature to be maintained. This will require assessment and management of human activities likely to affect these adversely, and of activities likely to impact the functioning of natural processes upon which the feature is dependent.

To fulfil the conservation objectives for the **Annex I Reefs**, 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 this feature through any of the following:

- i) **Physical loss** by Removal (demersal fishing);
- ii) **Physical damage** by Changes in suspended sediment or Physical disturbance or abrasion (demersal fishing);
- iii) **Non-toxic contamination** by Changes in turbidity (demersal fishing);
- iv) **Biological disturbance** by Selective extraction of species (demersal fishing).

The above list is not a catalogue of prohibitions but rather indicates where some form of management measure(s) may be required or further measures where actions are already in force. This advice is indicative and does not remove the need for formal consultation on individual plans and projects.

The Hatton Bank site is within the North Atlantic sea area regulated by the North East Atlantic Fisheries Commission (NEAFC). In order to protect the deep water corals at this site, both NEAFC and the European Commission have taken action to restrict demersal fisheries activities at Hatton Bank such that they do not result directly or indirectly in the deterioration or disturbance of the *Lophelia pertusa* reefs through the pressures listed above. Since January 2007, it has been prohibited to conduct bottom trawling and fishing with static gear, including bottom set gill-nets and longlines, within the Hatton Bank closed area (EC Regulation No 41/2006; NEAFC Recommendation IX-2007); the boundary of this closed area was extended southwards and southeastwards in 2008 (NEAFC Recommendation IX-2008, EC Regulation No 40/2008). As the biogenic reefs

are found in close proximity to stony reefs and bedrock reefs in this area, the fisheries closure serves to protect the three sub-types of Annex I reefs from these pressures.

However, the boundary of the proposed SAC is not fully aligned with the NEAFC and Common Fisheries Policy demersal fishing closure: the Hatton Bank SAC extends north west of the closure, and is therefore not completely protected by the NEAFC/CFP demersal fishing ban (see Map 1). These vulnerable areas are known to contain *Lophelia pertusa* reefs, as well as bedrock reefs.

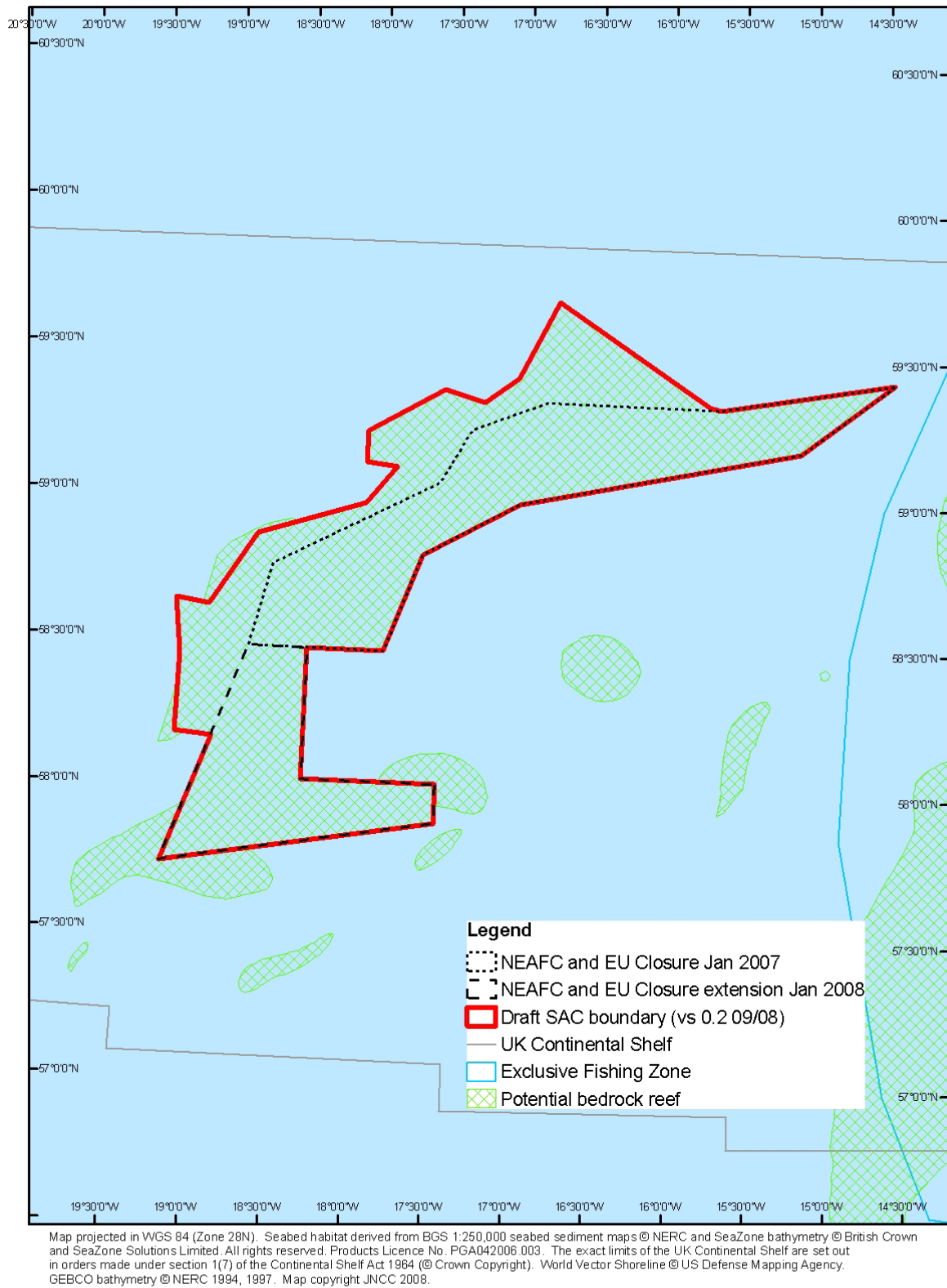
Within the north western section of the Hatton Bank SAC, the following offshore activity is likely to result in damage to the interest features, and is not subject to prior authorisation or licensing. It is, therefore, currently considered to pose a high or medium-high risk of damage to the interest features of the SAC:

- **Demersal fishing**

Competent Authorities are advised to consider management actions that need to be taken to reduce the risk of damage to the features associated with this activity. Equally, illegal, unreported or unregulated demersal fishing activity may be taking place within NEAFC/CFP closure, in which case the interest features may be exposed (at unknown levels) to the above pressures. In this case, Competent Authorities may be advised to consider further enforcement of the management measures to reduce the risk of damage to the reefs by IUU demersal fishing.

Finally, the fishing closure noted above is only in force until 31 December 2009. Competent Authorities should therefore reflect on an appropriate course of action to ensure that the Conservation Objectives for the Hatton Bank SAC interest features are fulfilled beyond 2009.

Map 1: Hatton Bank SAC boundary and NEAFC/EU fisheries closure



Hatton Bank SAC: Draft Conservation Objectives and Advice on Operations

Introduction

Under the Offshore Marine Conservation (Natural Habitats &c.) Regulations 2007, JNCC is required to notify 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 requirement applies once a site has been advised to the European Commission. This advice is also required under the Offshore Petroleum Activities (Conservation of Habitats) Regulations (as amended in 2007); the Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) Regulations 2007.

1) Conservation Objectives for Hatton Bank SAC interest feature

The following Conservation Objectives set out what needs to be achieved at the site in order to fulfil the aims of the Habitats Directive. They are a starting point from which management of activities and monitoring of the conservation features of the site may be developed. Only qualifying interest features are considered in this section.

The Conservation Objectives for the Hatton Bank ‘Reefs’ are:

Subject to natural change, restore¹ the ‘Reefs’ to favourable condition, such that:

- The natural environmental quality² is maintained
- The natural environmental processes³ are maintained.
- The extent⁴, diversity⁵, community structure⁶ and typical species⁷ representative of *Lophelia pertusa* biogenic reef, stony reef and bedrock reef in the Atlantic North-West Approaches are restored.

Explanation of terms used in the Conservation Objectives

1. Maintain or Restore

Maintain implies that the feature is in favourable condition and will, subject to natural change, remain at its condition at designation. Any existing activities are deemed to be sustainable and will not adversely affect the condition of the feature *if current practices are continued at current levels*.

Restore implies that the feature is degraded to some degree as described in the Hatton Bank SAC Site Assessment Document 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 the terrestrial features)

JNCC considers that maintenance or restoration of the following parameters (2- 7) will take account for the maintenance or restoration of natural structures and functions and ecological processes.

2. *Natural environmental quality* e.g. chemical quality parameters of water, suspended sediment levels, radionuclide levels etc should not deviate from baseline at designation (if available) or reference conditions
3. *Natural environmental processes* e.g. circulation, sediment deposition and erosion etc. should not deviate from baseline at designation (if available) or reference conditions
4. *Extent* - the area covered by the habitat and communities
5. *Diversity* - the number of different biological communities
6. *Community structure* e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility
7. *Typical species* – see **Appendix III**

Conservation objectives for inshore SACs have been provided in association with a ‘favourable condition’ table, which outlines how to recognise favourable condition status for the interest features in question. However, for offshore sites, there is presently insufficiently detailed information on i) the existing conditions of qualifying interest features and ii) the preferred or target condition of interest features in offshore waters. This currently limits the identification of measures and associated targets for condition monitoring. It is anticipated that further information on the condition of interest features will be obtained through baseline surveys and monitoring.

The site feature ‘Reefs’ has been graded as II for ‘*Degree of conservation of structure*’ which indicates that the feature is not in pristine condition. It is highly probable that to date that, due to damage caused by bottom trawling, parts of the Annex I feature may not be in favourable condition and might require restoration (Eastwood *et al.*, 2007). As outlined, further information will be required to assess and monitor the condition of the interest feature on the SAC.

2) Advice on operations

JNCC’s Advice on Operations outlines our current knowledge of the nature and extent of activities taking place within or close to the site which may significantly impact on interest feature(s) for which the site has been proposed (Annex I Reefs). We aim to link human activities and the ecological requirements of Annex I/II habitats or species, as required under Article 6 of the Habitats Directive. This advice will help focus the attention of the competent authorities on those activities that pose the greatest potential threat to the favourable condition of the Hatton Bank site’s interest features. In addition, a risk assessment has been conducted to assess the risk, under current management regimes, of offshore activities damaging the features for which a SAC is selected. It is important to note that this advice is only a starting point for assessing impacts and will be further developed over the coming years. Moreover the provision of this advice does not remove the need for formal consultation on individual plans and projects. JNCC will provide more detailed advice to competent authorities to enable them to assess the implications of any given plan or project at the time it is being considered.

Six broad Pressure Categories which may cause i) deterioration of natural habitats or the habitats of species, or ii) disturbance of species, (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 Table 1), although these examples are not inclusive of all potentially detrimental activities.

A three-step process is used to assess the vulnerability of the site's feature (**Reefs**) to the above pressures (see flow diagram in Appendix I):

- An assessment of the **sensitivity** of the interest feature to the listed pressures;
- An assessment of the current **exposure** of the interest feature to the pressures; and
- An assessment of the **vulnerability** of the interest feature to the pressures. Vulnerability occurs where sensitivity to a given pressure is combined with exposure to that pressure.

This approach is sufficiently robust to take into account the effects of new activities or changes in patterns of usage, and by assessing sensitivity, exposure and vulnerability independently, the reasoning behind current (and any future) advice is made clear. If an interest feature is known or thought to be sensitive to a particular pressure category, new activities or changes in patterns of activities which result in that pressure are likely to cause deterioration or disturbance.

All the scores of relative sensitivity, exposure and vulnerability are derived using best available scientific data and expert judgement. This method uses a coarse categorisation system, reflecting the current state of our understanding of the marine environment. It should be recognised that data for offshore habitats are sparse and assessments are likely to need revision in light of new research.

a) Sensitivity assessment

This assessment evaluates the relative sensitivity of the Hatton Bank Reefs to the effects of the aforementioned pressures. Sensitivity is defined here as 'the intolerance of a habitat, community or individual (or individual colony) of a species to damage, or death, from an external factor and the time taken for its subsequent recovery' (MarLIN, 2006). For example, a very sensitive species or habitat is one that is very adversely affected by an external factor arising from human activities or natural events (killed/destroyed, 'high' intolerance) and is expected to recover over a very long period of time, i.e. >10 or up to 25 years ('low' recoverability) (MarLIN, 2006). The sensitivity of interest features (and scientific understanding of sensitivity) may change over time; hence an operation which is not currently deemed to have a negative effect may do so in the future.

Table 1 (column 3) shows the sensitivity assessments for the reef feature at the Hatton Bank

SAC. They are drawn principally from MarLIN's (2005) evaluations of the sensitivity of the following biotope (present within the SAC):

- '*Lophelia* reefs (COR.Lop)'

The applicability of the MarLIN assessments of sensitivity is dependent on the quality of available scientific information on these biotopes and their characterising species. JNCC have in some cases, therefore, adjusted the assessments of sensitivity to be more precautionary. Further detail on our approach to evaluating sensitivity can be provided on request.

Note that three sub-types of Annex I reefs are found at the Hatton Bank site (bedrock, stony and biogenic); however the biogenic reef (*Lophelia pertusa*) is the most sensitive of these three sub-types. Therefore, in support of the precautionary principle, the sensitivity assessment is based on the *Lophelia pertusa* biotope.

Interest feature sensitivity to physical, chemical and biological pressures:

The interest feature and associated biological communities of the Hatton Bank site are sensitive to: **Physical loss**, **Physical damage**, **Toxic** and **Non-toxic contamination**, and **Biological disturbance**, resulting from a range of activities. Further detail on sensitivities of the Reefs is provided in Table 1.

b) Exposure assessment

Table 1 (column 4) highlights the relative exposure of the Hatton Bank's interest feature to physical, chemical and biological pressures. This assessment is based on known human activities operating in or adjacent to the site, and the anticipated pressures associated with these activities.

As offshore sites cover a relatively large geographical area and precise information on operations within SAC boundaries is not yet available, assigning scores for exposure carries certain assumptions about the spatial extent, frequency and intensity of the pressures associated with offshore activities. Expert judgement was used to determine where onsite activities are likely to affect interest feature physically, chemically and/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.

Fisheries data for the offshore marine area (as defined by the Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007) are not yet available to JNCC at sufficient resolution to enable a full assessment of exposure to different types of fishing activities. Availability of Vessel Monitoring System (VMS) data combined with logbook and/or vessel registration data for all vessels operating in the offshore marine area on an annual basis would allow the spatial extent and intensity of physical and biological pressures associated with demersal fishing to be evaluated more thoroughly. We are not aware of an adequate methodology to assess the distribution of static/set demersal gear use, or the intensity of its physical and biological impacts. Interest feature exposure and vulnerability to static/set demersal gears have therefore not been assessed.

It is likely that over the coming years, more detailed information on the levels of pressures associated with activities at the Hatton Bank site will be collected or collated, and this may lead to modification of the advice on operations presented here.

Interest feature exposure to physical, chemical and biological pressures

The interest features and associated biological communities located in the **north western section** of the Hatton Bank site (see Map 1) are likely to be exposed to the following pressures:

- **Physical loss:** The Reefs are exposed to **Removal** at an unknown level (demersal fishing);
- **Physical damage:** The Reefs are exposed to **Changes in suspended sediment** and **Physical disturbance or abrasion** at an unknown level (demersal fishing);
- **Non-toxic contamination:** The Reefs are exposed to **Changes in turbidity** at an unknown level (demersal fishing);
- **Biological disturbance:** The Reefs are exposed to **Selective extraction of species** at an unknown level (demersal fishing).

The remainder of the SAC is not believed to be exposed to any of the pressures listed above, assuming that demersal fishing (both mobile and static) ceased entirely when NEAFC and the

European Commission closed this area on 1st January 2007 (as amended in January 2008).

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

c) Vulnerability assessment

The vulnerability of the interest feature to external pressures is determined by integrating the sensitivity evaluation with that of exposure. Only if a feature is both sensitive *and* exposed to a human activity is it considered vulnerable (see Appendix II). In this context, therefore, 'vulnerability' has been defined as the exposure of the habitat, community or individual (or individual colony) of a species to an external factor to which it is sensitive (Hiscock, 1996). An assessment of the interest feature's vulnerability (column 5 in Table 1) helps to guide site management decisions by highlighting potentially detrimental activities that may need to be managed (or continue to be managed) by the competent authorities.

The vulnerability of the SAC to climate change is not considered in the tables below, given the uncertainties surrounding the effects of global change on the oceans.

Interest feature vulnerability to physical, chemical and biological pressures

Despite the cessation of demersal fishing over part of the SAC on 1st January 2007 (**check**), the Reefs and associated biological communities in the **north western section** of the SAC remain vulnerable, (at unknown levels) to:

- **Removal** (demersal fishing), **Physical disturbance or abrasion** (demersal fishing), **Changes in suspended sediment** (demersal fishing) **Changes in turbidity** (demersal fishing) and **Selective extraction of species** (demersal fishing).

Vulnerability to **Noise (acoustic)**, **Introduction of radionuclides**, **Introduction of microbial pathogens** and **Introduction of non-native species** remains unknown for the interest feature.

d) Risk Assessment

JNCC considers 'risk' to be the likelihood of deterioration of the feature due to an activity. It is the vulnerability of the feature to an activity, assessed against the level of management of that activity.

High risk activities will be those which the feature has high or moderate vulnerability **to**, and for which there is **inadequate** management. For example, industries 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 and shipping. 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 high vulnerability is mitigated for by management. For example, for industries which are location specific, are always subject to prior consent and have clear reliable methods of enforcement, there is generally a lower likelihood of causing damage or disturbance to interest features. This includes the activities of the oil and gas, aggregates and renewable energy industry sectors.

Only high or medium-high risk activities are noted here.

Within the Hatton Bank site, the following offshore activity poses a high risk to the interest features:

- **Demersal fishing**

Competent Authorities are advised to consider management actions that will reduce the risk of damage associated with this activity to the Reef interest feature.

Table 1: Sensitivity, exposure and vulnerability of the Hatton Bank *Lophelia pertusa* reefs to physical, chemical and biological pressures

Sensitivity key: ●●● = High sensitivity ●● = Moderate sensitivity ● = Low sensitivity, ○ = No known sensitivity* and ? = Insufficient information to make assessment (*Meaning: ‘Sensitivity of the feature has been researched and no evidence of sensitivity to this pressure has been found’)

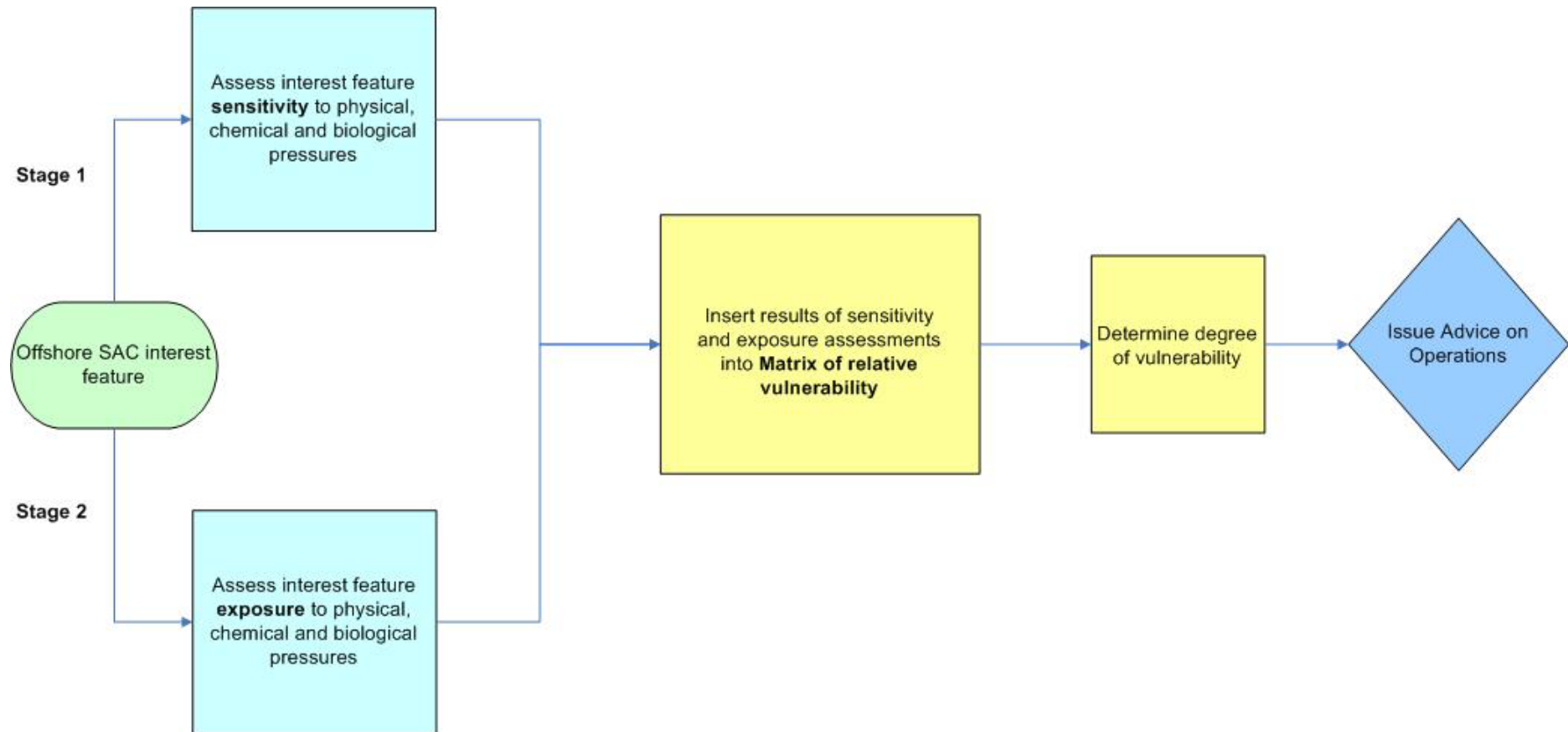
Exposure key: High = High exposure, Medium = Medium exposure, Low = Low exposure, None = No known exposure, Unknown level = Exposure of an unknown level and ? = Insufficient information to make assessment.

List of pressures which may cause deterioration or disturbance (with example activities)		Hatton Bank: <i>Lophelia pertusa</i> reefs		
		Sensitivity	Exposure	Vulnerability
Physical Loss	Removal (e.g. aggregate dredging, isolated rock dump, infrastructure development)	●●●	Unknown level	Vulnerability (not quantifiable)
	Obstruction (e.g. Permanent constructions [oil & gas infrastructure, windfarms, cables] & wrecks)	●●●	None	No known vulnerability
	Smothering (e.g. drill cuttings)	●●●	None	No known vulnerability
Physical Damage	Changes in suspended sediment (e.g. screening plumes from aggregate dredging)	●●	Unknown level	Vulnerability (not quantifiable)
	Physical disturbance or abrasion (e.g. mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, potting)	●●●	Unknown level	Vulnerability (not quantifiable)
Non-physical disturbance	Noise (e.g. boat activity, seismic)	○	?	No known vulnerability
	Visual presence (e.g. recreational activity)	○	None	No known vulnerability
Toxic contamination	Introduction of synthetic compounds (e.g. TBT, PCBs, industrial chemical discharge, produced water, fuel oils)	●●●	None	No known vulnerability
	Introduction of non-synthetic compounds (e.g. heavy metals, crude oil spills)	●●●	None	No known vulnerability
	Introduction of radionuclides (e.g. nuclear energy industry)	?	?	Insufficient information
Non-toxic contamination	Changes in nutrient loading (e.g. outfalls)	●●	None	No known vulnerability
	Changes in thermal regime (e.g. cooling water discharges)	●●●	None	No known vulnerability
	Changes in turbidity (e.g. laying of pipelines, aggregate dredging)	●●●	Unknown level	Vulnerability (not quantifiable)
	Changes in salinity (e.g. outfalls from rigs, ships)	●●●	None	No known vulnerability
Biological disturbance	Introduction of microbial pathogens (e.g. outfalls)	?	?	Insufficient information
	Introduction of non-native species and translocation (e.g. ballast water, hull fouling)	?	?	Insufficient information
	Selective extraction of species (e.g. bioprospecting, scientific research, demersal fishing)	●●●	Unknown level	Vulnerability (not quantifiable)

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Appendix I: Flow diagram illustrating process of determining vulnerability of interest features



Appendix II: Matrix of relative vulnerability

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

Relative exposure of the interest feature at the site	Relative sensitivity of the interest feature			
	High ●●● (3)	Moderate ●● (2)	Low ● (1)	None detectable ○ (0)
High (3)	9	6	3	0
Medium (2)	6	4	2	0
Low (1)	3	2	1	0
Exposure at an unknown level				0
None (0)	0	0	0	0

Note that if there is insufficient information to assess either the exposure OR sensitivity of a given interest feature, vulnerability will always be categorised 'insufficient information to make any assessment'.

Categories of relative vulnerability

High vulnerability	6 to 9
Moderate vulnerability	3 to 5
Low vulnerability	1 to 2
Vulnerability identified, but not quantified as level of exposure unknown.	
No known vulnerability	0
Insufficient information to make any assessment	

Appendix III: Typical Species Criteria

Identification of a species as typical is not in itself sufficient to indicate the importance of the species or any need for management. The importance of the species should be judged on the contribution made by the species to ecological integrity of the feature. These criteria are intended to help identify or classify typical species and are not limited to the benthos and are relevant to the Annex 1 habitat feature and its component parts at the *site* level.

A typical species should meet one or more of the following criteria a – e below:

a) Consistently associated with, but not necessarily restricted to, the feature

For example

- Can be predicted to occur at certain seasons/times (e.g. seasonal & temporal)
- Stages of life cycle associated with the feature (e.g. spawning)
- Species is dependent upon feature (for food, shelter, nest)

b) A species on which identification of the habitat is founded

- This criterion is unlikely to apply to complex physiographic features which may be composed include other Annex 1 features (e.g. H1130 Estuaries, H1160 Large Shallow Inlets and Bays which may include ‘H1170 Reefs’, ‘H1110 Sandbanks which are slightly covered by seawater all the time’ etc.)

c) Characteristic of the habitat

For example

- *Ammodytes tobianus*, *Zostera marina* for ‘H1110 Sandbanks which are slightly covered by seawater all the time’

d) An integral part of the structure of the habitat

For example

- Any species that gives the habitat structural complexity (e.g. kelp)
- Any species that forms the habitat (e.g. biogenic reef species, maerl)

e) A species which influences the habitat’s structure and function

For example:

- Bioturbators
- Grazers
- Animals which bore into the substratum
- Predators
- Keystone species (i.e. A species that influences the ecological composition, structure, or functioning of its community far more than its abundance would suggest (EEA, 2008))

Note: the above criteria should not be used to describe non-native species as typical

Non-Native – These are marine species and plants and algae are transported from their native range to ‘new’ areas. Species can be introduced to non-native environments accidentally or deliberately. Introductions and transfer of non-native marine species to their non-native environment mainly occurs by the transport and discharge of ballast water, and to a lesser extent by transport of fouling organisms on hulls or through aquaculture (JNCC, 2008b)