Title: East Rockall 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:** 25/10/2012 **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 in 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 East Rockall 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** Yes	**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 2012	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	0.674		0.013	**0.701**
High	0.674		0.156	**1.650**
Best Estimate	0.674		na	**na**

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

Low: Administration, enforcement and monitoring (£674k and £13k .pa)
High: Administration, enforcement and monitoring (£674k and £13k .pa); Lost profitability for fisheries (£143k. pa)

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

High: some fishermen exit sector, knock-on effect to local economy of costs to fishermen.

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'

It has not been possible to monetise the benefits because the benefits are not traded and cannont be easily quantified.

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

Restoration of reef habitats and associated biological communities.
Low to moderate beneficial impacts on: fish stocks; non-use values of natural environment; and for scientific research.
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 so a realistic range of measures is used for analysis. If site is not designated condition of the habitats could deteriorate. 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 if appropriate fisheries management not agreed through the CFP or properly enforced. 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: 0-0.036	**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 by human activities. 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 East Rockall Bank for its Reef habitat (Habitat H1170 under Annex I of the Habitats Directive). The habitat includes bedrock reefs, stony reefs formed by boulders and cobbles and biogenic reef.

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 (that decision 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 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 disappearing 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 their future existence.

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 (EC) 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.

[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'.

Once adopted by the EC in the Natura 2000 network the sites are designated by Member States as SACs.

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 EC Habitats and Wild Birds directives.

The Habitats Directive provides site selection criteria within Annex III. These criteria evaluate:

- 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 the UK Government and the Devolved Administrations on nature conservation matters, including on the selection of possible SACs 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 proposed SACs submitted by the UK Government is sufficient to meet the requirements of the Habitats Directive. 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].

There are currently 102 SACs with marine components, covering 5% of the UK sea area. 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 2012 fifteen 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. A further five possible SACs (Anton Dohrn Seamount, East Rockall Bank, Hatton Bank, Pobie Bank Reef and Solan Bank Reef) have been recommended to Scottish Government[8] in 2012.

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 SAC (cSAC) proposals were submitted to the EC in August 2010; Pisces Reef Complex and Wight Barfleur

[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://www.jncc.defra.gov.uk/page-161.
[8] These sites are were subject to public consultation between March and May 2012.

Reef cSACs were submitted to the EC in September 2012; and, Anton Dohrn Seamount, Hatton Bank, Pobie Bank Reef and Solan Bank Reef which have been approved as possible SACs (pSACs).

East Rockall Bank is located within the Rockall Trough and Bank Regional Sea. Other sites within this Regional Sea that have reef as a qualifying feature are: Darwin Mounds SCI, North-West Rockall Bank cSAC, and Anton Dohrn Seamount pSAC.

East Rockall Bank neighbours the North West Rockall Bank cSAC; with both areas being located on the Rockall Bank structure. However, the faunal composition of the bedrock and stony reef habitats at East Rockall Bank is significantly different to those at North West Rockall Bank, most likely due to the greater depth of East Rockall Bank (Howell *et al.* 2009). The benthic assemblages of East Rockall Bank also differ from those at Anton Dohrn Seamount and Darwin Mounds.

c) Conservation objectives and management of sites

JNCC is responsible for establishing conservation objectives for the features in 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 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 provisions 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 in offshore waters a Competent Authority must, where possible, manage human activities to ensure that the feature is not negatively impacted 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 East Rockall Bank pSAC. Two options were considered for this site:

Baseline: do nothing
Option 1: designate the site

No other options are considered as East Rockall 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 (e.g. fishing) are assumed to continue at current levels, potentially causing ongoing damage to the reef habitat and species.

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 includes a description of:

- The current situation at the site (the baseline), such as the site's ecological characteristics, the economic activities taking place, their value, and their environmental impacts;
- What changes, relative to the baseline, are expected to result from management measures that may be required to meet the site's conservation objectives if it was designated;
- 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 against the UK for failing to fully implement the Habitats Directive).

2.2 Characteristics of the site

East Rockall Bank is located approximately 320 km west of the Outer Hebrides. It is located along the eastern flank of Rockall Bank, a geological feature approximately 450 km long and 200 km wide. At its highest point the bank breaks the water's surface forming a rocky island. The eastern edge of the bank forms a scalloped, faulted, scarp-slope which descends steeply down 1000 to 1500 m into the Rockall Trough (Howell *et al.* 2009, Long *et al.* 2010).

The eastern edge of the Rockall Bank summit comprises fine sand with iceberg plough-marks; here mixed cobbles and pebbles representing Annex I Stony Reef support erect bryozoans, axinellid sponges and encrusting sponges. Historical records (Wilson 1979a and b) indicate that *Lophelia pertusa,* was associated with the coral rubble fringes identified in 2005 survey reports (Howell *et al.* 2009).

The eastern flank of Rockall Bank comprises steep slopes 400 – 750 m deep with substrates of boulders, cobbles and pebbles and areas of exposed bedrock and bedrock outcrop (Howell *et al.* 2009). A rocky ledge feature, representing Annex I Bedrock Reef, runs the length of the eastern flank and this supports assemblages of lace corals (stylasterid) and lobose and encrusting

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

sponges (Long *et al.* 2010). Further down the slope of the eastern flank, the substrate changes to boulder and cobble habitat, representing Annex I Stony reef and supporting high abundances of sponges.

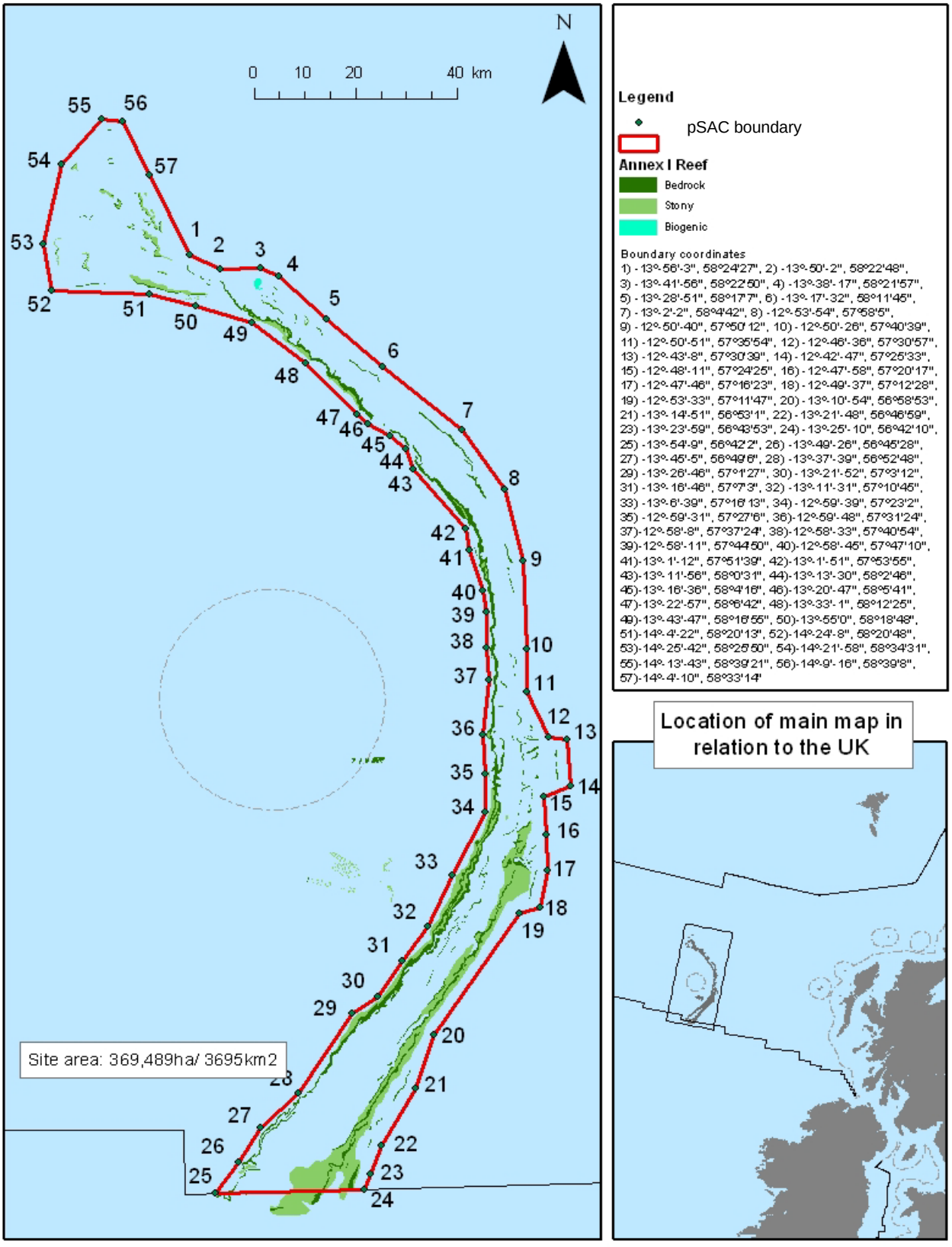
Small mound features on the flanks of the bank are covered by areas of sediment in-filled dead *Lophelia pertusa*. Live *L. pertusa* reef associated with parasitic cones in the northern region of East Rockall Bank supports a diverse assemblage of antipatharian and gorgonian corals (Long *et al.* 2010). Both of these habitats represent Annex I biogenic reef. Recently, further examples of Annex I Bedrock and Biogenic Reef and coral rubble were found to the north of the bank (Huvenne 2011)

The Reef has been damaged by trawling as evidenced by frequent trawl scars (Long *et al.* 2010) however the extent to which this has damaged biogenic habitats (particularly *Lophelia*) is uncertain.

The proposed site boundary for East Rockall Bank was defined using JNCC's marine SAC boundary definition guidelines[10]; it encloses the minimum area necessary to ensure protection of Annex I habitats. Bottom trawling may threaten the integrity and quality of the reef so the proposed boundary includes a buffer zone margin that allows for fishing gear operating at a distance from the vessel.

Note that the boundary proposed is for the pSAC. Future management measures required under the Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended) will be determined by Competent Authorities in consultation with JNCC, and could have different boundaries.

[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 Proposed boundary for the East Rockall Bank pSAC and the distribution of reef habitat.

2.3 Vulnerability of the site to human impacts

Table 2.1 below provides 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 from human activities, 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 to pressure and vulnerability have been derived using best available scientific information and informed scientific interpretation and judgement; the assessment is dynamic and will be revised as necessary to reflect new research or evidence. Note that three sub-types of Annex I reefs are found at the East Rockall 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. (See the East Rockall Bank draft Conservation Objectives and Advice on Operations document[11] for more-detailed information.)

[11] Available from: http://jncc.defra.gov.uk/pdf/EastRockall_ConservationObjectives_AdviceonOperations_2.0_withbookmarks.pdf

Table 2.1 Sensitivity, exposure and vulnerability of the East Rockall Bank reef to physical, chemical and biological pressures (taken from the East Rockall Conservation Objectives and Advice on Operations document v2)

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)		East Rockall Bank**:** *Lophelia pertusa* biogenic reef		
		Sensitivity	**Exposure**	**Vulnerability**
Physical Loss	**Removal** (e.g. aggregate dredging, isolated rock dump, infrastructure development)	•••	**None**	**No known vulnerability**
	Obstruction (e.g. permanent constructions (oil & gas infrastructure, windfarms, cables) & wrecks)	•••	**Low**	**Moderate vulnerability**
	Smothering (e.g. drill cuttings)	••	**None**	**No known vulnerability**
Physical Damage	**Changes in suspended sediment** (e.g. screening plumes from aggregate dredging)	•	**None**	**No known vulnerability**
	Physical disturbance or abrasion (e.g. mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, potting)	•••	**Low**	**Moderate vulnerability**
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)	**?**	**None**	**No known vulnerability**

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)	•	**None**	**No known vulnerability**
	Changes in salinity (e.g. outfalls from rigs, ships)	•••	**None**	**No known vulnerability**
Biological disturbance	**Introduction of microbial pathogens** (e.g. outfalls)	**?**	**?**	**No known vulnerability**
	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)	•••	**Low**	**Moderate vulnerability**

Table 2.1 shows that East Rockall Bank and its associated biological communities are moderately vulnerable to:

- obstruction (wrecks and cables);
- physical disturbance or abrasion (from mobile demersal fishing); and
- selective extraction of species (from static gears and mobile demersal fishing)

On further scrutiny the feature's overall structure and function was not considered to be affected by obstruction because exposure to this pressure is very low in relation to the size of the feature. The overall vulnerability to physical removal through obstruction was therefore reduced from moderate to low[12].

It has not been possible to determine whether the interest feature is vulnerable to the introduction of non-native species and translocation.

The reef is at risk of deterioration under the baseline as a result of the potential impacts of demersal fishing. Deterioration of the habitats would not achieve the aims of the Habitats Directive to maintain or restore Annex I habitats to favourable conservation status.

The conservation objective, based on current evidence, for the management of East Rockall Bank is to restore the reef to favourable condition. Activities that do not result in pressures to which the feature is sensitive may continue at current levels. The management of other activities to which the feature is vulnerable may need to be reviewed by the competent authorities. If new information suggests that the condition of the feature at the site is not significantly affected by the level of current activities and assessment indicates the site is in favourable condition, then the conservation objective for the reef will be changed to 'maintain' the features in favourable condition.

[12] East Rockall Bank SAC: Draft Conservation Objectives and Advice on Operations v1.0 JNCC

2.4 Human activity and regulation of activity at the site

Current and proposed economic activity at East Rockall Bank is described under the following sectors:

- 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, – two inactive cables cross the site, no active cables run near or through the site;
- Fisheries, – activity in part of the site and 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 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 is granted by Scottish Ministers and the Secretary of State.

The Offshore Habitats Regulations set out that where consent for a plan or project has been granted by a Competent Authority 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 are considered plans or projects under Regulation 25 of the Offshore Habitats Regulations. Ongoing activities at the site which may affect the habitat of interest and prevent 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).

a) Shipping

Parts of the site may be crossed by ships. 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.

b) Cables

Two inactive cables cross the site. No active telecommunications infrastructure currently passes through, or is planned for, the site.

Current Management of Activity (Baseline)
There is currently no regulation for the laying of cable in offshore waters, however cables are usually laid on soft sediment and are not likely to be laid on reef (or other uneven surface) where they could easily tangle. It is therefore assumed that no cables would be laid in the future within the possible SAC area.

c) Fisheries

Current activity (Baseline)
Fishing in offshore waters is managed at a UK and European level but non-European Union vessels may fish by agreement. Comprehensive data on location and type of fishing are difficult to obtain and recent fishing data are a reflection of activity already managed by total allowable catch and species quotas. Recent data are, however, used here as a best estimate of baseline fishing activities prior to any designation.

The distribution of fishing effort within the region can be obtained for UK vessels (≥15m) that carry vessel monitoring systems (VMS). These provide a vessel's position, speed and heading either hourly or every

two hours. As vessels fish at characteristic speeds, VMS data can be processed to provide proxy patterns of 'active fishing' based on vessel speed, and these patterns can be analysed spatially in relation to the site boundary. Using a speed rule to partition active fishing from VMS is a coarse but effective means of estimating fishing effort (Mills *et al*. 2007) for towed gear; it is less reliable for set gear such as pots and nets. VMS data has been used to estimate fishing effort within SACs as set out in section 4.2b.

There are no landings data available specifically for the area which is proposed for designation. Marine Scotland and the Marine Management Organisation compile various data at the level of ICES rectangles. Catch data encompasses information for UK-registered vessels landing in UK and non-UK ports, and for non-UK registered vessels landing in UK ports. Data includes:

- year
- size of vessel
- type of gear
- species caught
- port of landing
- vessel nationality
- value of landing
- tonnage of landing

Note, the exception is for non-UK vessels that fish within territorial waters, but that land at non-UK ports; it is not possible to obtain weights and values of landings for these vessels. This IA is currently concerned with the impacts of the UK's potential designation of East Rockall Bank on UK businesses. However the effects of designations on other Member States are relevant and information on Spanish fishing vessels has been provided by Pescagalicia-Arpega-Obarco[13].

Information on landings from the region around East Rockall Bank is given at the scale of ICES statistical rectangle (0.5^{o} latitude, 1.0^{o} longitude). These data were provided by the MMO and Marine Scotland and are presented here in tables 2.2 to 2.6; five years are shown (2006-10) to illustrate inter-annual variation in catches. The area of East Rockall Bank pSAC is 3695 km^2, just over the area of a single ICES statistical rectangle, but the site crosses nine rectangles (Figure 2.2). Resolving whether fishing activities actually overlap with the site and feature is not therefore possible from landings data alone. Analysed VMS data[14] gives us an indication of how fishing effort is spread across the site and surrounding area with a resolution of 0.05 decimal degrees, but this is still coarse information.

[13] This information was provided in written response to the Consultation Impact Assessment in July 2012.

[14] Generated by Cefas from VMS, log-book and EU vessel register data for 2006-9. All vessels (UK & non-UK) are included and fishing is estimated using a simple speed rule of 1-6 knots to represent fishing activity. 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

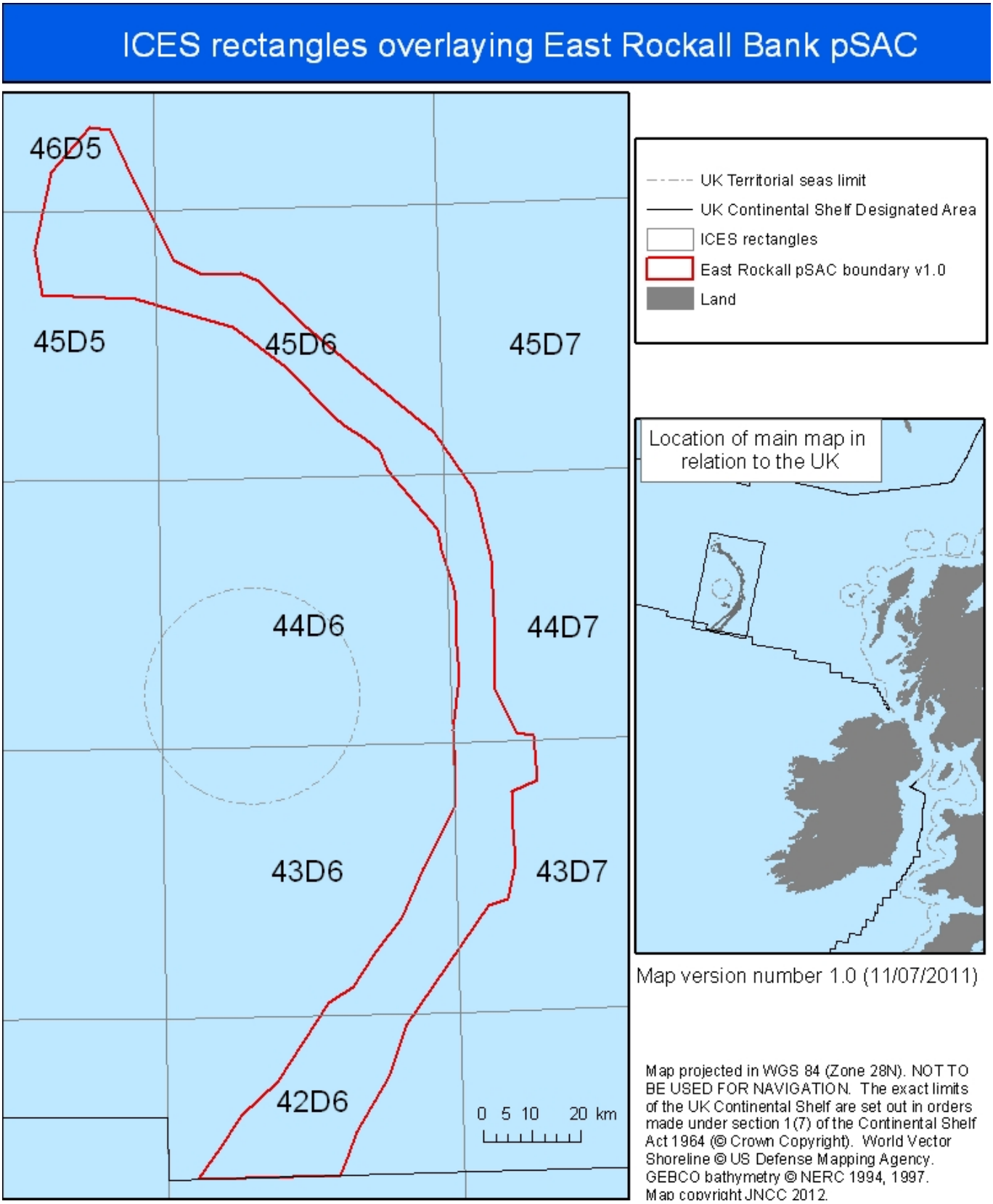


Figure 2.2 ICES Rectangles overlaying East Rockall Bank pSAC

Table 2.2 Fisheries landings 2006-10 from the ICES rectangles containing East Rockall Bank pSAC

ICES	2006		2007		2008		2009		2010		Average		Relative (%)	
	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight	Value
44D6	563	1,136	891	1,481	1,387	3,255	1,407	2,844	1,320	2,658	1,113	2,275	41	43
43D6	192	421	499	852	853	1,539	1,255	2,324	981	2,300	756	1,487	28	28
45D5	176	394	217	335	253	428	268	628	256	566	234	470	9	9
42D6	45	105	101	333	67	103	164	471	386	1,154	153	433	6	8
45D6	106	246	209	387	160	320	202	459	128	301	161	343	6	6
44D7	13	28	16	68	76	206	75	154	57	132	47	118	2	2
43D7	28	73	10	36	5	23	59	95	1,004	274	221	100	8	2
46D5	130	197	11	16	35	69	29	117	14	59	44	92	2	2
45D7	0	0	0	0	0	0	0	0	4	9	1	2	<1	<1
TOTAL	**1,252**	**2,602**	**1,952**	**3,509**	**2,836**	**5,943**	**3,459**	**7,092**	**4,150**	**7,453**	**2,730**	**5,320**	**100**	**100**

Table 2.3 Fisheries landings 2006-10 from the ICES rectangles containing East Rockall Bank pSAC by gear type.

Gear	2006		2007		2008		2009		2010		Average		Relative (%)	
	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight	Value
Otter trawls - bottom	1,024	1,949	1,764	2,881	2,519	5,088	2,765	5,006	2,481	4,999	2,111	3,985	77	75
Anchored gillnets	16	177	52	403	44	188	212	1,121	254	1,160	116	610	4	11
Otter twin trawls	42	89	95	152	146	331	308	617	309	733	180	384	7	7
Pair trawls - bottom	96	150	17	29	60	67	161	272	82	140	83	131	3	2
Gill and entangling nets*	30	153	0	0	56	257	10	70	37	173	27	131	1	2
Otter trawls - midwater	0	0	0	0	0	0	0	0	982	235	196	47	7	1
Otter trawls*	25	48	25	43	3	5	3	6	4	14	12	23	<1	<1
Beam trawls	7	26	0	0	0	0	0	0	0	0	1	5	<1	<1
Longlines*	10	9	0	0	0	0	0	0	0	0	2	2	<1	<1
Scottish seines	0	0	0	0	7	8	0	0	0	0	1	2	<1	<1
Set longlines	2	1	0	0	0	0	0	0	0	0	0	0	<1	<1

*These groups are non-specific; they could include anchored or mobile and demersal or pelagic gear.

Table 2.4 Fisheries landings 2006-10 from the ICES rectangles containing East Rockall Bank pSAC by vessel nationality.

Vessel nationality	2006		2007		2008		2009		2010		Average		Relative (%)	
	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight	Value
Scotland	962	2,087	1,705	2,799	2,773	5,851	3,249	6,355	2,867	6,126	2,311	4,643	85	87
France	136	208	13	19	0	0	145	610	185	799	96	327	4	6
England	154	307	190	342	17	26	12	34	0	0	75	142	3	3
German	0	0	39	339	0	0	3	20	12	50	11	82	<1	2
Wales	0	0	0	0	39	60	49	73	41	108	26	48	1	1
Norway	0	0	0	0	0	0	0	0	982	235	196	47	7	1
Ireland	0	0	5	9	0	0	0	0	62	135	13	29	<1	1
Northern Ireland	0	0	0	0	7	8	0	0	0	0	1	2	<1	<1

Table 2.5 Fisheries landings 2006-10 from the ICES rectangles containing East Rockall Bank pSAC by port of landing.

Port of landing	2006		2007		2008		2009		2010		Average		Relative (%)	
	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight	Value
Ullapool	695	1,402	567	1,251	974	2,168	1,545	3,389	1,117	2,769	980	2,196	36	41
Kinlochbervie	65	124	234	387	769	1,469	585	1,113	529	962	436	811	16	15
Scrabster	75	111	253	393	408	750	606	983	461	911	361	629	13	12
Lochinver	217	573	526	876	105	242	156	444	206	506	242	528	9	10
Peterhead	20	29	127	206	329	649	317	438	1,229	671	404	398	15	7
Corunna	55	202	28	57	103	367	40	304	128	478	71	282	3	5
Mallaig	15	16	23	35	21	60	132	243	419	1,030	122	277	4	5
Fraserburgh	28	37	42	54	64	152	54	128	32	50	44	84	2	2
Aberdeen	43	56	121	191	38	55	0	0	0	0	40	60	1	1
Macduff	0	0	22	39	15	24	0	0	10	29	9	18	<1	<1
Vigo	1	6	0	0	0	0	5	11	11	30	3	10	<1	<1
Buckie	8	14	9	17	0	0	0	0	0	0	3	6	<1	<1
Kyle	20	24	0	0	0	0	0	0	0	0	4	5	<1	<1
Killybegs	0	0	0	0	0	0	6	17	0	0	1	3	<1	<1
Burela	0	0	0	0	0	0	0	0	4	14	<1	3	<1	<1
Dunbeath	0	0	0	0	0	0	9	13	0	0	2	3	<1	<1
Lerwick	0	0	1	3	0	0	4	8	0	0	1	2	<1	<1
Unspecified Norwegian Port	9	8	0	0	0	0	0	0	0	0	2	2	<1	<1
Campbeltown	0	0	0	0	7	8	0	0	0	0	1	2	<1	<1
Scalloway and Isles	0	0	0	0	0	0	0	0	5	5	1	1	<1	<1
Dingle	<1	<1	0	0	0	0	0	0	0	0	0	0	<1	<1

Table 2.6 Fisheries landings 2006-10 from the ICES rectangles containing East Rockall Bank pSAC by species.

Species	2006		2007		2008		2009		2010		Average		Relative (%)	
	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight (t)	Value (k£)	Weight	Value
Monks	219	986	241	1,043	299	1,187	731	3,281	735	3,260	445	1,951	16	37
Haddock	310	474	1,038	1,579	1,243	1,842	1,533	2,228	1,103	1,715	1,045	1,568	38	29
Squid	3	8	11	24	670	2,132	236	404	588	1,111	302	736	11	14
Megrim	132	347	134	246	121	223	106	222	83	179	115	244	4	5
Ling	91	124	145	190	119	167	265	343	217	338	167	232	6	4
Saithe	151	101	140	80	233	161	380	281	233	227	227	170	8	3
Witch	101	195	109	165	50	63	64	121	90	204	83	150	3	3
Cod	20	41	20	46	26	72	32	70	12	31	22	52	1	1
Blue Ling	136	204	26	37	6	7	4	3	1	2	35	51	1	1
Blue Whiting	0	0	0	0	0	0	0	0	982	235	196	47	7	1
Catfish	13	22	12	19	10	17	21	36	13	25	14	24	1	<1
Skates & rays	20	30	12	13	13	13	16	26	13	27	15	22	1	<1
Grt. Forked Beard	13	12	24	21	13	13	15	16	8	11	15	15	1	<1
Mixed demersal	21	25	14	7	7	5	21	13	14	13	16	13	1	<1
Torsk (Tusk)	13	12	21	21	12	13	10	8	5	6	12	12	<1	<1
Whiting	0	0	1	1	5	7	9	14	11	13	5	7	<1	<1
Halibut	1	8	2	7	1	5	1	6	1	8	1	7	<1	<1
Gurnards - Red	0	0	0	0	3	3	2	0	32	28	7	6	<1	<1
Lemon Sole	1	2	1	2	2	2	8	12	6	8	4	5	<1	<1
Other flatfish	<1	2	<1	3	1	5	1	3	1	7	1	4	<1	<1
Crustaceans*	3	5	1	2	1	3	1	1	1	2	1	3	<1	<1
Unid. Incl. roe	1	1	1	1	1	1	1	4	1	1	1	2	<1	<1
Sharks & Dogfish	3	3	<1	1	1	2	0	0	0	0	1	1	<1	<1

* Includes deepwater red crab and nephrops.

Average annual landings (2006-2010) for the nine ICES rectangles overlaying East Rockall SAC were 2730 tonnes, with a first sale value of £5m (see Table 2.2). Variation in landings between years is high and reflects changing markets, regulations (e.g. proper implementation of the Buyers and Sellers Register), and quota allocation, in addition to changes in fish and shellfish abundance.

Most fishing was carried out by Scottish and French registered vessels (a minimum of seven French trawlers are known to fish in the area[15]) using static nets and demersal trawls to catch a variety of fish and shellfish (including haddock, ling and squid). In 2010 large catches of blue whiting were also made by a Norwegian vessel using mid water trawls. Spanish vessels also operate in the area, primarily targeting monkfish with gill nets: up to 15 gill-netting vessels operate in ICES zone VI and each has around 15-17 crew members. Static nets were regularly deployed to catch high-value species (including deepwater red crab, monkfish, halibut, ling, skates/rays and turbot). Landings were primarily to Scottish ports but smaller amounts were consistently landed to Spain; there were also sporadic landings to Ireland and Norway.

Landings increased over the period for which we have data, despite the closure of segments of rectangles 44D6 and 54D6 to bottom trawling in 2008 (Figure 2.3), this trend was largely driven by increases in landings of haddock, blue whiting, monkfish and squid.

Vessel monitoring data showed that trawlers focus on shallow areas at the top of Rockall Bank and towards the eastern limit of the pSAC: they were largely absent from the reef and steep cliffs which make up the majority of the site and deep water to the north and east (Annex 1). These data also suggests that fixed gear (nets and long-lines) was sometimes set along the eastern edge of the site where cliffs drop steeply into deep water (Annex 1). The Scottish Fishermen's Federation state that blue whiting are primarily caught over East Rockall Bank pSAC and that high catches of monkfish are made in the vicinity of the western boundary of the pSAC[16]. Scottish vessels targeting monkfish have invested heavily in quota allocation for this species.

Following public consultation on the Consultation Impact Assessment, further VMS-based analysis was carried out to assess the volume and value of the fisheries landed from the portions of the ICES rectangles affected by the proposed SAC boundary. This analysis attempted to quantify the volume and value of landings made by vessels using demersal, static and nephrops gears, with portions of the relevant ICES rectangles being attributed to the proposed SAC area on a 'best fit' basis. The estimated volumes and value of landings for the period 2006-2009 by species are presented in Table 2.7, while the estimated volumes and value of landings for the period 2006-2009 by broad gear type are presented in Table 2.8 overleaf.

[15] This information was provided by the National Federation of Fishermen's Organisations in their written response to the Consultation Impact Assessment for East Rockall Bank pSAC in June 2012.
[16] This information was provided by the Scottish Fishermen's Federation in their written response to the Consultation Impact Assessment for East Rockall Bank pSAC in June 2012.

Table 2.7: VMS-based estimates of volume and value of fisheries landings from East Rockall Bank pSAC by species[17][18]

	2006		2007		2008		2009		Average		Relative %	
	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)
Blue Ling	0	0.1	0	0.1	0	0.0	0	0.2	0	0.1	0.1%	0.0%
Bluemouth	0	0.1	0	0.0	0	0.0	0	0.0	0	0.0	0.0%	0.0%
Catfish	1	2.2	1	1.9	1	0.8	1	1.8	1	1.7	0.5%	0.4%
Cod	0	0.1	0	1.2	0	0.2	1	2.4	0	1.0	0.2%	0.2%
Great Forkbeard	4	2.8	1	1.1	2	1.8	3	2.4	2	2.0	1.0%	0.4%
Haddock	1	1.9	73	97.6	31	28.9	78	89.4	46	54.4	18.4%	11.4%
Hake	0	0.2	1	0.7	0	0.1	0	0.3	0	0.3	0.1%	0.1%
Halibut	0	1.5	0	1.4	0	0.2	0	0.8	0	1.0	0.1%	0.2%
Ling	28	40.0	45	57.6	47	59.6	58	76.4	44	58.4	17.7%	12.3%
Lemon Sole	0	0.2	0	0.3	0	0.2	1	1.7	0	0.6	0.2%	0.1%
Megrims	19	69.3	10	28.3	6	15.7	11	24.1	12	34.4	4.7%	7.2%
Monkfish	69	235.6	65	187.9	142	377.1	106	336.3	96	284.2	38.2%	59.7%
Saithe	31	21.6	20	10.8	54	42.1	46	35.5	38	27.5	15.1%	5.8%
Skates & Rays	3	3.6	1	0.9	1	1.6	1	0.9	1	1.8	0.6%	0.4%
Turbot	0	0.0	0	0.1	0	0.1	0	0.1	0	0.1	0.0%	0.0%
Tusks	2	2.2	4	4.1	2	3.0	2	1.7	3	2.7	1.1%	0.6%
Whiting	0	0.0	0	0.0	0	0.0	0	0.2	0	0.0	0.0%	0.0%
Witches	4	5.9	2	2.3	1	0.6	2	1.7	2	2.6	0.8%	0.6%
Other Demersal	5	2.4	1	1.2	1	0.6	4	1.8	3	1.5	1.1%	0.3%
Shellfish	1	0.8	0	0.1	2	3.9	1	1.5	1	1.6	0.3%	0.3%
Total Value	168	390.6	226	397.8	290	536.4	317	579.3	250	476.0	100.0%	100.0%

[17] Financial values are articulated in 2011 prices, and have been uplifted using HM Treasury's GDP Deflators http://www.hm-treasury.gov.uk/data_gdp_index.htm.

[18] Analysis was carried out using data for the period 2006-2009, in order to be consistent with the time period adopted in the Consultation Impact Assessment. Pelagic gears were excluded from the analysis.

Table 2.8: VMS-based estimates of volume and value of fisheries landings from East Rockall Bank pSAC by gear type[19][20]

	2006		2007		2008		2009		Average		Relative %	
	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)	Weight (t)	Value (£000's)
Demersal	161	373.7	219	383.8	211	368.9	270	499.7	215	406.5	86%	85%
Static Nets	4	15.6	7	14.0	79	167.5	5	5.0	24	50.5	9%	11%
Static Lines	4	1.4	0	0.0	0	0.0	0	0.0	1	0.3	0%	0%
Nephrops	0	0.0	0	0.0	0	0.0	42	74.6	10	18.6	4%	4%
Total	168	390.6	226	397.8	290	536.4	317	579.3	250	476.0	100%	100%

[19] Financial values are articulated in 2011 prices, and have been uplifted using HM Treasury's GDP Deflators http://www.hm-treasury.gov.uk/data_gdp_index.htm.

[20] Analysis was carried out using data for the period 2006-2009, in order to be consistent with the time period adopted in the Consultation Impact Assessment. Pelagic gears were excluded from the analysis.

Table 2.7 shows that the total estimated landed value of the catch from East Rockall Bank pSAC area increased from around £391,000 in 2006 (in 2011 prices) to around £579,000 in real terms in 2009. This means that the average estimated landed value over the 4 year period in real terms is around £476,000. The estimated value of monkfish catches was around £284,000 in real terms, representing around 60 per cent of the total estimated landed value from the pSAC area. Table 2.8 shows that demersal gears accounted for around £407,000 of average total estimated landed value in real terms between 2006 and 2009, around 85 per cent of the total. Static nets accounted for around 11 per cent of the average total estimated landed value.

Current management of activity (baseline)

The European Union's Common Fisheries Policy (CFP) sets the framework for regulation of fisheries in UK waters. European competence and specific regulations vary in their application depending on geography. In the UK, the management of fisheries in all waters beyond 12nm fall under the jurisdiction of the European Union through the CFP. The policy is transposed through the Control Regulations which allow annual fish quotas to be set, and Technical Conservation Regulations which deal with measures such as gear restrictions and area closures. Member States receive an annual allocation (quota) of each stock at each December meeting of the European Union Fisheries Council (with a small amount of the total quota allocated to 0–12nm)[21]. Non-pressured stocks such as scallops and cuttlefish still have no applicable quotas. When quota levels are reached vessels tend to move into the inshore to catch those species for which there is a market but fewer restrictions on what can be landed.

In addition to setting catch limits the CFP sets out regulations including minimum landing sizes for certain fish; and area based measures. Spatial measures include prohibiting particular fishing techniques in certain areas permanently, seasonally, or temporarily. The CFP can also limit fishing effort by limiting amounts of static gear or the power of the vessels that can take part in a fishery.

Since 2006 the European Commission has been advised by ICES that populations of some of the species caught over Rockall Bank (e.g. orange roughy, black scabbard fish and deep-sea sharks) declined below safe biological limits. Total Allowable Catches for some species decreased and the Commission has banned fishing for fishing for deep-sea sharks and orange roughy[22].

North East Atlantic Fisheries Commission (NEAFC) and/or EC fisheries closures are enforced at Hatton Bank pSAC, North West Rockall Bank cSAC and Darwin Mounds SCI to protect cold water coral and other vulnerable marine ecosystems. Bottom trawling is also banned by NEAFC to protect haddock in the Rockall Haddock Box, to the south east of the site[23].

Fishing with gill nets and entangling nets has been prohibited by the EU in the Rockall area (ICES zone VIb) at depths of more than 600 m since 2007 (there are also technical restrictions on nets used at shallower depths) [24]. A fisheries closure over East Rockall Bank was also proposed by the ICES Working Group on Deep-water Ecology in 2007 but has not been progressed[25] by the EC to establish any formal spatial measures over the bank.

[21] Quotas are informed by annual scientific stock assessment advice formulated by ICES; adherence to their advice is not mandatory.
[13] http://www.cfp-reformwatch.eu/2010/10/deep-sea-fisheries-quota-proposal-for-2011-and-2012-published/ [Accessed 24.10.11].
and http://cefas.defra.gov.uk/our-science/fisheries-information/deep-water-species,-ne-atlantic.aspx [Accessed 26.01.12].
[23] http://www.neafc.org/page/3245 [Accessed 18//10/11].
[24] European Council Regulation No 41/2007
[25] ICES. 2009. Report of the ICES-NAFO Working Group on Deep-water Ecology (WGDEC), 9–13 March 2009. ICES CM 2009/ACOM:23.

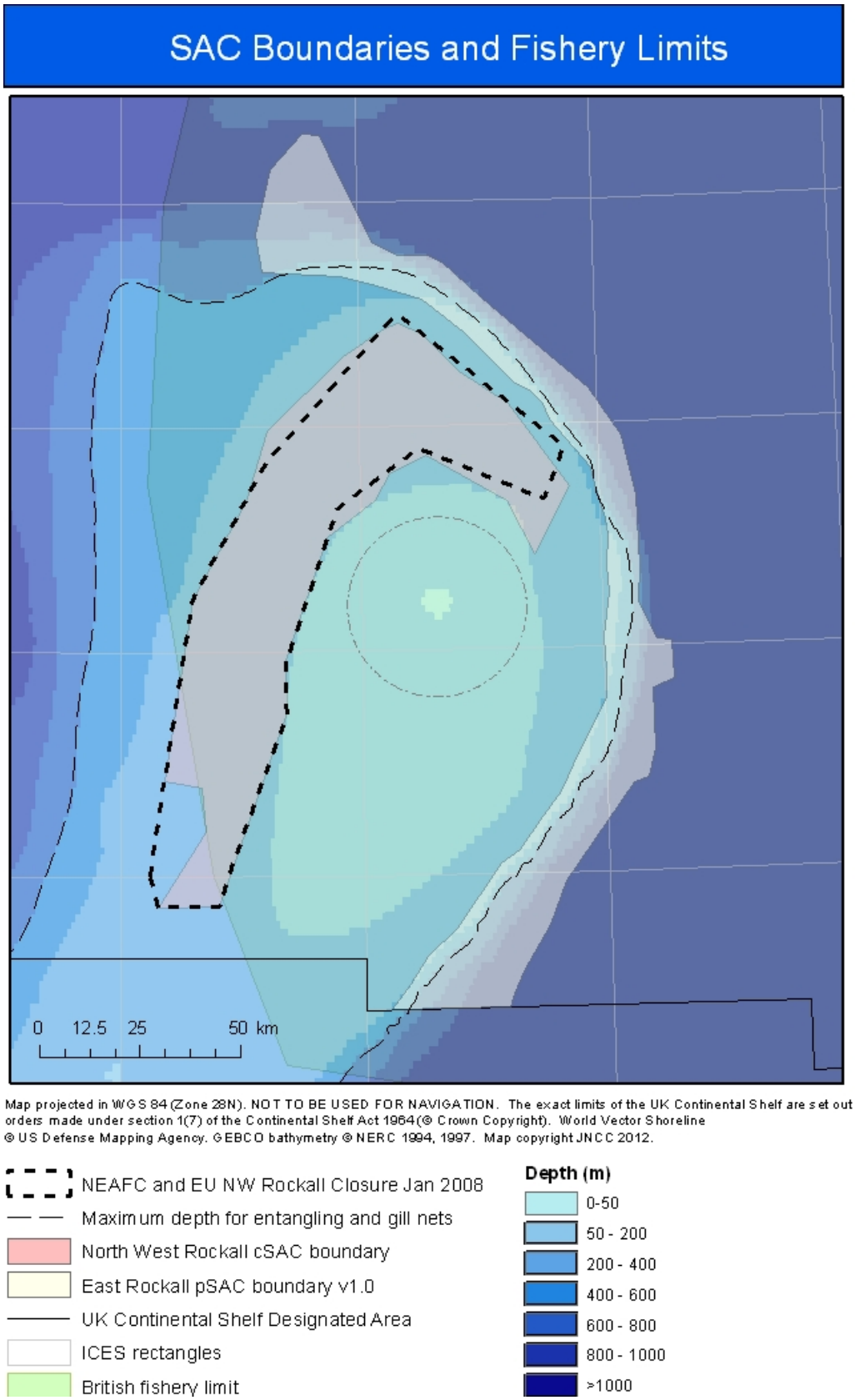


Figure 2.3 SAC boundaries and fishery limits around East Rockall pSAC

Fisheries regulations and policy are enforced in Scottish waters by Marine Scotland and Marine Scotland Compliance. Enforcement includes inspection of: fishing vessels in port, fishing industry premises and fish markets. At sea fishing vessels are inspected by Marine Protection Vessels and monitored by surveillance aircraft[26] . Vessels over 15m in length are required to have a Vessel Monitoring System and their activities are monitored via satellite by Marine Scotland's Marine Monitoring Centre[27].

Likely future regulation of activity following designation

The UK is likely to consider applying to the EC for controls to close areas of the East Rockall Bank pSAC to some forms of demersal fishing to minimise risk of damage to the reef habitat and its associated typical species. Fisheries management measures are legislated through the CFP. The CFP is currently undergoing reform and a revised regulation will come into effect in January 2013.

3 APPROACH TO ANALYSIS OF COSTS AND BENEFITS

3.1 Approach

This IA presents the potential costs and benefits to the UK of designating the SAC (the policy option). Impacts have been assessed over ten years. Section 2 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 (for example, where a benefit is identified as preventing continuing decline).

The necessary data to fully understand the employment and profit impacts from landings to foreign ports and from foreign vessels landing into the UK are complex. The value of these landings to the UK economy is limited because: landings by foreign vessels to UK ports are frequently transported directly overseas from their port of landing without any onshore processing or marketing. Furthermore, a large proportion of UK registered vessels landing overseas are UK Registered Foreign Owned vessels (UKRFO) which convey limited economic benefit to the UK economy (for a detailed discussion of these factors see Defra 2009). It is not possible to distinguish landings from UK registered UK owned vessels from those by UKRFO vessels. Landings to foreign ports and by foreign registered vessels landing to the UK have therefore been excluded from headline cost figures for this IA but the potential for indirect benefits to the UK economy (e.g. purchasing of fuel) from these landings should be recognised.

This method of assessment 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 detailed 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 little information from which to monetise values for environmental changes in the marine environment.

Therefore the approach to the assessment has:

[26] http://www.scotland.gov.uk/Topics/marine/Compliance/resources [Accessed 12.10.11].
[27] http://www.scotland.gov.uk/Topics/marine/Compliance/satellite [Accessed 12.10.11].

- 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 because insufficient evidence is available to accurately predict the distribution of net changes in activity within the regional economy.

The analysis presented in this document is based on the methods 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 are expected to result from 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 measures are not yet known. Therefore we have estimated the measures that 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, survey work) 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; and,
- 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[28] assessment under the Offshore Habitat Regulations; and

[28] 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.

- 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 activities that might impact on the conservation status of the site, and
- Costs of enforcing management measures

3.3 Benefits

The benefits of site designation arise from the increase in the area protected for nature conservation[29]. Benefits are assessed as the impact on ecosystem services that benefits humans[30]. The following overarching categories of ecosystem services are used[31]:

- 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, benefits from supporting services[32] (such as cycling of nutrients and photosynthesis) are assumed to be captured by the other benefits listed and so are not examined separately[33]. 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 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[34] and is not analysed further in this document.

[29] Heritage benefits, such as conservation of archaeological site, are the only benefits discussed that arguably sit outside the scope of nature conservation. Such benefits are still included.
[30] As described in Parliamentary Office of Science and Technology (2007).
[31] These are the categories used in the Millennium Ecosystem Assessment (MEA 2005), http://www.millenniumassessment.org [Accessed 01.11.11].
[32] Supporting services described as "those that are necessary for the production of all other ecosystem services" in the MEA
[33] 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.
[34] For example, in MEA (page 7, Section 2): http://www.millenniumassessment.org/documents/document.354.aspx.pdf [Accessed 01.11.11].

4 COSTS AND BENEFITS OF OPTION 1: DESIGNATE THE SITE

4.1 Implications of designation

To assess the range of potential costs and benefits likely minimum and maximum management measures for the site have been assessed. Choice of measures was informed by Table 2.1 and experience of managing similar sites.

The minimum scenario requires the smallest change in activities compared to the baseline while the maximum scenario requires the most change and highest costs. Together these scenarios enable us to estimate the range of possible costs for the site to achieve the conservation objective of 'restore' the reef feature to favourable condition.

Table 4.1 Summary of management scenarios that may be required for East Rockall Bank SAC.

Minimum scenario:	**Maximum scenario:**
Existing activities Ban all forms of towed, demersal fishing directly over reef features and ban all forms of fishing with static/set gear (including pots and longlines) over biogenic (*Lophelia*) reef. Proposed activities It is assumed that due to the location of the site there will be no plans or projects undertaken over or near the site which are likely to have a significant effect on site integrity.	Existing activities Ban all forms of towed demersal fishing and fishing with static/set gear (including gillnets, entangling nets, pots and longlines) over the whole pSAC. Proposed activities It is assumed that due to the location of the site there will be no plans or projects undertaken over or near the site which are likely to have a significant effect on site integrity.

4.2 Costs

In line with the purposes of this IA this section deals only with costs to the UK economies which are assumed to include those to UK registered vessels landing to the UK. Profits from UK registered vessels landing to foreign ports and foreign vessels landing to the UK are assumed to be primarily absorbed outside of the UK.

a) Shipping

There are not expected to be any changes to shipping over the site, so there are no increases to costs.

b) Fisheries

Potential UK economic impact of foregoing landings

As the reefs are sensitive to impacts from mobile demersal gear, it is expected that, at a minimum, the use of towed, demersal gear will be banned over the reef. This site differs from many other marine SACs in that most of the reef forms steep cliffs which cannot be fished with towed demersal gear. The sensitivity of benthic habitats to static gear is less clear but as a minimum measure areas of biogenic reef would also be protected from static fishing. A maximum, and more easily enforced scenario, is to ban the use of all towed and static gear over the pSAC.

Under the minimum scenario it is assumed that fishing will be displaced without loss of earnings (fishers already aim to avoid areas of reef as it damages their fishing gear). The maximum scenario involves

displacing demersal fishing from the whole pSAC. It is uncertain whether fishers would move elsewhere or if there will be less fishing in global terms: however, the Scottish Fishermen's Federation (SFF) indicate that the Total Allowable Catch (TAC) for monkfish could not be made up elsewhere in the ICES areas for which the TAC is allocated**Error! Bookmark not defined.**. Therefore, to estimate the potential maximum direct effect of designation, the cost of losing the value of demersal landings from the site are considered (i.e. it is assumed that fishers will not make-up their losses elsewhere). Under both scenarios, the costs of enforcing a fishing closure are considered

Using input-output multipliers allows analysis of the impact on the UK economy of loss of landings. However, it should be noted that multipliers are limited to a static reflection of economic linkages that change with time. The multipliers used were recommended by Sea Fish Industry Authority (SeaFish 2007) as the best available and account for landings in UK ports. Loss of £1m of landings could lead to a reduction in[35].

- UK Employment by 65 Full Time Employment jobs; and
- UK GDP by £1.73 million.

Although it does not take account of the potential indirect effects of any reduction in landings (e.g. losses to fish processors and gear suppliers), these estimates give an indication of the scale of the economic impact from changes in fishing activity as a result of designation.

The economic impacts of the potential designation of East Rockall Bank pSAC are estimated as the loss of profitability of fishing effort at the site. This is based on the 2009 survey on the profitability of fishing, (Seafish 2011), which shows that the net profit ratio does not exceed around 30% for any segments of the industry with most segments having much lower ratios.

A map identifying the ICES sub-rectangles viewed as fitting within the pSAC area is provided in Annex I. Only landings to the UK by UK registered vessels are included. Profit is calculated as 30% of gross landings from the pSAC. This method assumes that the values of catches-per-unit-effort are equal across ICES rectangles for each gear type.

The 'best fit' VMS methodology used in this analysis may lead to inaccuracies in and overestimation of fisheries impacts. The method incorporates landings values and volumes associated with fishing activities indicated by VMS activity of less than 5 knots in ICES sub-rectangles deemed to 'fit' within the pSAC area. In the event that an ICES sub-rectangle is only partially covered by the pSAC boundary, the sub-rectangle is included in the 'fit' if more than half of its area lies within the pSAC boundary. This means that a portion of the estimated landed volumes and values associated with the pSAC may come from outwith the pSAC area. Consequently, the analysis may overestimate the landed volumes and values associated with the area.

Table 4.2 gives the estimated impacts on fisheries associated with designation of the pSAC area, based on different assumptions around potential future management of the site.

[35] Based on hybrid multipliers used in Table 3 ("The regionally disaggregated impact of £1m landings") of the report (SeaFish 2007). As data were not available at a regional level, the mean of the regional impacts was taken to represent the UK impact. http://www.seafish.org/upload/file/economics/FINAL-%20Input%20output%20report%20%20,full%20report.pdf [Accessed 1.11.11].

Table 4.2 Summary of management assumptions made in estimating costs to fisheries (Calculations are shown in Appendix I).

Minimum scenario	**Assumptions**	**Change in costs**
Ban all forms of towed, demersal fishing directly over the reef and, ban all forms of static/set gear (including traps and longlines) over biogenic (*Lophelia*) reef.	No loss of profit. These habitats are currently avoided by fishers to protect their gear.	£0
Maximum scenario	**Assumptions**	**Change in costs**
Ban all forms of towed demersal fishing and fishing with static/set gear (including gillnets, entangling nets, traps and longlines) over the whole dSAC.	Loss of total net profit for demersal gear (profit estimated at 30% of average annual UK landings value of £476 k p.a.)	£143 k p.a.

Under the maximum scenario vessels using demersal gear would be impacted. UK registered demersal-fishing vessels landing into the UK from the ICES rectangles containing the pSAC are dominated by Scottish bottom trawlers but there are also significant landings by Scottish twin trawlers and pair trawlers (bottom) and static gill netters (Scottish and English). All landings into the UK were made to Scottish ports primarily: Mallaig, Ullapool, Lochinver, Kinlochbervie, Scrabster, Macduff, Fraserburgh, Peterhead and Aberdeen.

As detailed above landings to foreign ports are not included in the cost analysis and headline figures presented in this IA however significant landings are detailed here for information because they may have indirect impacts on the UK economy. Catches from the pSAC by UK registered vessels using demersal gear were landed to Spain, Ireland and France. The average annual demersal landings by UK registered vessels from *the whole of all of the ICES rectangles* containing East Rockall Bank pSAC were £291 k p.a. to Spain by otter trawlers and gill-netters; £4 k p.a. to Ireland from longliners; and, £2k p.a. to Norway from vessels using unspecified gear. A high proportion of these landings are likely to be from UKRFO vessels (particularly Anglo-Spanish vessels) based on Defra (2009) and expert opinion.

Average annual landings to the UK by foreign registered vessels from *the whole of all of the ICES rectangles containing East Rockall Bank pSAC* were: £327 k p.a. by French vessels; £81 k p.a. by German vessels; and £29 k p.a. by Irish vessels. These landings were made to Lochinver, Peterhead and Ullapool.

Further analysis

The analysis carried out to inform this IA was intended to provide an indication of economic impacts and their scale resulting from changes in fishing activity over the pSAC. Further information and analysis would be needed to understand more precisely how fishers would respond to measures and the impacts of their responses. Pescagalia-Arpega-Obarco suggest that Spanish gill-netters could suffer serious socio-economic consequences if gill netting is prohibited at East Rockall Bank pSAC. This effect is because gill-netters have recently been prohibited from fishing in other traditional grounds by various fisheries management measures including closures to protect Vulnerable Marine Habitats (North West Rockall Bank, Darwin Mounds and Hatton Bank) and restrictions on gill-netting at depths of over 200 m (as described in section 2.4).

In some cases, particularly where moving to an alternative ground would be unprofitable, individual fishermen may stop fishing. This change may not reduce total income to the sector as many stocks have fixed quotas and other vessels maybe able to draw on quota foregone. SFF suggest that displacement

of vessels targeting monkfish could damage stocks and stock-management in other areas[36]. Where individual fishers stop fishing then there may also be implications to the fishers themselves wider than foregone revenue, such as: the need to dispose of a vessel, potential decline in the market value of vessels and potential decline in the value of quotas.

Given the issues above, it is very difficult to predict how individual fishermen will respond to closures and the associated cost implications. At this stage the best that can be done for most closures is to provide an indication of the profitability of fishing within the area and suggest that the direct effect of a closure would be to reduce the profitability of the area by some margin.

Fisheries closures, even if undertaken unilaterally by the UK, would have to be agreed with other Member States of the European Union through the CFP. This process would take at least a year and therefore that closures would not be in place until 2014. This minimum timeframe is used in the IA to ensure that the costs are not underestimated.

It is recognised that fishers are currently be 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[37].

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; subsequent, 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.

Marine and aerial surveillance in the vicinity of the wider area already takes place and ensure compliance with fisheries restrictions.

These costs to government are summarised as:

i. *Requirements to review and manage existing activities.* It is assumed that work is necessary to develop, implement and communicate site-specific management measures. One-off costs of this work are estimated at £82k (£53k for consultation, £25k for work on management schemes and £4k for statutory instruments).[38]

[36] This information was provided by the Scottish Fishermen's Federation in their written response to the Consultation Impact Assessment for East Rockall Bank pSAC in June 2012.

[37] Summary of Costs to the Scottish Government for Implementing New Site Protection Measures in the Marine (Scotland) Bill: Final Regulatory Impact Assessment 2009. (Paragraph 96). These costs have been uplifted from 2008 to 2011 prices using HM Treasury's GDP deflators http://www.hm-treasury.gov.uk/data_gdp_index.htm.

[38] Taken from Summary of Costs to the Scottish Government for Implementing New Site Protection Measures in the Marine (Scotland) Bill: Final Regulatory Impact Assessment 2009. These costs have been uplifted from 2008 to 2011 prices using HM Treasury's GDP deflators http://www.hm-treasury.gov.uk/data_gdp_index.htm.

ii. Enforcement. Additional enforcement costs (e.g. prosecutions) to Marine Scotland Compliance for any fisheries management measures are estimated to be £13k annually[39]. This cost is assumed to start in 2014 when fisheries management measures are predicted to be in place.

iii. Ecological assessment and monitoring. Assessment and monitoring costs are estimated at a one-off cost of £342k for baseline information gathering (assumed to occur in 2013) and further costs of £250k every five years for monitoring (assumed to first occur in 2018)[40]. Note that these are tentative average 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 and monitoring plans in 2012 and new timings and costs will be incorporated in this IA if they become available.

This impact assessment assumes that administration costs are the same for minimum and maximum scenarios. Under both scenarios estimated impacts are one-off costs of £674k and annual costs of £13k.

4.3 Benefits of designating the site

Reefs at East Rockall Bank are thought to be well preserved[41]. Protecting East Rockall Bank from damage will enable species associated with it to grow, feed and reproduce. Some species live primarily on the reef (e.g. sponges and cup 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. invertebrates 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: these functions are vital for the sustainable delivery of ecosystem services. Benefits of designating the site are discussed below in terms of ecosystem services.

Fishing occurs over or adjacent to East Rockall bank (Appendix 1) but we do not know if it impacts the reef community directly[42]. If the reef was not designated it would remain at risk of abrasion damage from demersal fishing which can cause physical damage and removes fish and shellfish. *Lophelia pertusa* coral reef is the most sensitive community proposed for protection at East Rockall. This slow-growing coral can take tens to thousands of years to develop a reef structure (Bell and Smith 1999; Roberts 2002; Friewald *et al*. 2004). It is very fragile (Wilson 1979) and may take decades to recover from damage, or may never recover (Williams *et al.* 2010). Future deterioration of the biogenic, stony or bedrock reef at East Rockall would undermine the aims of the EC Habitats Directive to maintain or restore Annex I habitats and their species to favourable conservation status. It would also prevent the site from delivering the beneficial ecosystem services described below.

a) Provisioning services

Fish, shellfish and other crustaceans for human consumption

Rockall Banks increase habitat heterogeneity and complexity by providing hard substrate in a predominately sedimentary environment of muddy and sandy plains (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.

[39] These costs have been uplifted from 2008 to 2011 prices using HM Treasury's GDP deflators http://www.hm-treasury.gov.uk/data_gdp_index.htm.
[40] N.Golding JNCC *pers. comm.* 7.11.2011.
[41] East Rockall SAC Selection Assessment v1.0 JNCC
[42] East Rockall Bank SAC: Draft Conservation Objectives and Advice on Operations v1.0 JNCC

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). 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 East Rockall Bank for the provision of each of the ecosystem services described above is summarised in Table 4.3 below as the differences envisaged following site designation in comparison to the baseline (no designation). It is assumed that fisheries management measures and ecological monitoring will occur if the site is designated while if the site is not designated fishing will continue at current levels and the reef habitat will not be monitored.

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. Following, 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 4.3 Potential significance of ecosystem services improvements for East Rockall Bank

Services	Relevance to site	Baseline Decline	Designate Min management	Designate Max management	Value weighting	Scale of benefits	Confidence
Fish for human consumption	**Low.** May provide habitat for commercially exploited fish and shellfish.	**Low.** Interruption of lifecycle processes could cause some decline.	**Low-moderate.** Improvement on site may support some species of human interest (e.g. by providing food). Limited by risk enforcement does not succeed.	**Low-moderate.** Improvement on site may support species of human interest.	**Low.** Part of an important outcrop of hard substrate in an area dominated by sand and mud.	**Low-Moderate.** Increase in stocks may be offset by declines elsewhere due to fishing displacement.	**Low.** Unsure whether species that would benefit are currently impacted by habitat damage and harvesting.
Fish for non-human consumption							
Carbon sequestration	**Minimal.** Features are likely to have low effect.	**Minimal.** Unlikely to affect biological pump.	**Minimal.** Unlikely to affect biological pump	**Minimal.** Unlikely to affect biological pump.	**Mod**. High value but site plays minimal role	**Minimal.**	**Mod.** Biological pump not well understood.
Waste assimilation	**Minimal.** The features are not recognised as significant waste assimilators and cover a relatively small area.	**Minimal.** Unlikely to affect assimilation.	**Minimal.** Unlikely to affect assimilation functions and processes.	**Minimal.** Unlikely to affect assimilation functions and processes.	**Minimal.** Site plays minimal role.	**Nil.**	**Moderate**. Assimilation not well understood.
Non-use value of natural environment	**Low- Mod.** Public has preference for rare and visually appealing features. Cold water corals may be of interest.	**Low.** Continuing degradation, but may not have further adverse effect on reef value.	**Low-moderate.** Some recovery of biodiversity and community composition possible but enforcement may not succeed.	**Moderate.** Some recovery of biodiversity and community composition possible.	**Low.** All UK population is relevant but relatively low value per capita.	**Low – Moderate.**	**Low.**
Scientific research	**Low.** Some basic scientific value, but level of uniqueness is unclear.	**Low.** Continuing degradation removes scientific value.	**Low-moderate.** Some recovery but enforcement may not succeed.	**Moderate.** Some recovery of biodiversity and community composition.	**Moderate.** For biological resources.	**Low – Moderate.**	**Moderate**.
Total value of changes in ecosystem services			**Low-Moderate for both scenarios**				**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 4.4 below summarises the potential costs and benefits of the site analysed in this section. The costs are analysed over a period of ten years from designation in 2012, and are discounted at 3.5% per annum [43]. There are uncertainties in the assessment of costs.

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

Table 4.4 Summary costs and benefits for Option 1: Designate the site.

	Minimum management scenario		**Maximum management scenario**	
	Costs	**Benefits**	**Costs**	**Benefits**
Assessed	**Sectors** Shipping: £0 Fishing: £0 Government: Enforcement £13k.pa Management £82k one-off Ecological assessment £342k one-off, and £250k 'one-off'(every five years)	Low-moderate: possible impacts on fish species, scientific and non-use values.	**Sectors** Shipping: £0 Fishing: £143k p.a. Government: Enforcement £13k.pa Management £82k one-off Ecological assessment £342k one-off, and £250k "one-off" (every five years)	Low-moderate: possible impacts on fish species, scientific and non-use natural environment.
Total annual	£13k p.a.	Low	£156k p.a.	Low
Total one-off	£674k		£674k	
Total (Present Value*)	£701k	Low	£1,650k	Low
Not assessed	• Costs if any projects are refused • Costs from cumulative impacts of MPAs • Impacts beyond the next 10 years.	• Role of feature in wider ecosystem including suite of marine SACs. • Intrinsic value of biodiversity improvements • Ecosystem recovery beyond next 10 years	• Costs if any projects are refused • Costs from cumulative impacts of MPAs • Impacts beyond the next 10 years.	• 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 risks of unintended consequences are:

- Fishermen may seek compensation for moving grounds.
- Displacement of fishing effort to alternative grounds may intensify fishing at those grounds to unsustainable levels, causing net damage to fish stocks overall.

Each of these risks is greater under the maximum scenario, and when considered cumulatively with other SAC designations and marine planning restrictions (e.g. MoD activity, shipping, fishing). Some of these risks can be mitigated by involving stakeholders in the process of designation through public consultation.

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.

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 East Rockall pSAC.

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

a) Competition assessment

This assessment, shown in Table 4.5 is restricted to the sectors where significant potential costs are identified in Table 4.4 above, namely fisheries and Government. The table analyses the impact of the maximum potential management measures that may be required (which represent the maximum impact on activities in the site). The maximum scenario is used to assess whether any significant impact is likely. A more-detailed assessment of likely impacts should also take into account the minimum scenario. Cumulative impacts of designation of Natura 2000 sites in the marine environment could have more significant effects on competition in some sectors. It is assumed that any management measures will apply equally to domestic and foreign operations.

The designation of the site is not expected to have a significant impact on competition.

Table 4.5 Competition assessment for East Rockall SAC

Would the proposal:	*Fisheries*
1. Directly limit the number or range of suppliers?	No direct restrictions
2. Indirectly limit the number or range of suppliers?	The main tests of this parameter are whether the policy is expected to: - raise significantly the costs of new suppliers relative to existing suppliers, - raise significantly the costs of some existing suppliers relative to other existing suppliers: or, - raise significantly the costs of entering, or exiting, the affected market. In general these factors should not be realised although if some fishing gear types are considered more damaging than others management measures may impose restrictions on those gear types raising their costs relative to other gear types.
3. Limit the ability of suppliers to compete?	No restrictions on factors on which suppliers can compete.
4. Reduce suppliers' incentives to compete vigorously?	No reduction of incentive to compete.

b) Small firms impact test

Small and Medium Enterprises (SMEs) are considered for these purposes to be those with fewer than 250 employees. The industries potentially affected by the designation with a significant number of SMEs are related to fishing.

In the fishing industry it is likely that the fishing vessels that may be adversely affected by any additional management measures would be owned by SMEs and in most cases the company would not own more than one vessel. The number of fishing vessels affected would depend on the actual management measures implemented. Under the maximum scenario, the profitability of some small fishing businesses could potentially be affected. For example, their adaptations to the management measures for the site may increase costs, reduce value of landings or both.

Down-stream and up-stream effects in other sectors could also impact on SMEs, but impacted activities are likely to be displaced, at least partly to other locations in the UK economy, limiting the overall impact on SME's in the UK. For example, there are a number of SMEs which are directly and indirectly connected to the fishing sector, which could potentially be impacted on by designation. These include, the retail trade (fish mongers, markets) fish processing plants, ship builders and diesel suppliers.

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

The impact of designating the site on greenhouse gas emissions is unknown but not expected to be significant. If fishing vessels have to travel longer distances to access alternative fishing grounds this would increase emissions depending on vessel size and whether they already operate over a variety of fishing grounds.

e) Rural proofing

Some of the economic costs identified in relation to fisheries and other sectors may occur in remote coastal communities in predominantly rural areas of the UK. Due to the less diversified nature of their local economies, the potential impacts may be relatively more important as a proportion of economic activity in these locations.

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 benefits and impacts of the designation of East Rockall Bank pSAC. This assessment considered the impacts of Option 1 (designating the site) relative to the baseline (to not designate the site).

Designating this site will protect a reef habitat, and its associatied species, which have European biodiversity importance, from damage by marine industries. In addition to conservation of the local reef habitat there are wider network and strategic benefits on biodiversity through the Natura suite of marine SACs. (Establishing a network of protected sites is a key purpose of the Habitats Directive.) Healthy and diverse marine ecosystems underpin the sustainable delivery of ecosystem services beyond the next 10 yrs. These benefits are difficult to monitise and have been presented qualitatively. Designation of the site may also result in the restritiction of certain types of fishing and therefore potential costs to fishers have been assessed. No other industries are likey to be impacted, but there are costs to Government in administering, enforcing and monitoring the proposed SAC.

As specific management measures for the site will be developed after the site has been designated it is necessary to make assumptions about the measures that might be required. This assessment analysed the impacts of a range of potential management scenarios. The reef is vulnerable to damage from demersal fishing, but we do not know if or the extent to which it is currently impacted. If not designated the reef would not be routinely surveyed and could be damaged by fishing in the future. The UK Government could risk infraction proceeding, and large fines from the EC, should this site not be designated.

The minimum management scenario involves the smallest change in activities that may be needed compared with the baseline and therefore presents the minimum potential affect on activities. The maximum scenario entails the largest change in activities that may be needed compared with the baseline and thereby presents the maximum potential affect on activities.

As Table 4.4 above shows, under Option 1 (for the 10 years of impact assessment framework):
Total costs are for minimum and maximum management scenarios are £701k and 1,650k respectively.
Indirect costs from potential fisheries losses have not been examined quantitatively. Both scenarios bring low to moderate benefits for fish and shellfish habitat, non-use attributes and scientific research and knowledge.

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ANNEXES

ANNEX I: Location of fishing activity in pSAC area, 2006-2009, and location of 'Best Fit' ICES sub-rectangles

The distribution of UK vessels (≥15m) that have vessel monitoring systems (VMS) is presented here. Such monitoring systems provide a vessels position, speed and heading either hourly or every two hours. As vessels fish at characteristic speeds, VMS data can be processed to provide proxy patterns of 'active fishing' based on speed. Using a speed rule to partition active fishing from VMS is a coarse but effective means of estimating fishing effort[1], particularly for towed gear, it is less reliable for set gear such as pots and nets.

The data mapped here was generated by Cefas from VMS, log-book and EU vessel register data for 2006-9[2]. Fishing is estimated using a simple speed rule of 1-6 knots to represent fishing activity. These data enabled fishing effort both inside and outside of East Rockall pSAC to be estimated by ICES rectangle: the value of catches from the pSAC could then be estimated by partitioning landings values for each rectangle accordingly. Landings data by ICES rectangle are from Marine Scotland and the Marine Management Organisation, only landings data for UK registered vessels landing to UK ports are included in these analyses.

[1] Lee J, South, A B and Jennings, S. (2010) Developing reliable, repeatable, and accessible methods to provide high-resolution estimates of fishing-effort distributions from vessel monitoring system (VMS) data. ICES Journal of Marine Science 67: 1260-1271.

[2] 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.

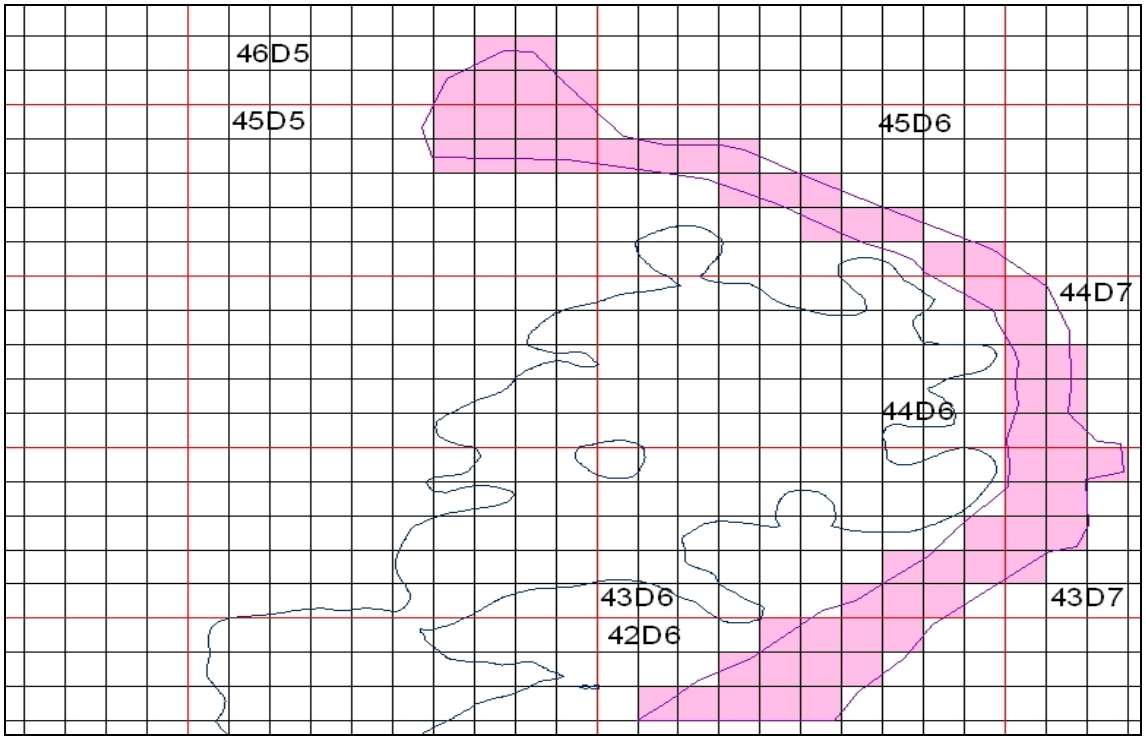

Figure 1. 'Best Fit' of ICES sub-rectangles within pSAC area.

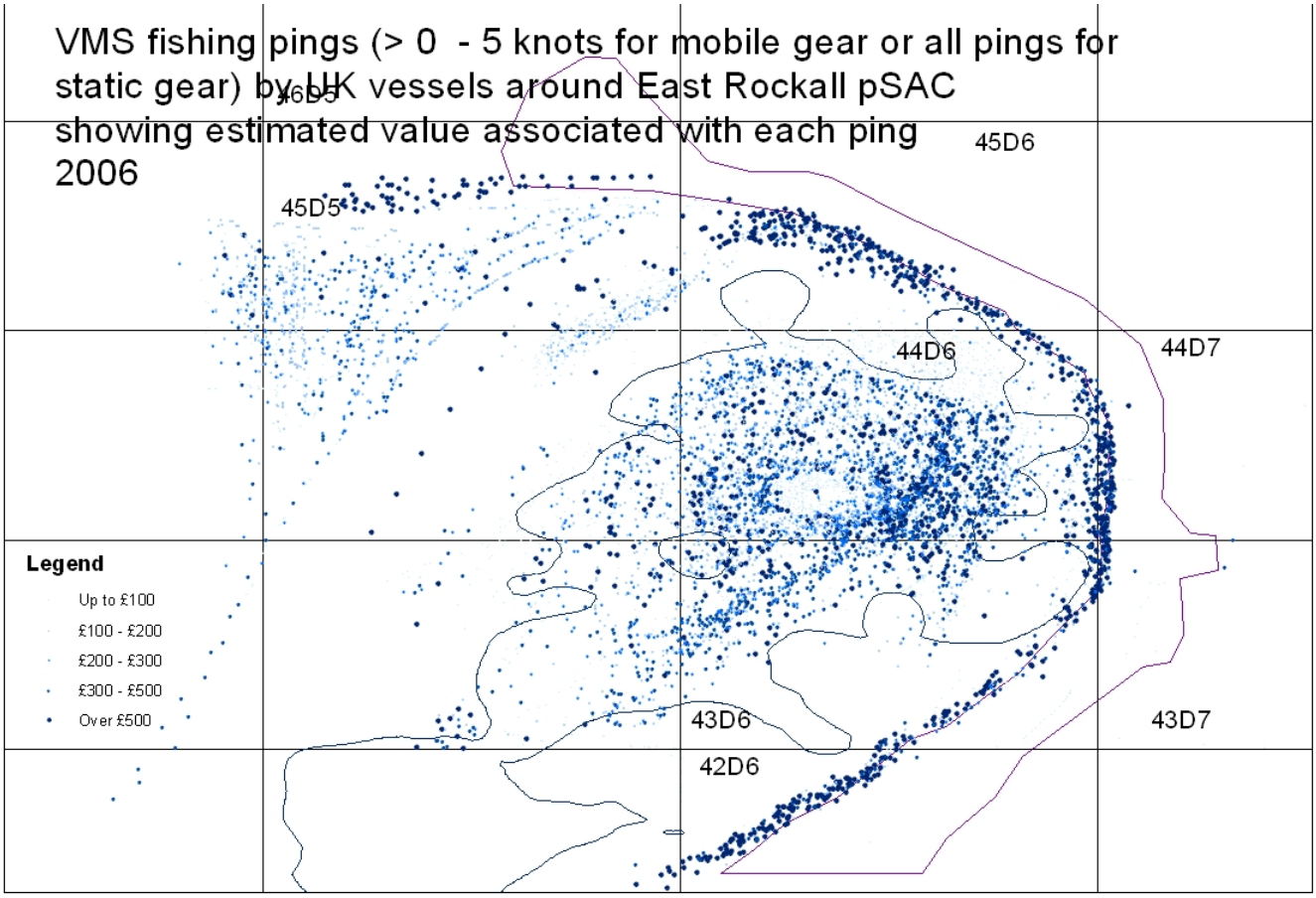

Figure 2. Distribution of UK-registered vessel activity around East Rockall Bank pSAC, 2006

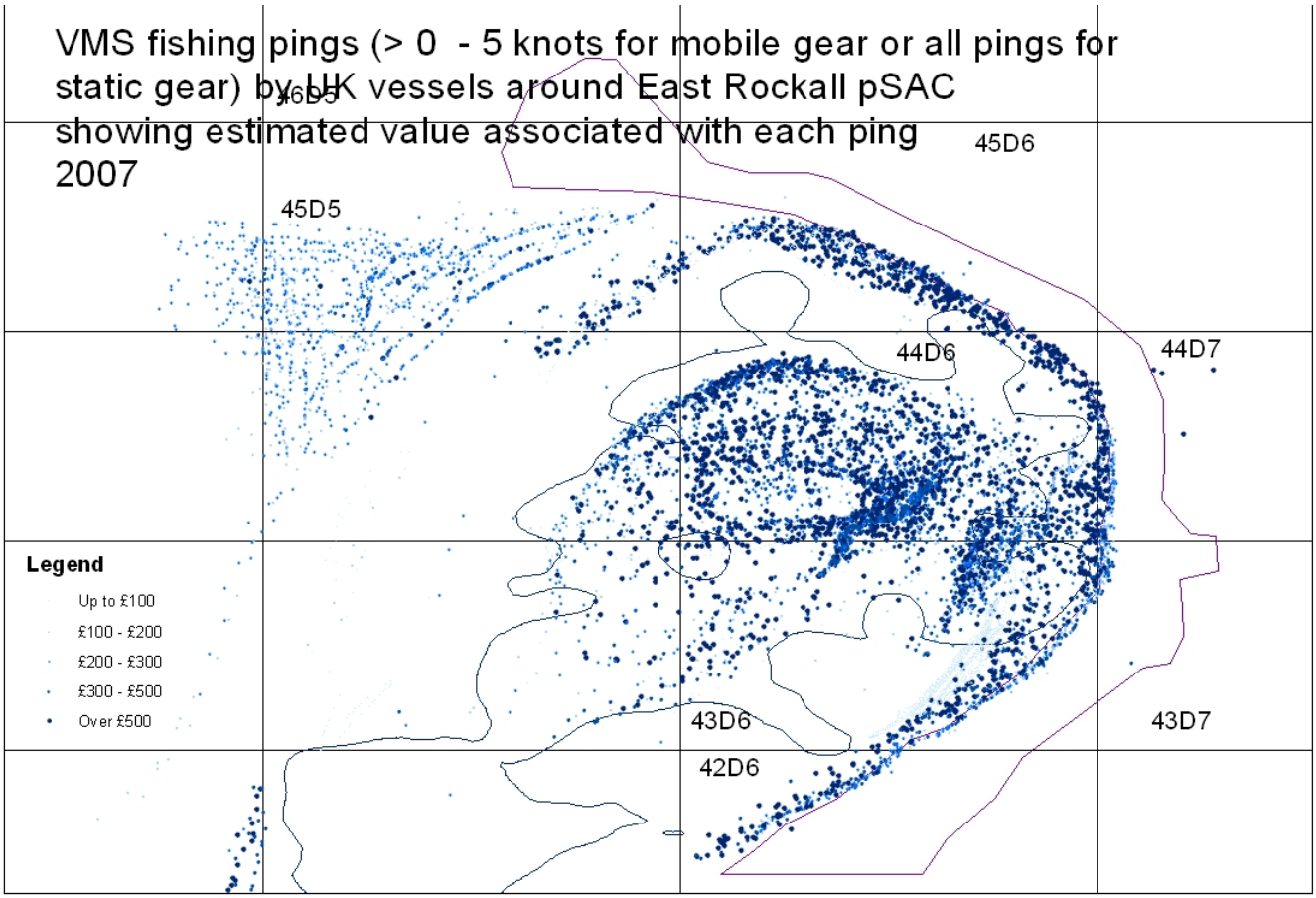

Figure 3. Distribution of UK-registered vessel activity around East Rockall Bank pSAC, 2007

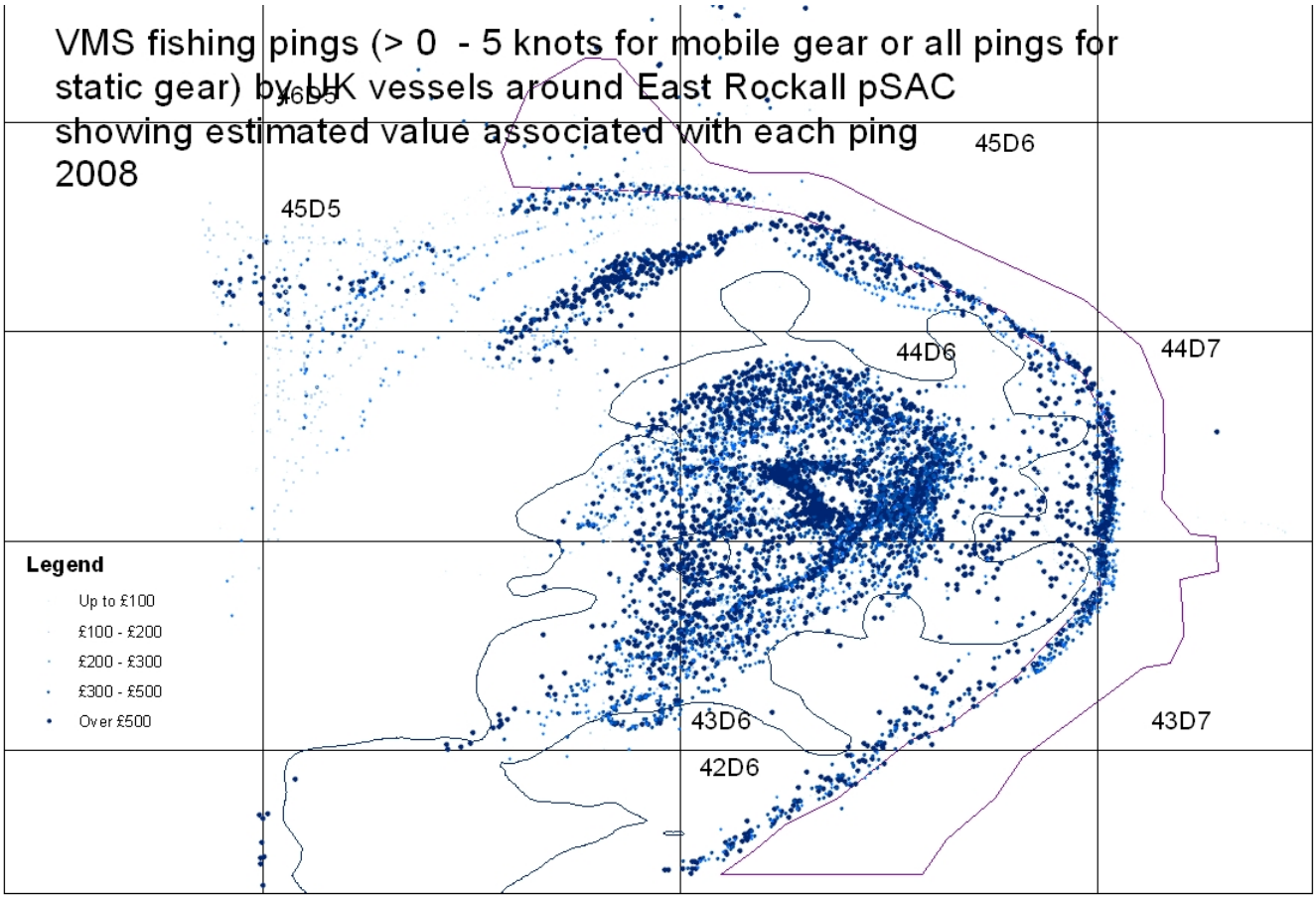

Figure 4. Distribution of UK-registered vessel activity around East Rockall Bank pSAC, 2008

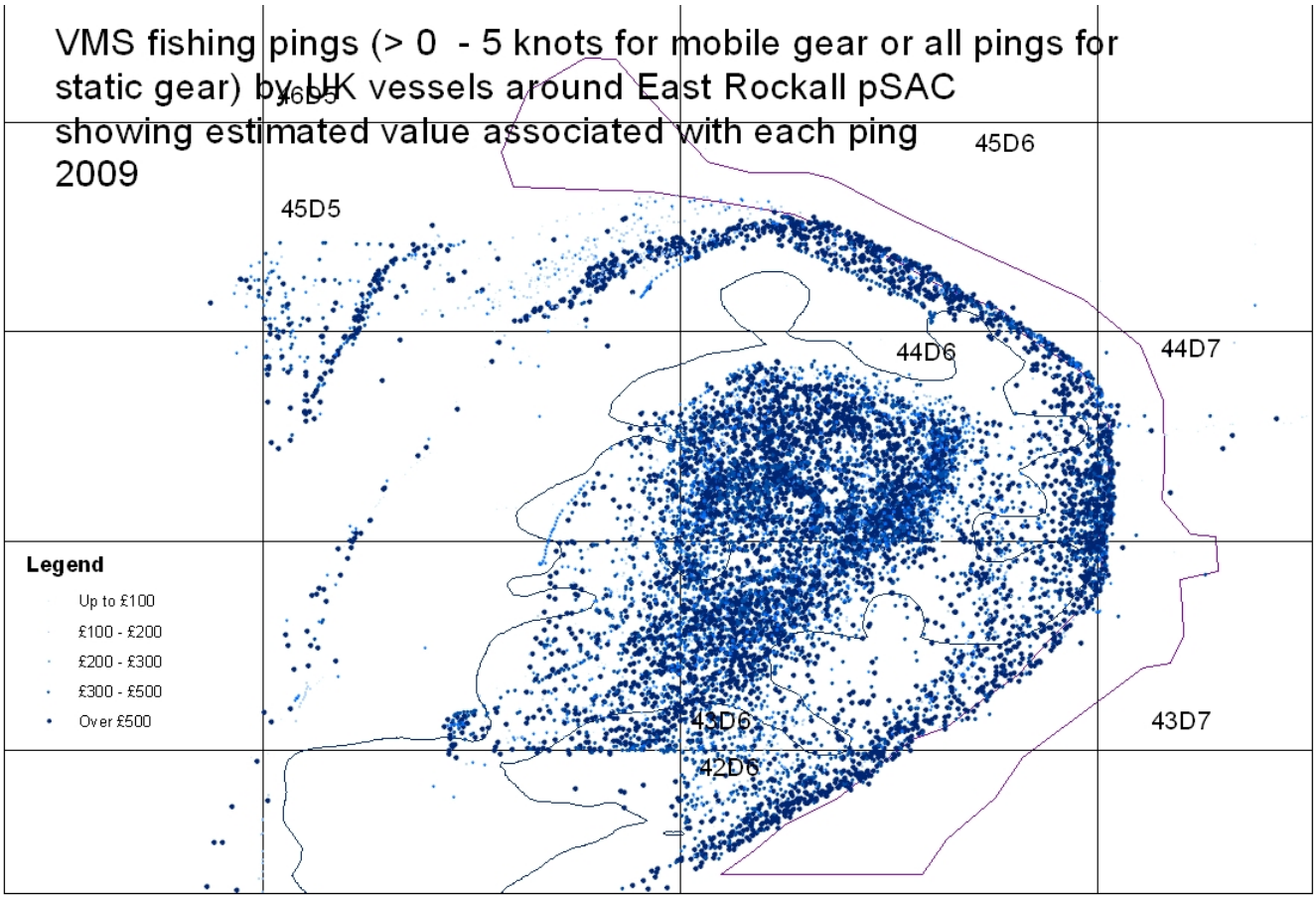

Figure 5. Distribution of UK-registered vessel activity around East Rockall Bank pSAC, 2009

ANNEX II: COSTS OF DESIGNATION OF EAST ROCKALL BANK BY SECTOR

Enforcement and monitoring

Minimum and maximum scenarios cost the same. Costs are calculated over the 10-year period using a discount rate of 3.5%, based on Green Book recommendations[3].

Enforcement and Monitoring						
Description			One-off Cost		Annual Cost	
Scenario	*Cost Item*	*Type*	*Cost £k*	*Year Experienced*	*Cost £k*	*Year Commencing*
BOTH	Develop management measures	Policy	82	2012		
	Surveillance and monitoring	Admin			13	2014
	Initial ecological Monitoring	Policy	342	2013		
	Ongoing ecological Monitoring	Admin	250	2018		
Total		***Admin***	250		12	
		Policy	424		0	
		Both	674		12	

Cost £k	*Present Value*	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*	*2019*	*2020*	*2021*
	82	82	0	0	0	0	0	0	0	0	0
	85	0	0	12	12	11	11	10	10	10	9
	330	0	330	0	0	0	0	0	0	0	0
	203	0	0	0	0	0	0	203	0	0	0
Admin	289	0	0	12	12	11	11	214	10	10	9
Policy	412	82	330	0	0	0	0	0	0	0	0
Both	701	82	330	12	12	11	11	214	10	10	9

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

Fisheries

Minimum – no costs

Costs are calculated over the 10-year period using a discount rate of 3.5%, based on Green Book recommendations[4].

Fisheries						
Description			**One-off Cost**		**Annual Cost**	
Scenario	***Cost Item***	***Type***	***Cost £k***	***Year Experienced***	***Cost £k***	***Year Commencing***
MAXIMUM	Loss of revenue	Policy			143	2014
Total		***Admin***	0		0	
		Policy	0		143	
		Both	0		143	

Cost £k	***Present Value***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***
	948	0	0	133	129	124	120	116	112	108	105
Admin	0	0	0	0	0	0	0	0	0	0	0
Policy	948	0	0	133	129	124	120	116	112	108	105
Both	948	0	0	133	129	124	120	116	112	108	105

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