Title: Hatton Bank Special Area of Conservation **IA No:** **Lead department or agency:** Marine Scotland **Other departments or agencies:** Joint Nature Conservation Committee (JNCC)	**Impact Assessment (IA)** **Date:** 12/09/2012 **Stage:** Development/Options **Source of intervention:** EU **Type of measure:** Secondary legislation **Contact for enquiries**: Katherine Ross Frin.Ross@jncc.gov.uk 01224 266588

Summary: Intervention and Options

RPC Opinion: RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
£m	£m	£m	No	NA

What is the problem under consideration? Why is government intervention necessary?

Anthropogenic pressures are causing the decline of many marine habitats and species. Intervention is needed to manage activities in key areas for important species and habitats, and to promote a healthy, resilient marine environment that underpins the sustainable delivery of ecosystem services. JNCC have assessed this site against the Habitats Directive Annex III selection criteria and advised the Scottish Government that it is eligible for identification as a 'Site of Community Importance' and should therefore be transmitted to the European Commission as required under Reg 7 of the Offshore Marine Conservation Regulations 2007 (amended).

What are the policy objectives and the intended effects?

The EC Directive 92/43/EEC on the conservation of natural habitats and wild flora and fauna (the Habitats Directive, 1992) aims to protect biodiversity. This Directive requires the UK (as a Member State) to propose sites hosting habitat types and species in need of conservation (as listed in the Directive), which are eligible for identification as Sites of Community Importance and designation as Special Areas of Conservation (SACs). The UK is required to establish conservation measures for sites designated as SACs by managing potentially damaging activities where the habitats and species are present and in their vicinity. Reefs (Habitat 1170 in Annex I) are the qualifying feature of Hatton Bank.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Baseline: Do nothing, that is do not designate the site.

Option 1: Propose the site to the EC for designation. This is the preferred option as it will contribute towards conserving habitat of European importance along with its typical species located in UK waters. The option to search for an alternative site has not been considered further here because alternative sites of a similar type are not currently known to exist (possible alternatives were considered in the scoping stage but not recommended on scientific grounds). Though the site could be conserved under voluntary agreements or a national designation this would not contribute to fulfilling the requirements of the Habitats Directive.

As the measure follows an EU directive, it is exempt from OIOO and moratorium on small businesses.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 01/2019

Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** No	**< 20** No	**Small** No	**Medium** No	**Large** No
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:** na	**Non-traded:** na	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Chair: ---------- Date: ----------

Summary: Analysis & Evidence

Policy Option 1

Description:

FULL ECONOMIC ASSESSMENT

Price Base Year 2011	PV Base Year 2011	Time Period Years 10	Net Benefit (Present Value (PV)) (£m)		
			Low: na	**High:** na	**Best Estimate:**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	0.777		0	**0.708**
High	na		na	
Best Estimate	0.777			**0.708**

Description and scale of key monetised costs by 'main affected groups'

Administration and monitoring (£777k)

Other key non-monetised costs by 'main affected groups'

None

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**Optional**
High	Optional		Optional	**Optional**
Best Estimate	Unquantified		Unquantified	**Unquantified**

Description and scale of key monetised benefits by 'main affected groups'

Benefits are not traded and cannont be easily quantified.

Other key non-monetised benefits by 'main affected groups'

Conservation of reef habitats and associated biological communities.
Low to moderate beneficial impacts on non-use values of natural environment; and for scientific ressearch.
Benefits for the sustainable delivery of esystem services beyond the next 10 yrs.
Important wider network and strategic benefits on biodiversity through the Natura suite of marine SACs.

Key assumptions/sensitivities/risks — **Discount rate (%)** 3.5

Management measures for site are not known before designation. Current fisheries closures are assumed to remain in force. Formal mechanisms to avoid damage to the habitats are weaker if site is not designated. Risk of infraction if suite of proposed SACs not designated. Benefits could be jeopardised by illegal fishing, which is out of UK control. Risk of cumulative economic impacts of MPAs

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: 0	**Benefits:** na	**Net:**	No	NA

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1 INTRODUCTION

1.1 Purpose

Within Europe, natural habitats are deteriorating and an increasing number of wild species are seriously threatened. The European Habitats Directive[1] aims to promote the maintenance of biodiversity by requiring Member States to maintain or restore habitats and species to a 'Favourable Conservation Status'. It also introduces robust protection for habitats and species of European importance.

This Impact Assessment (IA) addresses the recommendation by the Joint Nature Conservation Committee (JNCC) for designation of an offshore Special Area of Conservation (SAC) at Hatton Bank due to its reef habitat (Habitat H1170 under Annex I of the Habitats Directive). The habitat includes bedrock, stony and biogenic reefs.

Many of our marine habitats have been altered or damaged by human activities such as fishing, dredge disposal and oil and gas extraction (Eastwood 2007). Currently only 6% of the UK's marine environment is protected for conservation[2] and many offshore habitats are not protected. Additional management is needed to maintain and restore the healthy structure and function of such ecosystems, while permitting environmentally sustainable industries.

This IA informs the Scottish Government of the impacts that designating the site could have on the UK economy and the site's potential environmental and social effects. It should not inform the decision to designate the site (this is based on the site's Selection Assessment Document) because under the Habitats Directive economic or social impacts should not influence selection of SACs or delineation of their boundaries. However, information provided on the type and level of activities taking place in and near the site may inform management measures for the site.

1.2 Policy drivers

a) Habitats Directive

Member States of the Council of Europe are committed to the (Bern) Convention on the Conservation of European Wildlife and Natural Habitats[3]. The Wild Birds Directive[4] and Habitats Directive provide the framework within which the provisions of the Bern Convention are applied in the European Union. The Habitats Directive aims to conserve natural habitats and species that are most in need of conservation across Europe (which are listed in Annex I and Annex II of the Directive respectively). Habitats have been included in Annex I because they are either in danger of disappearance within their natural range, have a small natural range, or they present outstanding examples of typical characteristics of the biogeographical regions listed in the Directive. The Habitats Directive aims to conserve habitats *and* their typical species. As a Member State, the UK is required to take measures to maintain or restore these habitats to Favourable Conservation Status[5] and to introduce robust protection for them.

Under the Habitats Directive, habitats and species are to be protected by a coherent European ecological network of sites (called Natura 2000) identified by the European Commission from lists of national sites proposed by each Member State. The network of sites will enable habitat types to be maintained at, or restored to, favourable conservation status within their natural range. Once adopted in the Natura 2000 network, the sites are designated by Member States as SACs.

[1] Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna.
[2] JNCC marine protected area information http://jncc.defra.gov.uk/page-5201 [Accessed 06/01/2012].
[3] The Bern Convention , Bern, 1979,
[4] Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds
[5] Favourable conservation status is defined for a feature as the 'natural range and area it covers is increasing, and the specific structure and functions which are necessary for its long term maintenance exist and are likely to exist for the foreseeable future, and the conservation status of its typical species is favourable'.

The Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended in 2010) transpose the Habitats Directive (92/43/EEC) and Wild Birds Directive (2009/147/EC) into UK law. These regulations apply to the UK's offshore marine area, which covers waters beyond 12 nautical miles within British Fishery Limits, and the seabed and subsoil of the UK Continental Shelf Designated Area. The Offshore Habitats Regulations enable the UK to comply with European law beyond inshore waters and ensure that activities regulated by the UK that have an effect on important species and habitats in the offshore marine environment can be managed. Under the Regulations, 'competent authorities', which have functions relevant to marine conservation in the offshore marine area, have a general duty to secure compliance with the Habitats and Wild Birds directives.

The Habitats Directive provides site selection criteria within Annex III. Site selection criteria comprise:

- the degree of representativeness of the natural habitat at the site in question;
- the area of the site in relation to the area of that habitat type within the national territory;
- the degree of conservation of the structure and functions of the habitat type (including restoration possibilities); and
- a global assessment of the conservation value of the site for that habitat type.

JNCC is responsible for providing scientific advice to Government on nature conservation matters, including on the selection of SAC sites in the UK offshore marine area under the Offshore Habitats Regulations. In offshore waters off Scotland that advice is provided to Scottish Ministers.

The European Commission will assess whether the list of SACs submitted to them by UK Government is sufficient or not. JNCC has worked to provide the best estimate of whether the UK's sites submitted so far will be sufficient in terms of both representing the habitat across its natural range, and also in proportion to the amount of that habitat type within UK waters[6].

Ninety six SACs with marine components have already been designated in UK waters. JNCC concluded that if at least one example of each Annex I habitat sub-type in offshore waters in each of the UK's Regional Seas[7] were included in the SAC network that would ensure minimum representation of each Annex I habitat within its natural range in the UK (JNCC 2003). The UK Government aims to substantially complete the network of marine SACs in 2012 through submission of 12 sites, including six Scottish sites (three in offshore waters, one inshore site, and two that span inshore and offshore waters).

b) UK identification of Annex I reef sites

Between 2008 and 2011 twelve sites in UK offshore waters were proposed to the European Commission and the submissions are now recognised as Sites of Community Importance (SCIs) or candidate SACs: seven of the sites are in waters off Scotland. More recently, JNCC has compiled stakeholder responses regarding three possible SACs (Croker Carbonate Slabs, Pisces Reef Complex and Wight-Barfleur Reef) and a further five draft SACs (Anton Dohrn Seamount, East Rockall Bank, Hatton Bank, Pobie Bank Reef and Solan Bank Reef) have been recommended to Scottish Government[8].

Other offshore SACs with reef (H1170) as a qualifying feature are: Haig Fras, Stanton Banks and Darwin Mounds, which have been approved by the European Commission as Sites of Community Importance (SCIs). North-West Rockall Bank and Wyville Thomson Ridge candidate SACs (cSACs) proposals were submitted to the EC on 20th August 2010; Pisces Reef Complex and Wight-Barfleur Reef possible SACs (pSACs) were formally consulted on between July and September 2011; and, Anton Dohrn Seamount, East Rockall Bank, Pobie Bank Reef and Solan Bank Reef which have recently been approved as pSACs.

[6] JNCC 08 P14a December 2008 Progress towards completing the UK network of marine special areas of conservation (SACs) for Annex I habitats and site proposals for Hatton Bank and Bassurelle Bank
[7] Regional Seas: http://jncc.defra.gov.uk/page-161.
[8] These sites are now possible SACs and were subject to public consultation between March and May 2012.

Hatton Bank pSAC is the only reef site in the Atlantic North West Approaches Regional Sea: it is a large site, contributing 22% of the UK reef habitat to the Natura 2000 network of marine SACs.

c) Conservation objectives and management of sites

JNCC is responsible for establishing conservation objectives for the site, and for advising Competent Authorities of operations that could cause deterioration of the habitat and/or decline in the populations of its typical species. These conservation objectives and advice on operations are presented in a Draft Conservation Objectives & Advice on Operations document and inform the responsibilities of the Competent Authorities in the management of their activities within the site. Special provisions are made for the consideration of current and future plans and projects that impact on the site (but are not directly connected with management of the site for conservation purposes). The goal of these is to ensure that carrying out plans and projects does not adversely affect the integrity of the site. Management activities are intended to ensure marine habitats and species are maintained at, or restored to, favourable condition. Management relating to conservation of the site features (e.g. fisheries management) must be established within six years of the site being designated as an SCI (so that the site can proceed to full SAC designation). Under UK regulations, plans and projects that may have an impact on the site must be considered as soon as the site is submitted to the EC as a cSAC.

To fulfil conservation objectives for Annex I reef a Competent Authority must, where possible, manage human activities to ensure that the feature is not negatively affected through: 1) physical damage by physical disturbance or abrasion; and/or 2) biological disturbance by selective extraction of species.

1.3 Background information on the Impact Assessment

This report sets out the evidence base that supports the IA summary page for the policy options for the Hatton Bank pSAC. Two options were initially considered for this site:

Baseline: do nothing
Option 1: designate the site

No other options are considered as Hatton Bank, along with existing SACs and the other reef sites currently proposed, has been identified as an example of reef habitat to contribute towards the Natura network of sites for conservation. Other areas of similar habitat sub-type have been considered for selection as SACs but have been rejected for scientific reasons during earlier scoping.

Under the baseline option activities are assumed to continue at current levels.

This IA presents JNCC's assessment of the potential costs and benefits of designating the site. The approach is based on that adopted by JNCC for previous offshore SAC IAs (Eftec 2008); it includes a quantitative assessment of economic impacts and a qualitative assessment of ecosystem benefits. A framework is used to combine and assess cost and benefit information on the likely impacts of designation.

This framework involves a description of:

- The current situation at the site is (the baseline), such as the site's ecological characteristics, the economic activities taking place, their value, and their environmental impacts;
- What changes to these, relative to baseline, are expected to result from management measures that may be required to meet the site's conservation objectives;
- What the direct and indirect economic costs of those changes are to operators, enforcement authorities and wider society;
- The likely benefits of achieving the conservation objectives; and

- The different data that can be used to estimate costs and benefits, including impacts on goods and services that can be valued in monetary units; qualitative impacts on goods and services that are not traded in commercial markets; and other impacts (such as change to non-use value).

Impacts have been assessed over ten years. This timescale is sufficient for the conservation of some species and habitats and the implementation of fisheries management measures. Assessment of the impacts beyond ten years becomes more uncertain. For example, there is greater scope to adjust fishing activities and may therefore avoid costs that arise in the short-term. Costs are calculated using a discount rate of 3.5% per annum, based on Green Book recommendations[9].

2 BACKGROUND INFORMATION ON THE SITE

2.1 Baseline

The current condition of the site forms a baseline scenario against which the potential impacts of the policy options are assessed. This section assesses the current activities at the site and what is likely to happen over the assessment period if the site is not designated. This is the baseline against which the potential costs and benefits of designation are compared in Section 4. The monetary costs and benefits of the baseline are zero since no additional actions will be taken (however considerable cost could be incurred if the European Commission pursued an infraction case on the UK for failing to fully implement the Habitats Directive).

2.2 Characteristics of the site

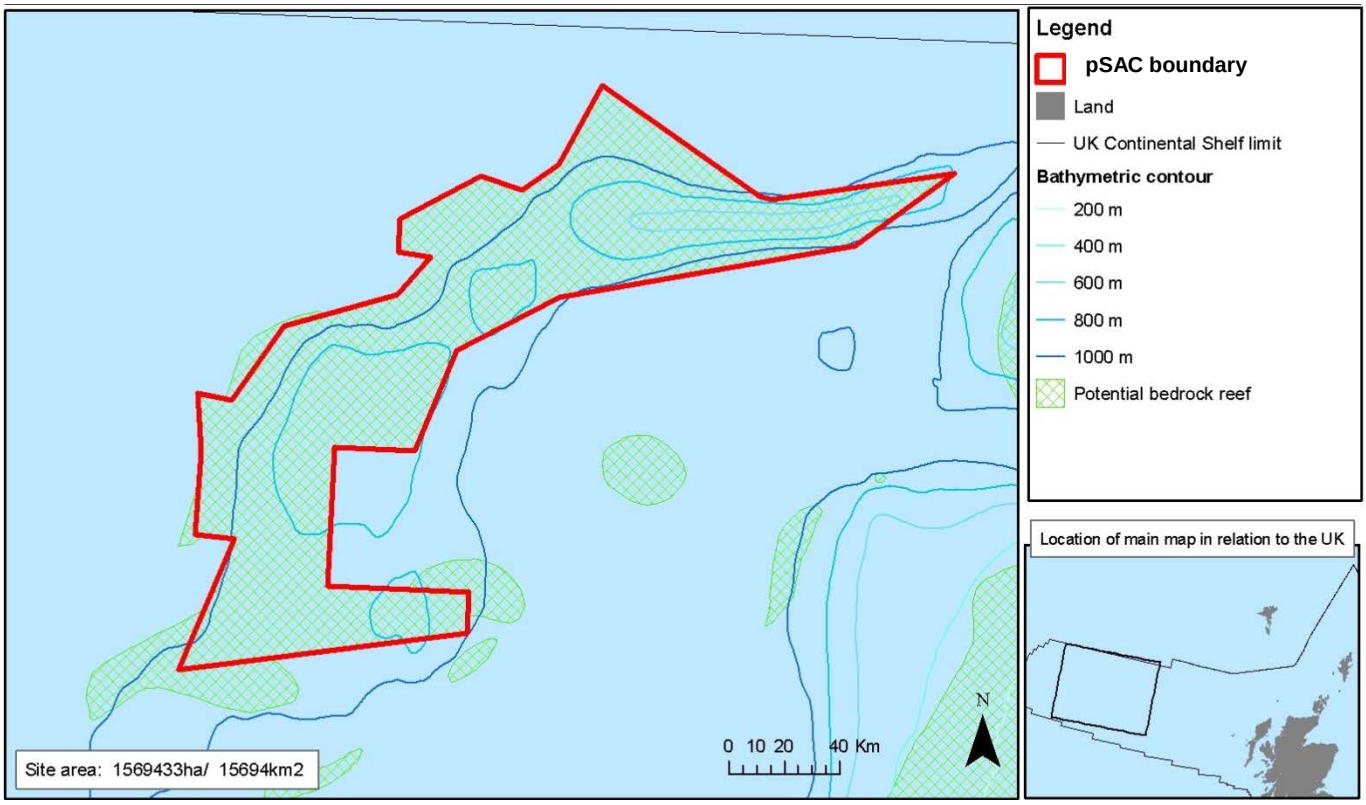
Hatton Bank is a large volcanic bank, situated in the Atlantic North-West Approaches, towards the western limit of the UK Continental Shelf. It stretches nearly 500 km in length, forming a topographic high in the surrounding deep water. Water depth across the bank ranges from around 500 m to over 1000 m at the base.

Because of its vast size and topographic complexity Hatton Bank supports a range of biological communities; each associated with different geomorphological structures and substratum types (Howell *et al*. 2007). Much of the seabed is comprised of coarse sandy sediment, however the bank also includes extensive areas of Annex I bedrock reef (particularly on the ridges along the top of the bank), and stony reef. Iceberg ploughmarks, shaped by the movement of icebergs during the last ice age, have been also recorded at this site. Hard substrata support a rich diversity of epifauna including: scleractinian corals; stylasterids (‘lace’ corals); antipatharians (‘black’ corals); soft corals; cup corals; gorgonian sea fans; glass sponges; sessile sea cucumbers; anemones; and brachiopods (Howell *et al*. 2007).

Elaborate cold-water coral reefs area also recorded and are frequently associated with topographically distinct features, including pinnacles and mounds tens of metres high and hundreds of metres wide (Howell *et al*. 2007). Their intricate structure is formed by both *Lophelia pertusa* and *Madrepora oculata* which, in association with the surrounding dead coral framework, support other fauna including: soft corals; scleractinian, antipatharians and bamboo corals; encrusting sponges; ascidians (sea squirts); bryozoans; feather stars; basket stars and sea stars (Narayanaswamy *et al*. 2006; Howell *et al*. 2007). These biogenic reefs occur primarily in the southern region (including Lyonesse), and across the north-west outcrops of the bank (Durán Muñoz *et al.* 2008a).

The proposed site boundary for Hatton Bank (Figure 2.1) was defined using JNCC’s marine SAC boundary definition guidelines[10] it encloses the minimum area necessary to ensure protection of Annex I habitats.

[9] HM Treasury, The Green Book: http://www.hm-treasury.gov.uk/data_greenbook_index.htm
[10] JNCC. 2008. UK Guidance on defining boundaries for marine SACs for Annex I habitat sites fully detached from the coast. Available from: http://jncc.defra.gov.uk/pdf/SACHabBoundaryGuidance_2008Update.pdf [Accessed October 2011].



Map projected in WGS 84 (Zone 28N). NOT TO BE USED FOR NAVIGATION. The exact limits of the UK continental Shelf are set out in orders made under section 1(7) of the Continental Shelf Act 1964 (© Crown Copyright). World Vector shoreline © US Defence Mapping Agency. GEBCO bathymetry © NERC 1994, 1997. Map copyright JNCC 2012.

Figure 2.1 Hatton Bank pSAC boundary and reef habitat.

2.3 Legal jurisdiction over Hatton Bank pSAC

Hatton Bank lies entirely outside of the UK's 200 nm Fishery Zone on an area of seabed claimed by the UK as extended Continental Shelf under the UN Convention on the Law of the Sea and set out in orders made under Section 1(7) of the Continental Shelf Act 1964.

As the pSAC is outside of the UK's 200 nm zone, control of fisheries rests with the North East Atlantic Fisheries Commission (NEAFC), rather than the European Commission. However control of activities on the seabed and environmental responsibilities, including protected area designation, rests with the UK.

2.4 Vulnerability of the site to human impacts

Table 2.1 below is an initial assessment of the site's vulnerability; it is taken from the draft Conservation Objectives and Advice on Operations document for this site. Vulnerability depends on the sensitivity of the reef species to the specified pressures, and current exposure to those pressures. Only if a site feature is both sensitive and exposed to a human activity is it considered vulnerable.

Scores of relative sensitivity (likelihood of damage or death following exposure to a pressure), exposure, and vulnerability have been derived using best available scientific information, interpretation and judgement; the assessment is dynamic and will be revised as necessary to reflect new research or evidence. (See the Hatton Bank draft Conservation Objectives and Advice on Operations document for more-detailed information.)

Table 2.1 Sensitivity, exposure and vulnerability of the Hatton Bank reef to physical, chemical and biological pressures (from Hatton Bank Conservation Objectives and Advice on Operations v1.0)

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 Banks:** *Lophelia pertusa* reefs		
		Sensitivity	**Exposure**	**Vulnerability**
Physical Loss	**Removal** (e.g. aggregate dredging, isolated rock dump, infrastructure development)	•••	**None**	**No known vulnerability: 0**
	Obstruction (e.g. Permanent constructions [oil & gas infrastructure, windfarms, cables] & wrecks)	•••	**None**	**No known vulnerability: 0**
	Smothering (e.g. drill cuttings)	••	**None**	**No known vulnerability: 0**
Physical Damage	**Changes in suspended sediment** (e.g. screening plumes from aggregate dredging)	•	**None**	**No known vulnerability: 0**
	Physical disturbance or abrasion (e.g. mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, potting)	•••	**None**	**No known vulnerability: 0**
Non-physical disturbance	**Noise** (e.g. boat activity, seismic)	○	**?**	**No known vulnerability: 0**
	Visual presence (e.g. recreational activity)	○	**None**	**No known vulnerability: 0**
Toxic contamination	**Introduction of synthetic compounds** (e.g. TBT, PCBs, industrial chemical discharge, produced water, fuel oils)	**?**	**None**	**No known vulnerability: 0**
	Introduction of non-synthetic compounds (e.g. heavy metals, crude oil spills)	•	**None**	**No known vulnerability: 0**
	Introduction of radionuclides (e.g. nuclear energy industry)	**?**	**None**	**No known vulnerability: 0**

Non-toxic contamination	**Changes in nutrient loading** (e.g. outfalls)	•	**None**	**No known vulnerability: 0**
	Changes in thermal regime (e.g. cooling water discharges)	•••	**None**	**No known vulnerability: 0**
	Changes in turbidity (e.g. laying of pipelines, aggregate dredging)	○	**None**	**No known vulnerability: 0**
	Changes in salinity (e.g. outfalls from rigs, ships)	•••	**None**	**No known vulnerability: 0**
Biological disturbance	**Introduction of microbial pathogens** (e.g. outfalls)	**?**	**None**	**No known vulnerability: 0**
	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)	•••	**None**	**No known vulnerability: 0**

It has not been possible to determine whether the interest feature is vulnerable to introduction of radionuclides, introduction of microbial pathogens and introduction of non-native species, but Hatton Bank is not known to be vulnerable to any of the other pressures listed above.

Demersal fishing is currently prohibited at Hatton Bank (see section 2.5). Therefore the reefs and associated biological communities are not considered vulnerable to physical loss, physical damage or biological disturbance from mobile demersal fishing (despite their sensitivity to these pressures). This is supported by an assessment of fishing effort over the site which indicates that there is no illegal fishing. (More details on site vulnerability can be found in: Hatton Bank draft Conservation Objectives and Advice on Operations.)

The site Selection Assessment Document for Hatton Bank describes that the bank bears damage from fishing prior to the fisheries closure. The conservation objective Hatton Bank pSAC is thus to restore the reefs to favourable condition such that:

- The natural environmental quality is maintained
- The natural environmental processes are maintained
- The extent, diversity, community structure and typical species representative of *Lophelia pertusa* biogenic reef, stony reef and bedrock reef in the Atlantic North-West Approaches are restored.

In its current condition a range of non-monetised benefits are obtained from the site. The possible degradation of the site if not designated would potentially decrease each of these values. Baseline levels of activity in relation to benefits of fisheries and recreation are described below. Other benefits include option and non-use value: benefits from values associated with potential future use, existence and others use of the site.

2.5 Human activity and regulation of activity at the site

The remoteness of Hatton Bank means that human activities are restricted to fishing and occasional shipping, however the following sectors were considered when preparing this assessment:

- Shipping – low activity;
- Oil and gas – no current or planned activity at or near the site;
- Aggregate extraction – no current or planned activity at or near the site;
- Cables – no current or planned activity at or near the site;
- Fisheries – some fishing occurred historically over the pSAC and in the surrounding area;
- Renewable energy schemes - no current or planned activity at or near the site.

There are no other significant current or planned economic activities at the site.

Under regulation 25 of the Offshore Habitats Regulations, Competent Authorities must to carry out an Appropriate Assessment before undertaking or authorising a plan or project that could significantly affect a designated site. Initially the Competent Authority can agree to the plan or project only if it is certain that it will not adversely affect the integrity of the site. Under regulation 26, however, a Competent Authority can agree to a plan or project that will have an adverse effect if there are reasons of overriding public interest and permission from Scottish Ministers and the Secretary of State.

The Offshore Habitats Regulations set out that where consent for a plan or project has been granted prior to the site becoming an offshore European Marine Site, consent must be reviewed against the Conservation Objectives for the site.

Not all activities that may affect the reef for which the site is designated are considered plans or projects under Regulation 25 of the Offshore Habitats Regulations. Ongoing activities at the site which may be affecting the habitat of interest and preventing it from reaching or being maintained at favourable conservation status may need to be managed through the development of specific management measures (e.g. certain fishing methods, which may be controlled through measures taken under the European Common Fisheries Policy).

Shipping

Parts of the site may be crossed by ships at some times. It is assumed that there are no significant effects associated with shipping at the site and therefore that no changes to shipping activity will occur under any of the options under consideration in this IA.

Fisheries

Historic fishing

Historically a number of countries have fished over Hatton Bank and there is evidence of fishing damage to the bank (Howell *et al*. 2007). Since 2006, areas of the bank have been closed to fishing by NEAFC and in 2009 the whole pSAC area was closed to demersal fishing.

Bottom-trawling dominated fishing at Hatton Bank but longlines and gill nets were also deployed. At the start of this century fishing was primarily by a Spanish trawler fleet which exploited the western region of Hatton Bank. This fleet comprised around 27 vessels and targeted roundnose grenadier, orange roughy, Baird's slickhead and black scabbardfish (Bensch *et al*. 2008). UK vessels (4 in 2006) took monkfish in shallower depths and small number of Lithuanian, Estonian and the Russian Federation vessels fished in the region (Bensch *et al*. 2008). Species caught at Hatton Bank are listed below.

Fish commonly caught in the Hatton Bank area		
Common name	**Scientific name**	**Fishery**
Baird's smooth-head	*Alepocephalus bairdii*	Trawl
Black scabbardfish	*Aphanopus carbo*	Trawl
Blue ling	*Molva dipterigia*	Trawl
Leafscale gulper shark	*Centrophorus squamosus*	Trawl/gillnet
Orange roughy	*Hoplostethus atlanticus*	Trawl
Portugese dogfish	*Centroscymnus coelolepis*	Trawl/gillnet
Roundnose grenadier	*Coryphaenoides rupestris*	Trawl
Greater forkbeard	*Phycis blennoides*	Longline
Greenland halibut	*Reinhardtius hippoglossoides*	Longline
Ling	*Molva molva*	Longline
Tusk	*Brosme brosme*	Longline
Anglerfish/monkfish	*Lophius piscatorius*	Gillnet
Birdbeak dogfish	*Deania calcea*	Other
Black dogfish	*Centroscyllium fabricii*	Other
Blackmouth catshark	*Galeus melastomus*	Other
Longnose velvet dogfish	*Centroscymnus crepidater*	Other
Rabbitfish	*Chimaera monstrosa*	Other
Roughnose grenadier	*Trachyrincus murrayi*	Other
Roughsnout grenadier	*Trachyrincus scabrous*	Other

Source ECOVUL/ARPA 10/2005; Durn Munz et al. 2007; Bensch et al. 2008

Current fisheries management (the baseline)

Since 2006, there has been an NEAFC ban on deep-sea gillnetting at depths exceeding 200m in ICES areas VI and XII east of 27°W, including Hatton Bank[11]. In addition progressively larger areas of the bank were closed to demersal gear between 2007 and 2009 as described below and in Figure 2.2.

In 2007, NEAFC closed a portion of Hatton Bank to bottom trawling and fishing with static gear, including bottom set gill-nets and longlines (NEAFC Recommendation IX 2007; EC Regulation No 41/2006). This closure was based on revised maps of deep-water corals (Durán Muñoz *et al*. 2007a,b; ICES 2007a,b; NEAFC 2007) to protect vulnerable coral-based ecosystems.

Following further research, and information on the distribution of *Lophelia pertusa,* (Durán Muñoz *et al*. 2008c, 2009) this closure was extended in 2008 (NEAFC Recommendation IX-2008; EC Regulation No 40/2008) and again in 2009 (NEAFC 2010).

The recommended Hatton Bank pSAC boundary traces the 2007-08 and 2009 NEAFC fisheries closed area (Figure 2.2) and adheres to the revised JNCC guidance on defining site boundaries for SACs away from the coast (JNCC 2008). Any further management measures which may be required under the Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 will be determined by Competent Authorities in consultation with JNCC and may require different boundaries to the SAC site boundary.

Hatton Bank is exceptional amongst the current tranche of offshore SAC proposals in that the entire pSAC site is already closed to demersal fishing. This closure is reviewed annually but is unlikely to alter unless NEAFC is provided with new information on the distribution of corals. Under NEAFC regulations

[11] NEAFC Record 03: Gill Nets 2006.

fisheries monitoring and enforcement at sea is carried out by inspection vessels for states fishing in an area[12].

Likely future regulation of activity following designation

The NEAFC and EU fisheries closure is to protect Vulnerable Marine Ecosystems based on long-lived cold water corals and therefore it is anticipated to continue into the future: further fisheries measures are not anticipated to be required if the site is designated.

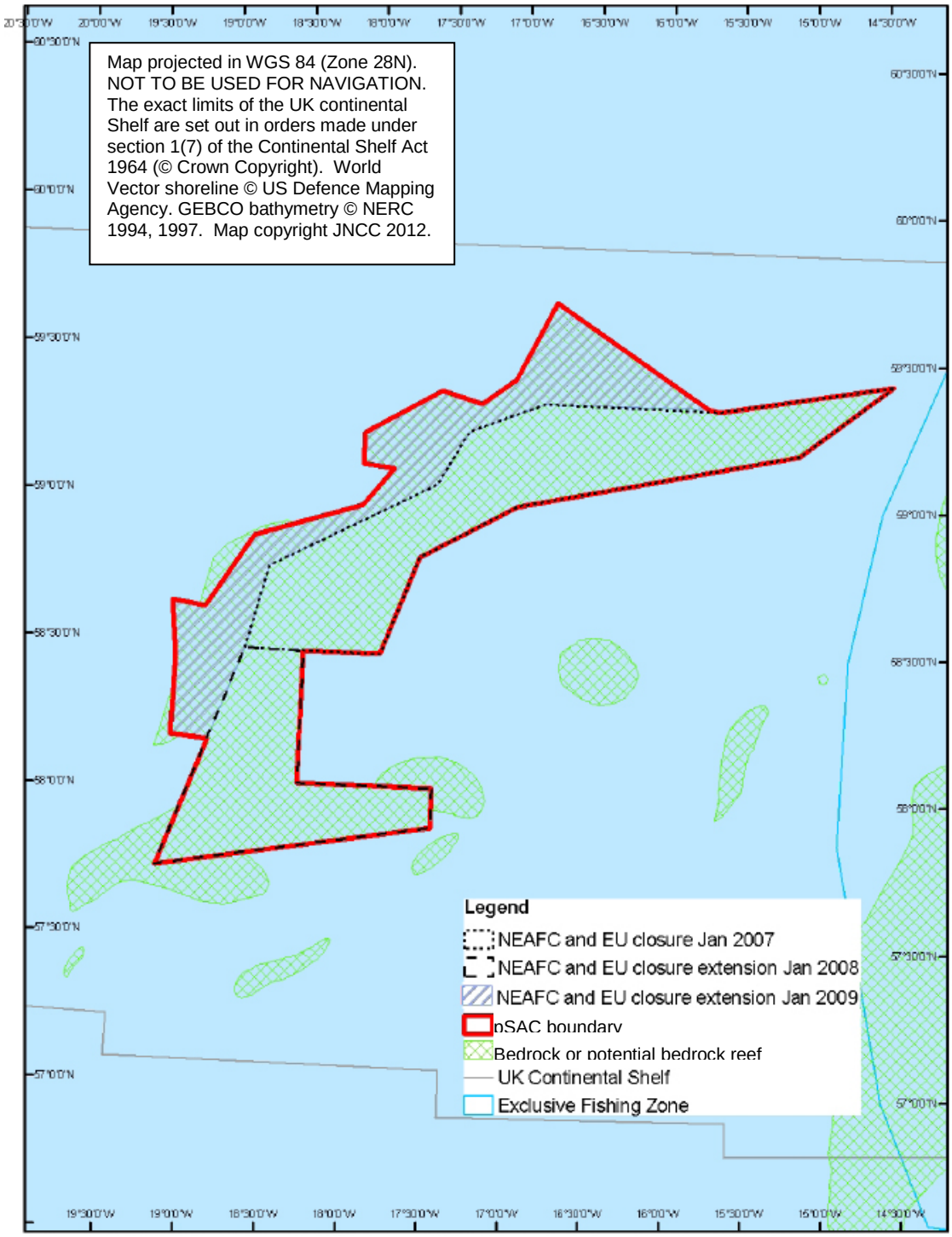


Figure 2.2 NEAFC and EU Fisheries Closures at Hatton Bank

[12]NEAFC Scheme of Control and Enforcement 2011.

3 APPROACH TO ANALYSIS OF COSTS AND BENEFITS

3.1 Approach

This IA assesses the potential costs and benefits to the UK of the policy option to designate the site. Impacts have been assessed over ten years. Section 2 has outlined the current situation at the site (the baseline) in terms of economic activities. It should be remembered that the baseline may be dynamic, and the assessments try to take account of this.

This method has been used to develop IAs for the suite of marine Natura 2000 sites consulted on by JNCC in 2009-2011. However, different sites have different baselines, activities and circumstances. Therefore the same type of impact may have different costs or benefit at different sites.

Section 4 examines the potential costs and benefits of the policy option. The costs and benefits are subject to significant uncertainty. The main causes for this uncertainty are that:

- It is difficult to predict what management measures will be implemented at the site;
- It is difficult to know how operators will respond to them and what costs they will incur in doing so; insofar as they can predict this there may be reasons in some cases for not supplying this information, for example: commercial sensitivities;
- It is difficult to predict how the condition of the protected features and surrounding environment would change under Option 1 (designate); and
- There is currently very little evidence which can be used to monetise values for environmental changes in the marine environment.

Therefore the approach to the assessment has:

- Used techniques to obtain the best available information on these areas of uncertainty. This is done firstly by developing scenarios on likely potential maximum and minimum management measures; and secondly by drawing on sources most likely to be able to predict the impacts of these potential management measures and provide relevant information;
- Used a framework of factors likely to determine the benefits to society of achieving the conservation objective of the site;
- Identified the possible minimum and maximum impact on economic sectors rather than the actual expected impact; and
- Not assessed the precise direct or indirect impacts on businesses, employees or elements of the supply chain potentially affected. This is because there is not sufficient evidence available to accurately predict the distribution of net changes in activity within the regional economy.

The analysis in this document is based on the methods that are judged to be the best practicable way of addressing the issues considered.

3.2 Costs

a) Policy costs to the private sector

The policy costs arising from designation of the site are the costs of changes to existing and planned human activities to comply with the policy objectives. The costs considered include the direct and indirect economic costs to operators, enforcement authorities and wider society. The costs are expected to result from the range of management measures that may be required to meet the site's objectives and are considered relative to the baseline of not designating the site.

The costs borne by each key sector will depend on the extent to which their activity impacts on the site and the management measures deemed necessary to restore the reef and its typical species to favourable condition. These are not yet known. It has therefore been necessary to make assumptions about what measures might be required for this site. It is assumed that the site will be transmitted to the European Commission by October 2012, and that some costs (for example, of survey requirements) could arise immediately.

Policy costs to the private sector may arise if:

- Consent for a plan/project is granted, it may be subject to restrictions on the timing or manner in which it can be implemented which result in costs to businesses. Restrictions are determined by the competent authority in its assessment under the Offshore Habitat Regulations.
- Consent for proposed plans or projects may be refused by the competent authority. The cost to businesses is assumed for this analysis to be the additional cost of undertaking the plan or project elsewhere.
- Activity in the area is restricted (e.g. certain fishing activity) and costs to business occur in the form of foregone income/profit.

b) Administration costs to the private sector

Administration costs include time and expenditure necessary for the private sector to provide information and documentation to comply within the administration requirements of a regulation. They exclude policy costs, which are the time and expenditure necessary to adjust activities (e.g. to reduce pollution) to comply with regulatory standards. Potential administration costs to the private sector are:

- The costs to businesses of finding out about the designation and its management measures;
- For ongoing or new plans and projects, the cost to businesses of providing detailed information to inform the Competent Authority's[13] assessment under the Offshore Habitat Regulations, and
- Undertaking more detailed analysis (such as Environmental Impact Assessment) and reporting if required.

c) Costs to the public sector

Potential administration costs to the public sector are:

- Costs of monitoring the site and maintaining information on its conservation status;
- Costs of regulating and activities that might impact on the conservation status of the site; and
- Costs of enforcing management measures.

[13] Competent Authorities include statutory undertakers, as well as regulators which grant consents for regulated activities in the marine area. For example, DECC is a competent authority which regulates certain activities for wind farm, and oil and gas development.

3.3 Benefits

Designating this site would be primarily to fulfil our obligations under the Habitats Directive because the site contributes a significant proportion (22%) of the UK's known reef habitat.

If not designated site condition should improve because recent fisheries controls protect the reef from damage and no other damaging activities are planned for the site. (In the unlikely case that NEAFC considered removing protection for vulnerable coral-based ecosystems designation would protect the site from damage by ensuring that alternative fishing controls were implemented.)

More-general benefits of site designation are assessed as the impact on ecosystem services that benefits humans[14]. The following overarching categories of ecosystem services are used for offshore pSAC IAs[15]:

- Provisioning services (e.g. provision of food);
- Regulating services (e.g. absorbing waste); and
- Cultural services (e.g. the role of marine species in culture and the artistic inspiration they provide).

Following Defra's guidance on the valuation of ecosystem services, the relevant benefits gained from supporting services[16] (such as cycling of nutrients and photosynthesis) are assumed to be captured by the other benefits listed and so are not examined separately[17]. The analysis in Section 4 is based on a list of ecosystem service categories that are relevant to the site.

The impacts of designation on ecosystem services are analysed further in Section 4.3. In addition to these categories biodiversity has an intrinsic value that gives rise to other benefits. Intrinsic value is important but it cannot be assessed using conventional economic techniques[18] and is not analysed further in this document.

4 COSTS AND BENEFITS OF OPTION 1: DESIGNATE THE SITE

4.1 Implications of designation

In a departure from usual IA methodology for SAC designation, minimum and maximum management strategies are not discussed here because at this site no change in management is expected to be required to restore the reef features.

4.2 Costs

a) Shipping

There are not expected to be any changes to shipping over the site.

b) Fisheries

The recommended management scenario for Hatton Bank is that the current NEAFC/EU fishery closure continues. Site designation would not, therefore, cost the fishing sector anything.

[14] As described in Parliamentary Office of Science and Technology (2007).
[15] These are the categories used in the Millennium Ecosystem Assessment (MEA 2005), http://www.millenniumassessment.org [Accessed 1.11.11].
[16] Supporting services described as "those that are necessary for the production of all other ecosystem services" in the MEA
[17] For example, small marine organisms called phytoplankton form the basis of the food chain, ultimately ending in caught fish species. Valuing phytoplankton on its own in addition to these services they support would lead to double counting.
[18] For example, in MEA (page 7, Section 2): http://www.millenniumassessment.org/documents/document.354.aspx.pdf.

It is recognised that fishers are currently subject to a combination of impacts including marine SAC designations, proposed Marine Protected Area designations, and renewable energy related developments, however consideration of cumulative impacts is beyond the scope of this IA.

c) Administration costs to Government

The estimate of the costs to Government arising as a result of the SAC designation have been largely based on the Financial Memorandum, published in relation to the Marine (Scotland) Act 2010. This presents a summary of the costs to the Scottish Government for implementing new marine site conservation measures[19].

One-off costs are related to: consultation, developing management schemes, and, statutory instruments. Key stakeholders are likely to include the Scottish Government, fishers and their representatives, JNCC, Scottish Natural Heritage, and non-government conservation organisations. Further work could also be required to assess the impacts of current activities.

Monitoring would be undertaken by JNCC: an initial detailed survey would provide baseline information on the topography, geology and ecology of the reef; following this surveys would monitor the condition of the site and fulfilment of its Conservation Objectives, on a five year cycle. Survey techniques have not yet been decided but are likely to include acoustic mapping and ground truthing by video or grab sampling. Because of its large size and distance off-shore survey costs for Hatton Bank are higher than those for other offshore SACs.

It is assumed that marine and aerial surveillance in the vicinity of the wider area already takes place to ensure compliance with fisheries restrictions and that designation will cause any additional costs.

These costs to government are summarised as:

i. *Requirements to review and manage existing activities.* It is assumed that no further work is necessary to assess the impacts of activities, but work may be necessary to develop, implement and communicate site-specific management measures. One-off costs of this work are estimated at £77k (£50k for consultation, £23k for work on management schemes and £4k for statutory instruments)[19].

ii. *Ecological assessment and monitoring.* Assessment and monitoring costs are estimated at a one-off cost of £400k for baseline information gathering (assumed to occur in 2013) and further costs of £300k every five years for monitoring (assumed to first occur in 2018)[20]. Note that these are tentative estimates based the cost of previous surveys and assume work is carried out under partnership agreements rather than at commercial rates. The estimates are precautionary and may significantly decrease, – JNCC aims to refine their survey plans in 2012 and new timings and costs will be incorporated in this IA if they become available.

Total administration costs are therefore one-off costs of £477k and periodic costs of £300k every five years. (Costs of monitoring and enforcing the NEAFC fisheries closure are not included here as the closure is already enforced.)

[19] Summary of Costs to the Scottish Government for Implementing New Site Protection Measures in the Marine (Scotland) Bill: Final Regulatory IA 2009. (Paragraph 96)
[20] N.Golding JNCC *pers. comm.* 7.11.2011

Table 4.1 Cumulative costs of designating Hatton Bank pSAC including present value costs where a discount rate of 3.5% per annum year is applied following green book recommendations.

Enforcement and Monitoring							
Description			One-off Cost		Annual Cost		
Scenario	*Cost Item*	*Type*	*Cost £k*	*Year Experienced*	*Cost £k*	*Year Commencing*	*Average*
ALL	Develop management measures	Policy	77	2012			0
	Initial ecological Monitoring	Policy	400	2013			0
	Ongoing ecological Monitoring	Admin	300	2018			0
Total		*Admin*	400		0		0
		Policy	377		0		0
		Both	777		0		0

Cost £k	*Present Value*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*
	77	77	0	0	0	0	0	0	0	0	0
	386	0	386	0	0	0	0	0	0	0	0
	244	0	0	0	0	0	0	244	0	0	0
Admin	244	0	0	0	0	0	0	244	0	0	0
Policy	463	77	386	0	0	0	0	0	0	0	0
Both	708	77	386	0	0	0	0	244	0	0	0

4.3 Benefits of designating the site

Reefs at Hatton Bank are well preserved but not in pristine condition due to prior damage from demersal fishing [21]. Protecting this site from possible damage will enable species that form the reef and are associated with it to grow, feed and reproduce. Some species live primarily on the reef (e.g. corals) while others (e.g. certain fish and shellfish) may use the reef temporarily for feeding, reproduction or protection. The benefits of protecting the reef habitat are both site-specific and Europe wide (as part of the network of Natura 2000 sites). Wider benefits occur because animals and plants disperse to other areas (e.g. corals release larvae into the water which are swept to new sites by ocean currents). Together the Natura 2000 sites help towards maintaining and restoring the quality, productivity and diversity of marine ecosystems in European waters: this is vital for the sustainable delivery of ecosystem services. Benefits of designating the site are discussed below in terms of ecosystem services.

a) Provisioning services

Fish, shellfish and other crustaceans for human consumption

Hatton Bank increases habitat heterogeneity and complexity by providing hard, uneven substrate in a predominately sedimentary environment of muddy and sandy planes (McBreen *et al.* 2011). Patches of unique habitat have been shown to increase the number of juvenile fish species surviving to adulthood in other regions (e.g. Connell & Jones 2003 – New Zealand) by offering refuge from predation and competition. They can also provide food and shelter for adult fish possibly including long-lived, slow-maturing demersal fish recorded from Hatton Bank (e.g. Baird's smooth-head and Orange roughy).

[21] Hatton Bank SAC Selection Assessment Document v1.0 - available from http://jncc.defra.gov.uk/marineconsult

b) Regulating services

Regulating services are not mentioned further here as their value is considered to be minimal at a site level.

c) Types of value

Option Values

Some people will gain from having the option to benefit in future from conservation of a good example of reef, even if they do not currently plan to benefit from it (option value). This arises because if the site is not protected now there may not be good examples of reef to conserve in future. Also, some will gain from knowing that it is conserved in case future information reveals that the reef provides important benefits that we are not currently aware of (quasi-option value).

Non-use Values

Most people who benefit from knowing the site is being conserved are unlikely to use it or get tangible benefits from it. This is known as the existence value of conserving the site. Some people will also gain satisfaction from knowing that the reef habitat is being conserved for others in the current generation (altruistic value) and for future generations (bequest value).

There is reliable evidence in the UK and elsewhere that the general population has significant positive non-use values associated with rare species (see for example Christie *et al.* 2004 for general discussion or White, *et al.* 2001 for examples of value of conservation of specific mammal species). Additionally, Beaumont *et al.* (2006) estimate the non-use value of biodiversity of the UK marine environment at £0.5-1.1 billion per year across the UK population.

The effects of designation of Hatton Bank for the provision of each of the ecosystem services described above is summarised in Table 4.2.

The table highlights the differences envisaged following site designation in comparison to the baseline (no designation). There are four additional columns of information in the table to clarify our understanding of the qualitative changes in ecosystem services arising from (non-) designation:

- ***Relevance*** Relating to the amount of ecosystem good or function arising from site
- ***Value weighting*** Categorisation of how valuable the amount of ecosystem good or function from the site is in providing benefits to human population
- ***Scale of benefits*** Consideration of actual potential to deliver benefits (for example considering leakage, delivery to human population, etc.)
- ***Confidence*** Level of confidence in our current knowledge of all other categories (in other words, scale of benefit, level of improvement, etc.)

Based on the above categories, an overall level of each ecosystem service is defined with its own confidence level. An overall level of total benefits is also assigned at the base of the table.

The parameters are assigned a level for each service from a menu, defined as:

- ***Nil*** Not present/none.
- ***Minimal*** Present at a very low level, unlikely to be large enough to make a noticeable impact on ecosystem services.
- ***Low*** Present/detectable, may have a small noticeable impact on ecosystem. services, but unlikely to cause a meaningful change to site's condition.
- ***Moderate*** Present/detectable, noticeable incremental change to site's condition.
  High Present/detectable order of magnitude impact on sites condition.

Table 4.2 Potential significance of ecosystem services improvements for Hatton Bank

Services	Relevance to site	Baseline Decline	Management if designated	Value weighting	Scale of benefits	Confidence
Fish for human consumption	**Low-Moderate** Provides habitat for commercially exploited fish.	**Low** Existing fishing closure should prevent habitat decline. Illegal fishing could decrease quality of habitat and numbers of fish.	**Low** Existing fishing closure should prevent habitat decline. Illegal fishing could decrease quality of habitat and numbers of fish.	**Moderate** A large area of hard, topographically complex, substrate in an area otherwise dominated by sand and mud.	**Low** Fisheries closure already in force.	**Low** Unsure whether species that would benefit are currently impacted by habitat damage.
Fish for non-human consumption						
Carbon sequestration	**Minimal** Features are likely to have low effect.	**Minimal**	**Nil**	**Moderate** High value but site plays minimal role	**Minimal**	**Moderate** Biological pump not well understood
Waste assimilation	**Minimal** The features are not recognised as significant waste assimilators.	**Minimal**	**Nil**	**Minimal** Site plays minimal role.	**Nil**	**Moderate** Assimilation not well understood.
Non-use value of natural environment	**Low- Moderate** Public has preference for rare and visually appealing features, perhaps including cold water corals.	**Low** Protected by current fisheries closure (in absence of illegal fishing).	**Low -Moderate** Protected by current fisheries closure (in absence of illegal fishing). Public may perceive that conservation is more effective if the site is designated.	**Low** All UK population is relevant but relatively low value per capita.	**Low - Moderate**	**Low**
Scientific research	**Moderate** Some opportunity for research of coldwater coral influenced by oceanic currents.	**Low** Protected by current fisheries closure (in absence of illegal fishing).	**Low-Moderate** Designation necessitates scientific surveys and monitoring.	**Moderate**	**Moderate**	**Moderate**
Total value of changes in ecosystem services			**Low-Moderate**			**Low-Moderate**

d) Benefits to economic activity

Designation of sites may assist public and private sectors with marine spatial planning and a more strategic consideration of available resources. In particular they will have better knowledge of a) the nature conservation significance of different parts of the marine environment, and b) the added costs of applications within a site boundary.

4.4 Summary of costs and benefits

Table 4.3 summarises the potential costs and benefits of the site analysed in this section. The costs are analysed over a period of 10 years from designation in 2012, and are discounted at 3.5%[22]. There are uncertainties in the assessment of costs, and some costs have not been quantified.

Table 4.3 Summary costs and benefits table for Option 1: Designate the site.

	Costs	**Benefits**
Assessed	**Sectors**	Low-moderate: possible impacts on fish species, scientific and non-use values.
	Shipping: £0	
	Fishing: £0	
	Government: Management £77k one-off Ecological assessment: £400k one-off, and £300k 'one-off' (every five years)	
Total average annual	0	Low-moderate
Total one-off	£777k	
Total (Present Value*)	£708k	Low-moderate
Not assessed	• Costs if any projects are refused • Costs from cumulative MPA impacts • Costs beyond next 10 years • Any extra fisheries enforcement costs associated with designation.	• Role of feature in wider ecosystem including suite of marine SACs. • Intrinsic value of biodiversity improvements • Ecosystem recovery beyond next 10 years

(***this is the value over 10 years with the annual green book discount applied to costs occurring after 2012.)

Risk of unintended consequences

The main risk is that the fisheries closure is not successfully enforced and damage from illegal fishing prevents the site from reaching its conservation objectives.

Under the Offshore Habitats Regulations, and following an Appropriate Assessment, a Competent Authority can agree to a plan or project for imperative reasons of overriding public interest (even where a project would have an adverse effect on site integrity). Assessing such grounds would entail additional costs.

[22] HM Treasury, The Green Book: http://www.hm-treasury.gov.uk/data_greenbook_index.htm

4.5 Impact tests

Consideration has been given within the main body of this assessment to relevant and identifiable environmental impacts and effects on sustainable development of designating Hatton Bank pSAC.

The further tests specified by the IA guidance are considered here.

a) Competition assessment

No significant costs to industry sectors are identified, so competition assessment is not applicable.

b) Small firms impact test

No significant costs to industry sectors are identified, so a small firms impact assessment is not applicable.

c) Legal aid

No new criminal penalties are introduced by these proposals therefore we do not anticipate that there will be an impact on the Legal Aid Fund.

d) Carbon assessment

No significant change in activity is identified, so a change in greenhouse gas (GHG) emissions is not expected.

e) Rural proofing

No significant costs to industry sectors are identified, so a rural proofing impact assessment is not applicable.

f) Other impact tests

The effect of designating the site on: health, disability, race, gender equality and human rights has been considered and it is not thought to have an impact. Consequently these impact tests are not examined further here.

5 CONCLUSIONS

This IA aims to provide stakeholders and Government with information on the impacts of designating Hatton Bank pSAC. This is done by considering the impacts of Option 1 (designating the site) relative to the baseline (to not designate the site).

The reef is vulnerable to damage from demersal fishing, but such fishing is currently prohibited over the site. No industries are likey to be impacted by designation, but there are costs to Government in administering, enforcing and monitoring the pSAC. The UK Government would risk infraction proceedings and large fines from the EC if this site is not designated.

Table 4.3 shows that under Option 1 (for the 10 years of IA framework) total costs are estimated to be £708 k at present value and there are expected to be low to moderate benefits for fish stocks, scientific research and non-use aspects of the site.

In addition, a range of costs and important ecological benefits are possible through wider network and strategic effects. Establishing a network of protected sites is a key purpose of the Habitats Directive.

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