Title: Wight-Barfleur Reef Special Area of Conservation. **IA No:** **Lead department or agency:** Defra Marine Biodiversity Policy **Other departments or agencies:** Joint Nature Conservation Committee (JNCC)	**Impact Assessment (IA)** **Date:** 03/05/2012 **Stage:** Final **Source of intervention:** EU **Type of measure:** Secondary legislation **Contact for enquiries**: Gareth.Johnson@jncc.gov.uk (01733) 866838

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?

Due to pressures of anthropogenic activities on marine habitats and species many are currently in decline. Although regulation is in place for some activities, it is not necessarily designed to achieve nature conservation objectives. Intervention is needed in order to manage activities in key areas for important species and habitats and to promote a healthy, resilient marine environment. JNCC have assessed this site against the Habitats Directive Annex III selection criteria, and advised the Secretary of State 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 promote biodiversity maintenance. This Directive requires the UK (as a Member State) to propose sites hosting habitat types and species in need of conservation listed in the Directive, which are eligible for identification as SCIs and designation as Special Areas of Conservation (SAC). 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 Wight Barfleur Reef

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 as alternatives have been considered at an earlier stae of the process. Alternative sites of similar type are not currently known to exist (known 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 (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

Signed by the responsible Minister: ..... Date: .....

Summary: Analysis & Evidence — Policy Option 1

Description: The assessment considers the minimum and maximum plausible management scenarios to achieve conservation objectives.

FULL ECONOMIC ASSESSMENT

Price Base Year 2011	PV Base Year 2011	Time Period Years 20	Net Benefit (Present Value (PV)) (£m)		
			Low: na	**High:** na	**Best Estimate:** na

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	£181k		£41.1k	**£785.7k**
High	£181k		£55.0k	**£985.6k**
Best Estimate	£181k		£48.1k	**£885.7k**

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

Low: lost profit for fisheries (£1.62k pa from 2012); and enforcement (£181k and £39.6k pa).
High: lost profit for fisheries (£16.2k pa from 2012); and enforcement and monitoring (£181k and £39.6k pa).
Cost calculations are based on an upper bound for segment profitability (30% of landings) rather than GVA; adding crew-share would overestimate overall sector impact.
The best estimate given here is the mid point of costs for low and high scenarios.

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

High: fishermen could exit sector, knock-on effect to local economy of costs to fishermen and direct impacts on fishing related industries (e.g. fish processing, hauliers). Displacement of fishing from the site could impact vessels operating in other areas.

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 cannot be readily quantified and most of the benefits are not traded so cannot be easily valued.

Details of the qualitative assessment of the benefits are provided in the evidence base.

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

Wight Barfleur Reef SAC would designate as protected site 137kha of reef that supports a diverse range of marine species. Moderate beneficial impacts on ecosystem servies, including non-use values of natural environment and scientifc research in the area that is designated; reduction in fishing mortality in the designated area. Benefits for the sustainable delivery of esystem services. 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. Profit to fishing vessels assumed to be 30% of catch value. 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: £0.022m	**Benefits:** na	**Net:**	No	NA

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1 INTRODUCTION

1.1 Purpose

In Europe natural habitats are continuing to deteriorate and an increasing number of wild species are seriously threatened. The main aim of the European Habitats Directive[1] is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain, or restore natural habitats and wild species to Favourable Conservation Status (see below), introducing robust protection for those 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 Wight-Barfleur due to its Annex I reef (habitat 1170).

Human activities can adversely affect our marine environment. Many of our marine habitats have been altered or damaged by activities such as fishing, windfarm development, dredge disposal and oil and gas extraction (Eastwood 2007). Direct harvesting of fish has caused dramatic decreases in populations of target species including cod, herring, plaice and sole (Hall 1999) and even localised extirpation in parts of UK waters, for example the "common" skate[2] in the Irish Sea (Reynolds et al 2001; Dulvy and Reynolds 2002). Species that are not the target of harvesting may also be damaged, particularly through inadvertent bycatch, and damage to habitats can occur, for example through the use of destructive bottom-fishing gear (Jennings and Kaiser 1998).

Currently only 4% of the UK's marine environment is protected for habitat-conservation purposes. At present, protection is not being provided to examples of the variety of habitats found in UK offshore waters although proposals such as Wight-Barfleur Reef are now being considered. Given the overlap between anthropogenic activities and habitats of conservation importance, it is evident that additional management is needed to maintain and restore the healthy structure and function of marine ecosystems whilst supporting sustainable industries.

The IA informs the Government about impacts designation of 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 (which should be based on the site's Selection Assessment Document). This is because under the European Union's (EU's) Habitats Directive economic or social impacts should not influence selection of SACs or delineation of their site boundaries. However, information provided on the type and level of activities taking place in and near the site may be used to 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 considered to be most in need of conservation at a European level (which are listed in Annex I and Annex II of the Directive respectively). Habitats have been included on Annex I because they are either in danger of disappearance within their natural range, have a small natural range, or they present outstanding examples of typical characteristics of the biogeographical regions listed in the Directive. The Habitats Directive not only aims to conserve the habitats but also their typical species. The UK (as a Member

[1] Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna.
[2] Since this research was conducted, the common skate (*Dipturus batis*) has been reclassified as two separate species, the blue skate (*D. flossada*) and the flapper skate (*D. intermedia*) (Iglésias et al 2010)
[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

State) is required to take measures to maintain or restore favourable conservation status[5] of these natural habitats and to introduce robust protection for them.

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

The Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007 (as amended) (the "Offshore Habitats Regulations") transpose the Habitats Directive (92/43/EEC) and Wild Birds Directive (2009/147/EC) into national 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 that 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. Site selection criteria comprise:

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

JNCC is responsible for providing scientific advice to Government on nature conservation matters, including on the selection of SAC sites in the UK offshore marine area under the Offshore Habitats Regulations.

The European Commission will assess whether the list of SACs submitted by UK Government to them is sufficient or not. JNCC have worked to provide the best estimate of whether the UK's sites submitted so far will be sufficient or not 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.

JNCC concluded that if at least one example of each Annex I habitat sub-type in each of the UK's Regional Seas[6] 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).

b) UK identification of Annex I reef sites

Twelve proposals for SACs in UK offshore waters have now been submitted to the European Commission. The first five were submitted on 31st August 2008, the next six were submitted on 20th August 2010 (two of these sites are joint inshore-offshore sites), and the most recent site was submitted on the 26th August 2011. A further three sites (including this site) have been formally recommended to Government and undergone consultation, and a further five sites have been formally recommended to Scottish Government by JNCC.

Other offshore SACs with reef (H1170) as a qualifying feature comprise Haig Fras, Stanton Banks and Darwin Mounds that have been approved by the European Commission as Sites of Community

[5] Favourable conservation status is defined for a feature as when 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'.
[6] Regional Seas: www.jncc.gov.uk/page-161.

Importance. North-West Rockall Bank and Wyville Thomson Ridge proposals were submitted to the EC on 20th August 2010. Anton Dohrn Seamount, East Rockall Bank, Hatton Bank, Pobie Bank Reef (joint inshore/offshore) and Solan Bank Reef (joint inshore/offshore) are currently being progressed as draft SACs and were formally recommended to Scottish Government by JNCC in December 2011.

Wight Barfleur Reef is the only offshore SAC within the Eastern English Channel Regional Sea for which reef is a qualifying feature. Inshore, Solent and Isle of Wight Lagoons SAC also has a reef component and Lyme Bay and Torbay SAC has been submitted to the EC as an inshore SAC in the region following advice from Natural England. However, Wight-Barfleur Reef is a different sub-type of reef and is very different in character to the aforementioned sites owing to its depth (circalittoral and deep circalittoral), its reduced coastal influence, and the high-energy environment.

c) Conservation objectives and management of sites

JNCC is responsible for establishing conservation objectives for the site, and advice on 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 document[7] and inform 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 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.

To fulfil conservation objectives for Annex I reef, it will be necessary for the competent authority to manage human activities where possible to ensure that the feature is not 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 Wight Barfleur Reef Special Area of Conservation Impact Assessment. Two options were initially considered for this site:

Baseline: do nothing
Option 1: designate the site

No other options are considered as Wight Barfleur Reef, 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, where they exist, have been considered for selection as SACs but have been rejected for scientific reasons during earlier scoping.

This IA presents JNCC's quantitative assessment of the potential costs and benefits of the policy option (designate the site). Impacts have been assessed over a timescale of approximately ten years. The decision to use this timeframe was based on various factors. It provides a sufficiently long period over which conservation benefits may arise and fisheries control measures may be implemented. Assessment of the impacts beyond ten years becomes more uncertain. For example, businesses have greater scope to adjust their activities in the long-term (for example through purchasing new equipment) and may therefore avoid costs that arise in the short-term. Costs are calculated over the 10-year period using a discount rate of 3.5%, based on Green Book recommendations[8].

[7] Wight Barfleur Reef SAC: Draft Conservation Objectives and Advice on Operations v3.0 JNCC http://www.jncc.gov.uk/pdf/WightBarfleur_ConservationObjectives_AdviceonOperations_V3_0.pdf
[8] HM Treasury, The Green Book: http://www.hm-treasury.gov.uk/data_greenbook_index.htm

The overall approach to assessing potential costs and benefits is based on the approach adopted by JNCC for its previous offshore SAC IAs (Eftec 2008), the joint consultation in 2009-10 on 12 inshore and offshore potential SACs and SPAs, and the Dogger Bank IA which was submitted for final approval in February 2011. A framework is used to combine and assess cost and benefit information from different sources on the likely impacts of the potential management measures for the sites.

This framework involves a description of:

- What the current situation at the site is (the baseline), such as the site's ecological characteristics, the economic activities taking place, their value, and their environmental impacts;
- What changes to these, relative to baseline, are expected to result from potential management measures that may be required to meet the site's conservation objectives;
- What the direct and indirect economic costs of those changes are to operators, enforcement authorities and wider society;
- The likely benefits of achieving the conservation objectives; and
- The different data that can be used to estimate costs and benefits, including: impacts on goods and services that are bought and sold in commercial markets that can be valued in monetary units; impacts on goods and services that are not traded in commercial markets (that are less easy to value); and other impacts (such as change to non-use value).

Information from stakeholders was requested during formal consultation on the scientific justification for the site and impact assessment. Additional information and comments from the formal consultation process was then used to update the IA. The consultation asked further questions but there was no substantive information provided that refines the cost implications.

2 BACKGROUND INFORMATION ON THE SITE

2.1 Baseline

Information about 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 Option 1 are compared in Section 4. By definition the costs and benefits of the baseline are zero since no additional actions will be taken.

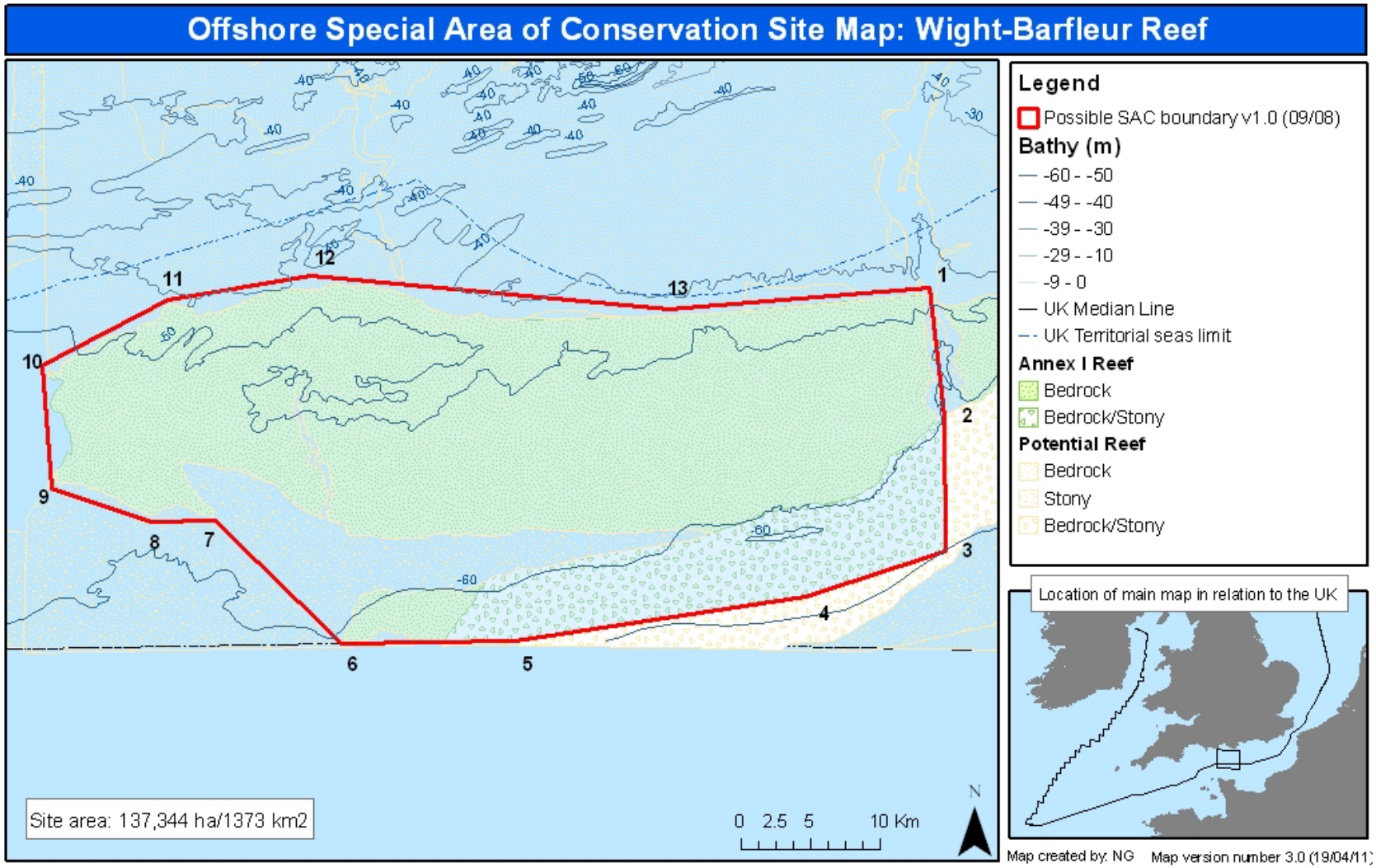
2.2 Characteristics of the site

The Wight-Barfleur reef is an area of bedrock and stony reef located in the central English Channel, between St Catherine's Point on the Isle of Wight and Barfleur Point on the Cotentin Peninsula in northern France (Figure 2.1)[9]. The SAC is approximately 65km long (east to west) and up to 26km wide. The depth within the SAC ranges from 25m to 100m, with the deepest areas to the south, and within the palaeovalley which runs along the south-east part of the possible SAC (pSAC). The large area of bedrock reef within the pSAC is characterised by a series of well-defined exposed bedrock ridges, up to 4m high. The rock is generally sandstone, mudstone and siltstone, although different regions within the pSAC can be distinguished on the basis of the different textures formed by different types of rock. The southern area of the site is composed of flat, smooth, mudstone and sandstone, with overlying coarse sediment (gravels, cobbles and boulders) which in places forms stony reef. The south-eastern area of the site contains part of a large palaeochannel known as the 'Northern Palaeovalley', which forms a major channel running roughly north-east/south-west across the English Channel. In this area the palaeovalley remains largely unfilled by sediment owing to the strong currents in the area, and is characterised by a gravel, cobble and boulder substrate which in places forms stony reef. The bedrock and stony reef areas support a diverse range of reef fauna. There are many types of sponges present,

[9] Wight Barfleur Reef SAC Selection Assessment Document v3
http://jncc.defra.gov.uk/pdf/WightBarfleur_SelectionAssessmentDocument_V3_0.pdf

from encrusting sponges to larger branching types. Tube worms, anemones and tunicates (sea squirts) are also common on the large boulders and bedrock.

Figure 2.1 Map of Wight-Barfleur Reef possible SAC site boundary showing surrounding bathymetry and distribution of reef habitat



Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12"; 7) -01° 46' 56", 50° 14' 05"; 8) -01° 50' 50", 50° 14' 05"; 9) -01° 56' 48", 50° 15' 27"; 10) -01° 57' 17", 50° 20' 14"; 11) -01° 49' 35", 50° 22' 46"; 12) -01° 40' 47", 50° 23' 37"; 13) -01° 18' 56", 50° 22' 01"

Site map projected in UTM (Zone 30N, WGS84 datum). Seabed habitat derived from BGS 1:250,000 seabed sediment maps © NERC and SeaZone bathymetry.

2.3 Baseline condition of the site

The likely future condition of the site if it is not designated forms the baseline against which to judge the value of potential improvements as a result of designating the site and achieving its conservation objectives.

Table 2.1 below summarises the initial assessment of the site's vulnerability to pressures which was undertaken for the draft 'Wight-Barfleur Reef SAC: Conservation Objectives and Advice on Operations' (v3.0) for the site. It will be updated and revised as necessary to reflect new evidence. The advice on operations assesses the vulnerability of the site's reef to current activities on the site. The vulnerability is determined by a combination of the sensitivity of the reef to the specified pressures and current exposure to those pressures. Only if a site feature is both sensitive and exposed to a human activity is it considered vulnerable. The scores of relative sensitivity, exposure and vulnerability have been derived using best-available scientific information and informed scientific interpretation and judgement (sources of the information are noted in the conservation objectives document itself). More information on how site vulnerability was assessed can be found in the supporting Wight-Barfleur Reef draft Conservation Objectives and Advice on Operations document.

The process uses sufficiently coarse categorisation to minimise uncertainty in information and reflects the current state of our knowledge and understanding of the marine environment. Sensitivity, defined as the intolerance of a habitat, community or individual (or individual colony) of a species to damage, or death, from an external factor has been assessed for the effects of broad categories of human activities. Current exposure of the reef to the effects of these categories of activities was assessed on best available advice (as of January 2011).

Key:

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.

Table 2.1 Sensitivity, exposure and vulnerability of the Wight-Barfleur Reef to physical, chemical and biological pressures

List of pressures which may cause deterioration or disturbance (with example activities)		**Wight-Barfleur Reef: Bedrock reefs**		
		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
	Smothering (e.g. drill cuttings)	••	Low	Low
Physical Damage	**Changes in suspended sediment** (e.g. screening plumes from aggregate dredging)	•	Low	Low
	Physical disturbance or abrasion (e.g. mobile benthic fishing, anchoring, windfarm scour pits, pipeline burial, potting)	•••	Low	Moderate
Non-physical disturbance	**Noise** (e.g. boat activity, seismic)	○	?	Insufficient information
	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)	•••	?	Insufficient information
	Introduction of non-synthetic compounds (e.g. heavy metals, crude oil spills)	•••	?	Insufficient information
	Introduction of radionuclides (e.g. nuclear energy industry)	?	?	Insufficient information
Non-toxic contamination	**Changes in nutrient loading** (e.g. outfalls)	••	None	No known vulnerability
	Changes in thermal regime (e.g. cooling water discharges)	••	None	No known vulnerability
	Changes in turbidity (e.g. laying of pipelines, aggregate dredging)	•	Low	Low
	Changes in salinity (e.g. outfalls from rigs, ships)	•••	None	No known vulnerability
Biological disturbance	**Introduction of microbial pathogens** (e.g. outfalls)	?	?	Insufficient information
	Introduction of non-native species and translocation (e.g. ballast water, hull fouling)	?	?	Insufficient information
	Selective extraction of species (e.g. bioprospecting, scientific research, demersal fishing)	•••	Low	Moderate

Table 2.1 shows that Wight-Barfleur Reef and associated biological communities are:

- Moderately vulnerable to obstruction (e.g. cables and possible development of renewable energy installations), physical disturbance and/or abrasion (e.g. demersal fishing), and selective extraction of species (e.g. demersal fishing)
- Vulnerable at low levels to smothering (e.g. demersal fishing), changes in suspended sediment (e.g. by demersal trawling) and changes in turbidity (e.g. by demersal trawling).

It has not been possible to determine whether the interest feature is vulnerable to introduction of synthetic and non-synthetic compounds, introduction of radionuclides, introduction of microbial pathogens and introduction of non-native species.

The reef is at risk of deterioration under the baseline as a result of the potential impacts of demersal fishing and infrastructure development. Some activities that take place at the site are already subject to regulations and conditions that are likely to prevent significant damage occurring to the features. These activities include possible renewable energy developments, aggregates industry operations and laying of submarine cables and pipelines. However, demersal fishing would be difficult to control if the site is not designated and this is likely to contribute to some level of decline of the feature over the assessment period. Deterioration of the habitats would not achieve the aims of the EC Habitats Directive to maintain or restore Annex I habitats.

The conservation objective, based on current evidence, for the management of Wight-Barfleur Reef 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 of spatial and temporal intensity. The management of other activities to which the feature is vulnerable may need to be reviewed by competent authorities responsible. If new information suggests that the condition of the feature at the site is not significantly affected by present-day activities and assessment indicates the site is in favourable condition, then the conservation objective for the reef will be changed to 'maintain' the feature in favourable condition.

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

2.4 Human activity and regulation of activity at the site

Current and proposed economic activity at Wight-Barfleur Reef is described below under the following sectors:

- Oil and gas – three unused wellheads within the site; no current activity
- Renewable energy projects – slight overlap with Round 3 licensing round for windfarm development, but main development area is outside the site boundary to the north.
- Aggregate extraction – no activity or planned activity within the site or nearby that is likely to affect site; some aggregate extraction approximately 10km to the northeast of the site so not considered further in this assessment
- Shipping – a major English Channel shipping lane runs through the site longitudinally
- Cables – one operational submarine cable runs through the site
- Fisheries – demersal fishing for sole within the region and potting for lobsters and crabs

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

Designation of the site would mean that under regulation 25 of the Offshore Habitats Regulations, before the appropriate Competent Authority undertakes or authorises a plan or project which may have a significant effect on the site, it is required to carry out an Appropriate Assessment to assess the

implications for the site in view of its conservation objectives. The Competent Authority can only agree to the plan or project if it has ascertained that it will not adversely affect the integrity of the site. Under regulation 26, a Competent Authority can agree to a plan or project for imperative reasons of overriding public interest (IROPI) notwithstanding its adverse effect, if there are no alternative solutions. This effectively places the burden of proof on developers and Competent Authorities to show the absence of an adverse effect, rather than requiring those opposing a plan or project to show that there would be an adverse effect.

If consent has already been granted by a Competent Authority for a plan or project at the time a site becomes a European Offshore Marine Site, under the Offshore Habitats Regulations that consent will need to be reviewed against the conservation objectives for the site, and either affirmed, modified or revoked.

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

a) Oil and gas

Description of known current and future activity relevant to the site

There are three abandoned and/or removed wellheads within the site boundary. From east to west, there are a Conoco-operated wellhead (98/23-1), a British Gas wellhead (98/22-1B) and an additional wellhead structure, operator unknown (98/22-2).

There are no known future oil and gas operations planned at the site.

Regulation and consents (baseline)

The environmental impacts of oil and gas activities are regulated by the Department of Energy and Climate Change (DECC). An Environmental Impact Assessment (EIA) is required under the Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) (Amendment) Regulations 2007 and an Environmental Statement will be submitted by the operator to DECC prior to consent for the activity under the Petroleum Act 1998. A full Environmental Statement may not be required for certain proposals[10] where it is thought that an activity will not have a significant effect on the environment, based on information provided in a Petroleum Operations Notice (PON) 15 submission.

Requirements of the Birds and Habitats Directive in relation to oil and gas plans or projects within UK waters and the UK continental shelf are implemented through The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended 2007). Regulation 5 of the regulations requires DECC to consider whether an Appropriate Assessment (AA) should be undertaken prior to granting any consent under the Petroleum Act 1998. The regulations also require consent to be obtained for geological surveys and for the testing of equipment to be used in geological surveys related to oil and gas activities undertaken in UK waters and the UK continental shelf. Offshore installations are required by the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 and the Offshore Installation (Emergency Pollution Control) Regulations 2002 to prepare Oil Pollution Emergency Plans outlining response and mitigation procedures for oil pollution incidents occurring from and around the installation and service vessels. These plans are submitted for consultation to a number of departments and agencies, including the statutory nature conservation advisers to ensure that environmental concerns have been considered and addressed appropriately. In

[10] Certain projects such as pipelines of 800 mm diameter and 40 kilometres or more in length must have an Environmental Statement.

relation to toxic contamination, all chemicals used and discharged offshore require a permit[11] and their potential environmental impacts are assessed through the use of chemical risk assessment models, including Chemical Hazard Assessment and Risk Management (CHARM).

A range of other consents and licences, for instance in relation to the discharge of chemicals, deposits in the sea, control of pollution etc, may be necessary depending on the precise nature of the activity. Information about the full range of environmental consents that may be applicable may be found at: https://www.og.berr.gov.uk/environment/environ_leg_index.htm

DECC's Offshore Inspectorate Team inspects installations and expect maintenance to be undertaken to prevent environmental discharges (for example from drains and binding, hoses and diesel tanks). Inspectors also have the powers to investigate whether requirements or restrictions imposed on the operator by DECC are complied with and to monitor any permitted or unplanned discharge of oil and chemicals. During an inspection, the Inspectorate can ask to see any reports of inspections undertaken by operators and review them with respect to environmental concerns (such as corrosion) and ask for a timeline for continued monitoring or remediation works. If the Inspectorate Team identifies any potential environmental issues they can make a condition under the International Convention on Oil Pollution Preparedness, Response and Co-operation[12], for example, that maintenance is undertaken.

The decommissioning of disused offshore installations and pipelines is governed by national and international regulations and overseen by DECC's Offshore Decommissioning Unit. Decommissioning includes the preparation and submission of a Decommission Programme supported by an EIA. Relevant regulations include: Petroleum Act 1998, Energy Act 2008, Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 as amended, and OSPAR Decision 98/3 (this normally requires the removal of the whole installation but there are possible exceptions for larger structures).

Likely future regulation of activity following designation

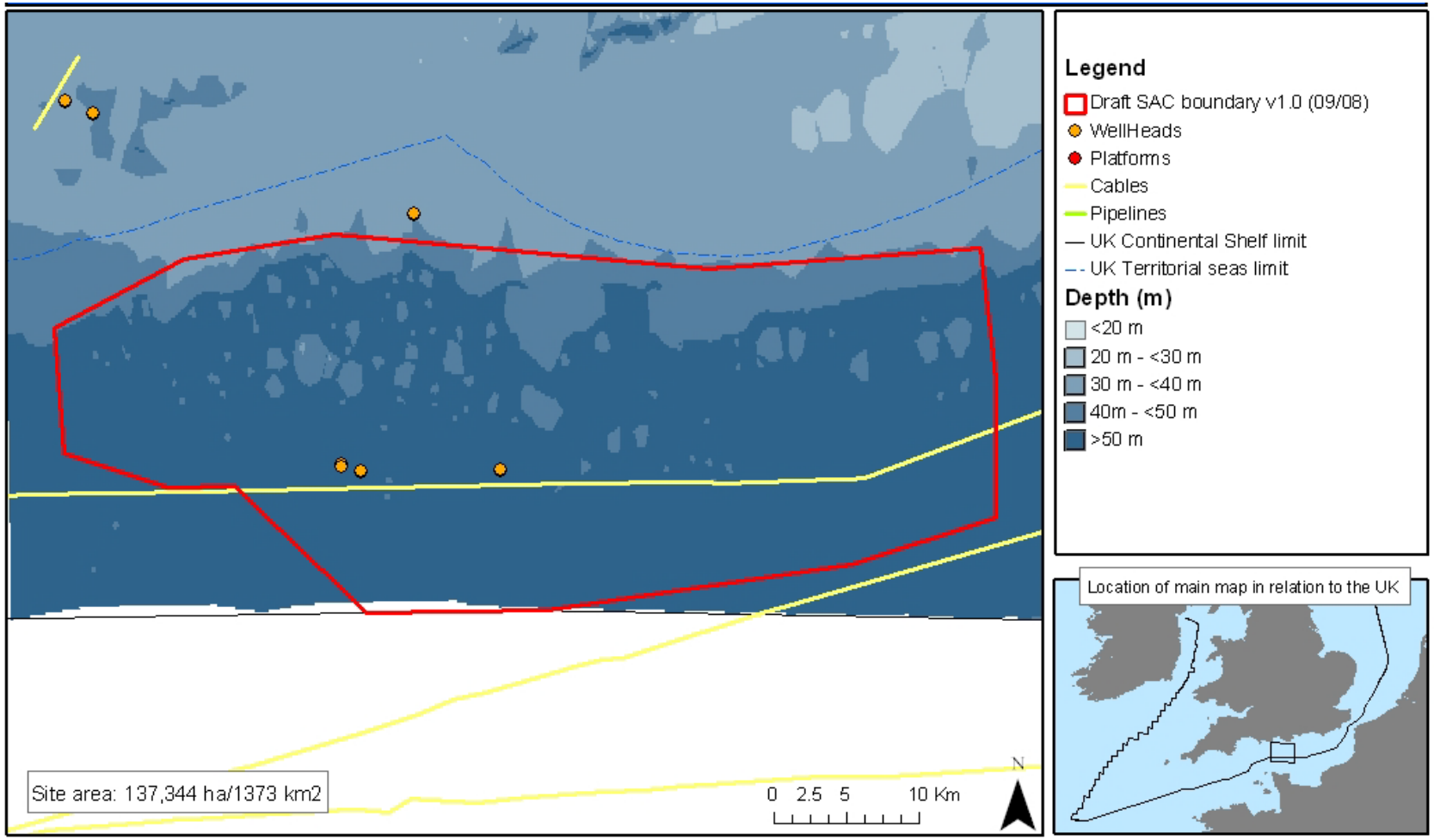
Any oil and gas plan or project would be subject to screening to assess if it were likely to have a significant effect on the reef at Wight Barfleur Reef. If effects are likely to be significant, an AA would be conducted by DECC, with information provided by the developer, including environmental information such as that normally provided for EIA outside a Natura site. It is normally possible to put in place mitigation measures which ensure that a plan or project will not have an adverse effect on site integrity. If such mitigation measures are not possible, the proposed development must be refused, unless the competent authority considers that there are imperative reasons of overriding public interest (IROPI) for the development to proceed, and no alternative solutions.

The Competent Authority is likely to be required to show that activities will not adversely affect the integrity of the site before issuing consent. They may also apply stricter rules on decommissioning, for example they may require removal of all infrastructure once a project has been completed.

For a Natura 2000 site, the EIA should include robust and transparent modelling of the amount of drill cuttings and their distribution under certain conditions. It will also discuss and report the impacts that these drill cuttings have on the site. The modelling should be detailed enough to demonstrate the impacts that the drill cuttings will have on the conservation objectives of that site. The modelling should also be appropriate to enable/indicate the requirement for future modelling.

[11] Through the Offshore Chemicals Regulations (2002) and Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005.
[12] OPRC, 1990

Figure 2.2 Gas infrastructure and cables around the Wight-Barfleur Reef SAC proposal (from SeaZone 2008)



Map version number 1.1 (26/07/10)

Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12";
7) -01° 46' 56", 50° 14' 05"; 8) -01° 50' 50", 50° 14' 05"; 9) -01° 56' 48", 50° 15' 27"; 10) -01° 57' 17", 50° 20' 14"; 11) -01° 49' 35", 50° 22' 46"; 12) -01° 40' 47", 50° 23' 37";
13) -01° 18' 56", 50° 22' 01"

Site map projected in UTM (Zone 30N, WGS84 datum). Seabed habitat derived from BGS 1:250,000 seabed sediment maps © NERC and SeaZone bathymetry.
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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). Map copyright JNCC 2008.

b) Renewables

Description of known current and future activity relevant to the site

There is currently no renewable energy development activity within the area. The site does overlap marginally (*c.* 45km^2) with a large Round 3 windfarm licensing zone to the northwest (Zone 7) (Figure 2.3). The development rights have been granted to Eneco for the zone, but it is planning to develop only a third of the site 2km north and outside of the SAC boundary providing approximately 900 MW of capacity[13].

Regulation of activity (baseline)

An Offshore Energy Strategic Environmental Assessment (SEA)[14] was concluded in June 2009 which assessed the environmental implications of the installation of 25GW of offshore wind in the UK Renewable Energy Zone of England and Wales (to meet the UK government targets of 15 percent of energy from renewable sources by 2020), as well as further licensing for oil and gas, and gas storage in depleted reservoirs. The Crown Estate concurrently initiated the leasing process for Round 3, based on areas it had determined as suitable for wind farm development, subject to the outcomes of the SEA. The zonal approach to round 3 allows for some flexibility regarding the location of development(s) within the zone. This means that it may be possible to locate development in areas of the zone that are less likely to impact on features in any overlapping Natura 2000 sites. Assessment of the impacts of further developments both alone and in combination will be required following the submission of applications and accompanying data. It is highly likely that there will be further leasing rounds for wind farm development in the future. Leases for wave and tidal devices have currently been considered on an individual basis.

Following on from the SEA, the Crown Estate, using the information from the SEA and the information from developers, has determined which areas of the seabed are suitable for leasing, and nine Zone Development Agreements were awarded in January 2010. The wind farm developers will now need to gain consent to install a wind farm and also to connect to the UK electricity grid.

Any application for a wave or tidal power project offshore will require an Environmental Statement that identifies the likely significant effects of the device, array or farm on the environment and proposes suitable mitigation measures.

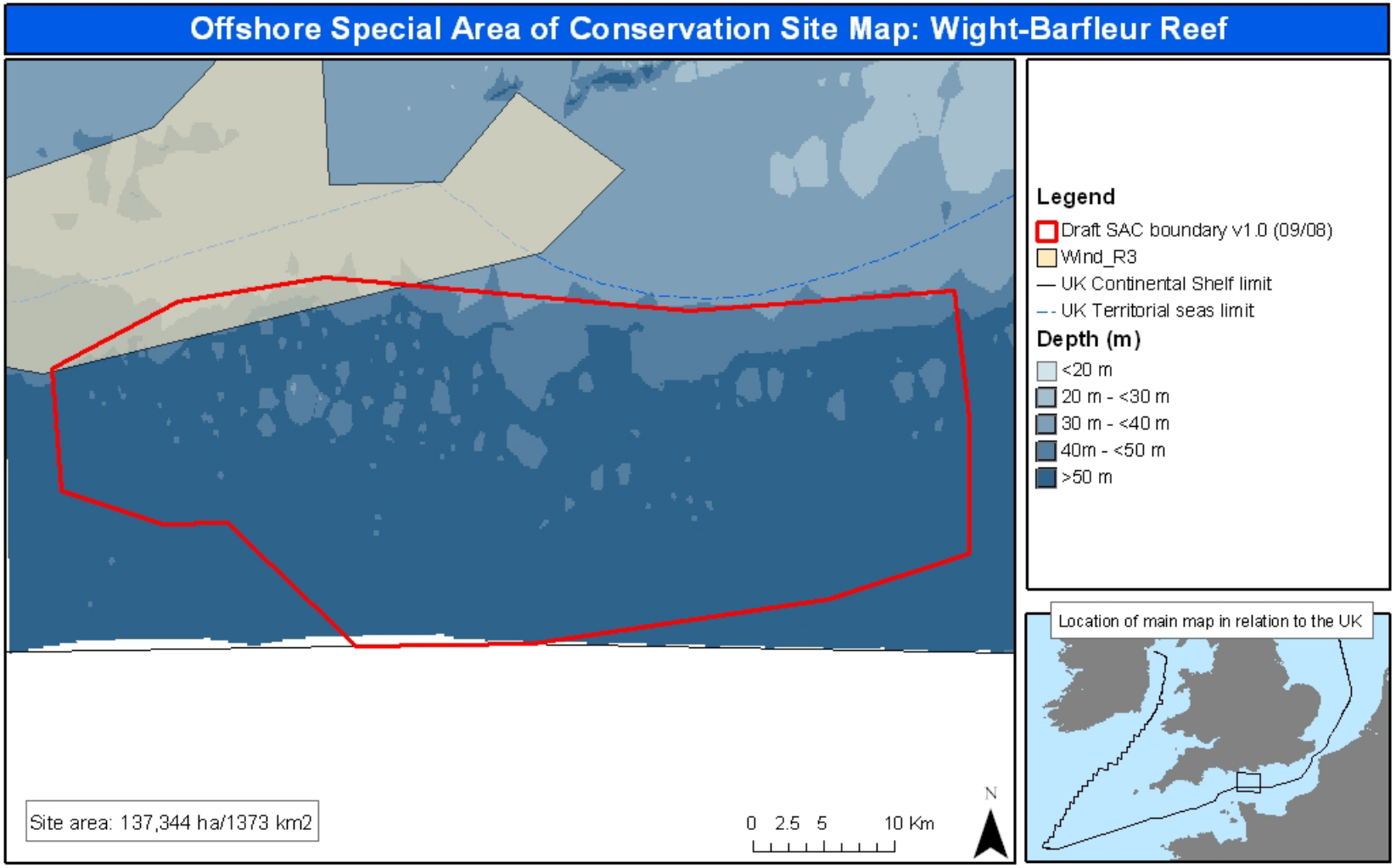
Prior to construction, surveys are conducted to inform the EIA and provide baseline data on the site. These involve the developer undertaking bathymetric, geophysical and benthic surveys to determine the nature of the seabed and its associated plants and animals as well as studies to investigate bird, fish and marine mammal use of the site. Meteorological masts, wave buoys and current meters are also installed to investigate the wind resources and hydrodynamic conditions at the site.

Likely future regulation of activity following designation

JNCC provided advice to The Crown Estate (TCE) on their Habitats Regulations Assessment (HRA) for the Round 3 Plan. Whilst not pre-judging individual appropriate assessments carried out by the Regulator, it is likely that the survey information that would be provided by the developer for Environmental Impact Assessment should be sufficient to characterise the biotope distribution of the Zone and conduct appropriate assessment (AA), therefore survey in addition to that which would be required for EIA in the absence of the SAC is unlikely to be needed.

[13] http://corporateuk.eneco.nl/outlook_and_strategy/innovation/Pages/TheEnecoWindPark.aspx
[14] Updated in 2010 by the Offshore Energy SEA 2

Figure 2.3 Round 3 windfarm licensing around the Wight-Barfleur Reef SAC (from SeaZone)



Map version number 1.1 (26/07/10)

Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12";
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Site map projected in UTM (Zone 30N, WGS84 datum). Seabed habitat derived from BGS 1:250,000 seabed sediment maps © NERC and SeaZone bathymetry.
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from material obtained from the UK Hydrographic Office with the permission of the Controller of Her Majesty's Stationery Office and UK Hydrographic Office (www.ukho.gov.uk).
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). Map copyright JNCC 2008.

c) Shipping

Description of known current and future activity relevant to the site

The English Channel is one of the busiest shipping lanes in the world carrying over 400 commercial vessels per day[15]. Automatic Identification Systems (AIS) reveal that approximately 150 vessels a day pass over the region containing Wight-Barfleur Reef pSAC (Figure 2.4).

The Dover Traffic Separation Scheme was the first radar controlled TSS in the world and was set up by the international Maritime Organisation following an accident in 1971. The Dover TSS passes over the southern half of the site.

Perhaps due to the sheer amount of traffic, with UK-Europe and North Sea-Atlantic routes, the English Channel and surrounding area experience 40% of the UK incidents that threaten pollution[16]. However, legislation is already in place to help try to limit these pollution events.

Regulation of activity (baseline)

The International Convention for the Prevention of Pollution from Ships (MARPOL) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. The MARPOL Convention, which was adopted by the International Maritime Organisation in 1973, covered pollution by oil, chemicals, harmful substances in packaged form, sewage and garbage. Measures relating to tanker design and operation (arising from the Convention on the Safety of Life at Sea, 1974) were also incorporated into the MARPOL Protocol. As the 1973 MARPOL Convention had not yet entered into force, it was absorbed into the 1978 MARPOL Protocol. The Convention includes regulations aimed at preventing and minimizing pollution from ships, both accidental pollution and that from routine operations. It now includes six technical Annexes which came into force in 1983:

Annex I	Regulations for the Prevention of Pollution by Oil
Annex II	Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk
Annex III	Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form
Annex IV	Prevention of Pollution by Sewage from Ships
Annex V	Prevention of Pollution by Garbage from Ships
Annex VI	Prevention of Air Pollution from Ships (this annex came into force 19 May 2005)

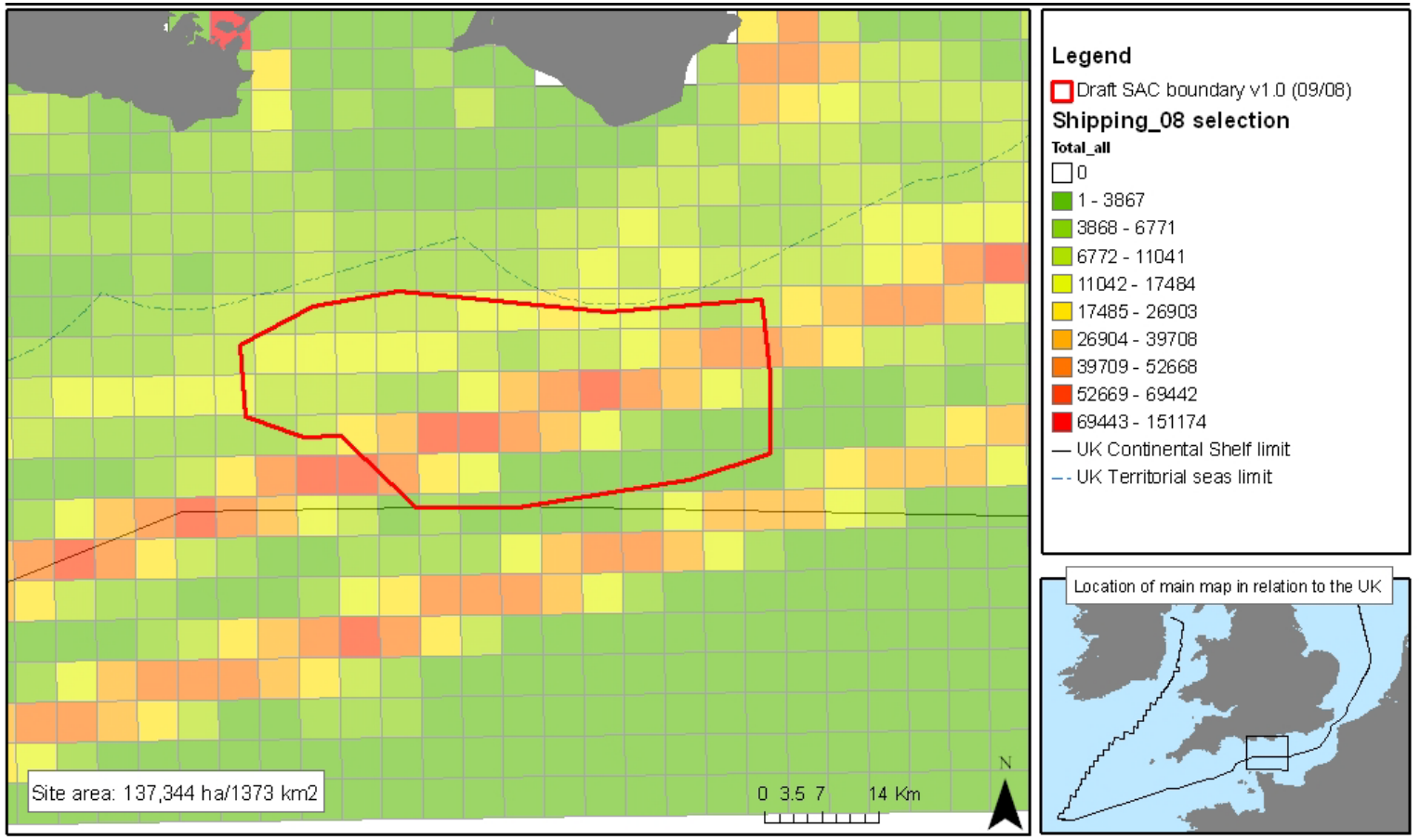
Signatories to the Convention, which include the UK, must accept Annexes I and II, but the other Annexes are voluntary.

Likely future regulation of activity following designation

The site is proposed for its reef habitat, which is unlikely to be affected by shipping passing above it, therefore under the designate option, no change to current practice is likely to be required to fulfil the conservation objectives for the Wight-Barfleur Reef.

[15] Maritime and Coastguard Agency http://www.dft.gov.uk/mca/mcga_-_hm_coastguard_-_the_dover_strait
[16] Maritime and Coastguard Agency http://www.dft.gov.uk/mca/pacops_final_report_2006.pdf

Figure 2.4 Shipping activity around the Wight-Barfleur Reef pSAC from the Cefas data contract (MB106)[17].



Map version number 1.1 (26/07/10)

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[17] Data was derived from Automatic Identification Systems (AIS), a collision-avoidance system for ships over 300GT that travel in international waters. Data are provided by MCA. Data for 2008 are represented as the total number of vessels passing through each 5km by 5km grid cell. Data are represented on a scale of 'low' to 'high'

d) Cables

Description of known current and future activity relevant to the site

There is an active submarine cable and seven inactive cables operated by Global Crossing running east-west through the centre of the Wight-Barfleur pSAC site[18] (Figure 2.2).

Regulation of activity (baseline)

Most sub-sea cables are exempt from licence control under the Marine & Coastal Access Act 2009 though associated works such as rock armouring and mattressing, the construction of facilities at the shore landing, and pre-sweep and trenching may require a marine licence. A "pre-sweep" licence is required where activities are to be undertaken that will result in the re-deposition of material other than at an existing designated disposal site. Where a cable is an integral component of a larger scheme, such as the construction of an offshore energy generation project, any marine licence issued for the project will need to include the laying of the cable.

The laying of inshore cables (up to the territorial limit) is a licensable activity under the Marine and Coastal Access Act (MCAA). Where a cable is inshore, only the normal application and decision-making process is followed. If the cable is an international cable, then the Marine Management Organisation (MMO) must grant an application, although conditions can be attached to that licence.

Nothing in section 81 of the MCAA applies to anything done in the course of laying or maintaining an offshore stretch of exempt marine cable[19].

A submarine cable is exempt from requiring a marine licence unless it is a cable constructed or used in connection with any of the following:

- The exploration of the UK sector of the continental shelf;
- The exploitation of the natural resources of that sector;
- The operations of artificial islands, installations and structures under the jurisdiction of the United Kingdom;
- The prevention, reduction or control of pollution from pipelines.

A deposit, removal or dredging activity carried out for the purpose of executing emergency inspection or repair works **only** to a cable is exempt from requiring a marine licence. This exemption is subject to the condition that the activity may only be carried out in accordance with an approval granted by the MMO for that purpose.

Likely future regulation of activity following designation

There are no plans to install any new cables unless associated with wind farms (discussed in renewables section). As such, cable laying activity is not expected to change following designation.

e) Fisheries

Description of known current and future activity relevant to the site

Note that fishing in offshore waters is carried out on a European level, by UK vessels, European and non-European vessels by agreement. Data on location and type of fishing is difficult to obtain comprehensively for various reasons. Also, fishing data from recent years is a reflection of fisheries already managed to an extent by total allowable catch (TAC) and species quotas. As there are no indications that these measures are likely to change within the timeframe of the IA, the current situation is taken as the baseline.

[18] Consultation response provided by TCE (November 2011)
[19] http://www.marinemanagement.org.uk/licensing/documents/guidance/02.pdf

The CFP is currently undergoing reform and a revised regulation will come into effect in January 2013. The Green Paper[20] currently (October 2009) sets out some of the areas that the Commission would like to review; at this stage it is however impossible to predict which, if any, of those proposed measures will come into effect.

It is possible to obtain information on the distribution of fishing effort within the region for UK vessels (≥15m) that have vessel monitoring systems (VMS). These provide a vessels position, speed and heading either hourly or every two hours. Such information can be analysed spatially in relation to the site boundary. As vessels fish at characteristic speeds, VMS data can be processed to provide proxy patterns of 'active fishing'. The European Commission has passed a regulation requiring all member states to assure that VMS terminals in use on fishing vessels (≥15m) of its national fleet are secure[21]. VMS data only cover vessels of over 15m in length. Using a simple speed rule to partition active fishing from VMS is a coarse but effective means of estimating fishing effort (Mills *et al*. 2007), particularly for towed gear. It is less effective for static gear.

There are no landings data available specifically for the area that is proposed for designation. The Marine Management Organisation's Fisheries Activity Database (hereafter, FAD) compiles various data at the level of ICES rectangle. 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. Wight-Barfleur Reef is completely contained within ICES 29E8 and covers approximately 1/3 of the rectangle.

Potting industry

The biggest fishery in the region is potting for crustaceans including European or common lobster (*Homarus gammarus*), edible crabs (*Cancer pagurus*), European spider crabs (*Maja squinado*) as well as cockle (*Cerastoderma edule*) and whelk (*Buccinum undatum*) fisheries in the surrounding sediment. Lobsters were the largest catch by value[22], accounting for £260k pa (30% of all landings) (based on mean values from 2006-9). Edible crabs were the third largest catch (behind sole), accounting for £229k pa (26.7%), and then whelks (£30k; 3.4%) (all landed in Poole or Selsey) and spider crabs (£4k; 0.5%) much further down the list.

Most of the potting is carried out from Poole, Lymington and Keyhaven, Salcombe, Selsey and Weymouth.

Sole fishery

The sandy sediment of the English Channel hosts a large fishery for the common or Dover sole (*Solea solea*). According to the UK Biodiversity Action Plan the western English Channel and Irish Sea sole fisheries face potential collapse. In 2010, Greenpeace International added the common sole to its seafood red list, indicating that they believed most supermarkets were selling sole sourced from unsustainable fisheries. However, the English Channel megrim, monk and sole beam trawl fisheries (the Channel and West Sustainable Trawling Group (C&WSTG)) are currently undergoing Marine Stewardship Council (MSC) assessment. The C&WSTG have modernised and improved fishing gear to minimise catch of non-target species. Sledges have been replaced with rollers and cod ends have been made larger to ensure non-commercial benthic life and bycatch can escape.

[20] http://ec.europa.eu/fisheries/reform/
[21] http://ec.europa.eu/fisheries/index_en.htm
[22] Though this is as a consequence in a dramatic fall in landings of sole in 2009 visible in the data.

Within the ICES rectangle that contains the Wight Barfleur Reef site, £234k worth of sole are landed every year (based on 2006-9 landings). The amount of sole landed, however, is variable and only £46k was landed in 2009, compared to £434k in 2007. It is thought that this drop in landings corresponds to an increase in fuel prices, a theory seemingly supported by a noticeable drop in beam trawl effort in the same year.

The vast majority of sole are caught by vessels registered in England and landed in Brixham and Plymouth. Most are caught using beam trawls, but otter trawls, gillnets, trammel nets and drift nets are also used. A few Belgian beam trawlers also target sole and land in Milford Haven and Swansea. It is highly likely that these vessels fish on the sediment surrounding the reef, rather than the feature itself as sole is a fish species characteristic of sandy sediments.

Other fisheries

Mechanized dredgers target predominately scallops (£11k; 1.9%) in the region and land at Brixham, Shoreham, Plymouth and Weymouth.

Moderate quantities of cuttlefish were landed along the south coast (£17k; 2%). Many were caught in beam trawls (mainly from Brixham) or pots (Poole), but the largest hauls were caught in traps (unspecified) and landed in Poole.

Information was provided during the consultation period by the French National Committee for Marine Fisheries and Sea Farming (CNPMEM) which described French fishing effort within the site boundary. It was not possible to include this information in the headline figures as the scope of the IA is for UK businesses only. However, the information has been included as Annex IV and Annex V to the document in the interests of providing a complete picture of fishing activity in the region.

Table 2.2 Total catch by nationality from the ICES rectangles (29E8) containing Wight Barfleur Reef SAC (2006-9)

	2006		2007		2008		2009		Average		Average as a percentage	
Vessel nationality	Weight (t)	Value (£)	Weight (t)	Value (£)	Weight (t)	Value (£)	Weight (t)	Value (£)	Weight (t)	Value (£)	Weight	Value
England	481.7	772858	340.7	1147755	283.6	931983	269.8	475868	343.9	832116	97.54	97.06
Belgium	10.1	32330	2.5	13661	1.6	8530	5.4	15701	4.9	17556	1.39	2.05
Scotland	2.7	3507	0.8	1572	0.2	400	8.0	16132	2.9	5403	0.82	0.63
Guernsey	1.5	2818	0.0	0	0.0	0	1.8	5669	0.8	2122	0.23	0.25
UK	0.0	0	0.0	0	0.2	671	.00	0	0.0	168	0.01	0.02
Total	**496t**	**£812k**	**344t**	**£1,163k**	**286t**	**£942k**	**285t**	**£513k**	**353t**	**£857k**	**100**	**100**

Table 2.3 Use of gear types in the ICES rectangles (29E8) containing Wight Barfleur Reef SAC (2006-9)

	2006		2007		2008		2009		Average		Average as a percentage	
Gear type	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight	Value
Pots	416578.3	629016	217102.9	591220	194707.0	512697	147153.8	367177	243885.5	525027	69.17	61.24
Beam trawls	32566.8	127137	88538.8	487351	66402.7	345934	10746.8	35447	49563.8	248967	14.06	29.04
Mechanized dredges	32060.0	25921	19508.2	32097	115.0	275	2347.2	3025	13507.6	15329	3.83	1.79
Gillnets (not specified)	6851.3	17598	2396.9	18049	252.1	2194	2596.4	18661	3024.2	14125	0.86	1.65
Scottish seines	0.0	0	0.0	0	0.0	0	15968.7	43234	3992.2	10809	1.13	1.26
Otter trawls (unspecified)	650.0	939	4651.7	17258	5426.9	21242	569.9	2317	2824.6	10439	0.80	1.22
Traps (not specified)	5579.0	4876	9922.6	9740	9171.2	11181	6779.5	7987	7863.1	8446	2.23	0.99
Set gillnets (anchored)	0.0	0	291.5	670	4692.8	27162	2920.3	5815	1976.2	8412	0.56	0.98
Pair trawls - bottom	0.0	0	0.0	0	200.0	400	95139.5	26163	23834.9	6641	6.76	0.77
Otter trawls - bottom	838.9	5230	0.0	0	3072.2	17599	0.0	0	977.8	5707	0.28	0.67
Trammel nets	2.8	7	776.9	4488	0.0	0	0.0	0	194.9	1124	0.06	0.13
Hooks & lines (unspecified)	688.7	723	107.4	637	0.0	0	390.8	2361	296.7	930	0.08	0.11
Boat dredges	0	0	0	0	1531.5	2900	0	0	382.9	725	0.11	0.08
Driftnets	0	0	707.3	1479	0	0	0	0	176.8	370	0.05	0.04
Longlines (not specified)	65.1	67	0.0	0	0.0	0	326.3	1183	97.8	312	0.03	0.04

Table 2.4 Major ports of landing from the ICES rectangles containing Wight Barfleur Reef SAC (2006-9)

		2006		2007		2008		2009		Average		Average as a percentage	
Port of landing	Country	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight	Value
Poole	GBE	277323.7	394423	163537.1	352402	147979.6	339570	114865.1	240052	175926.4	331612	49.89	38.68
Brixham	GBE	22544.3	87599	102175.6	508944	70155.1	366891	8743.7	30733	50904.7	248542	14.44	28.99
Lymington and Keyhaven	GBE	102451.9	210752	29573.7	105004	41381.4	128909	9533.2	36593	45735.1	120314	12.97	14.03
Salcombe	GBE	238.1	720	16933.8	94198	6992.6	37432	8099.4	43099	8066.0	43862	2.29	5.12
Plymouth	GBE	1721.3	8560	5230.5	14664	2161.2	11385	95731.4	26961	26211.1	15392	7.43	1.80
Milford Haven	GBW	10102.7	32330	612.1	3664	870.1	3179	5384.2	15701	4242.3	13719	1.20	1.60
Weymouth	GBE	2175.7	4313	10975.7	26696	3757.1	15411	2623.3	6208	4883.0	13157	1.38	1.53
Portsmouth	GBE	67811.7	42806	666.9	2232	0.0	0	1003.2	4724	17370.5	12441	4.93	1.45
Boulogne	FRA	0	0	0	0	0	0	15968.7	43234	3992.2	10809	1.13	1.26
Swanage	GBE	404.6	874	3152.7	8294	0.0	0	11774.5	28988	3833.0	9539	1.09	1.11
Cherbourg	FRA	0	0	5057.4	12084	444.6	579	3889.1	9342	2347.8	5501	0.67	0.64
Isle Of Wight	GBE	3285.1	9513	0.0	0	485.7	1093	3057.3	7221	1707.0	4457	0.48	0.52
Selsey	GBE	315.6	719	973.2	5231	3697.9	9190	633.8	2137	1405.1	4319	0.40	0.50
Swansea	GBW	0.0	0	1905.6	9997	722.3	5351	0.0	0	657.0	3837	0.19	0.45
Teignmouth	GBE	0.0	0	393.9	12377	0.0	0	0.0	0	98.5	3094	0.03	0.36
Itchenor/East Wittering	GBE	391.7	1281	486.7	2068	306.9	1715	1525.4	6797	677.7	2965	0.19	0.35
Shoreham	GBE	589.5	4456	952.1	2318	374.5	2632	0.0	0	479.0	2352	0.14	0.27
Exmouth	GBE	0.0	0	0	0	2023.8	7682	0.0	0	506.0	1920	0.14	0.22
Lyme Regis	GBE	50.5	249	0.0	0	354.5	891	844.2	4827	312.3	1492	0.09	0.17
West Bay	GBE	0.0	0	0.0	0	0.0	0	552.5	5852	138.1	1463	0.04	0.17
Hamble	GBE	2607.0	3613	814.7	2116	0.0	0	0.0	0	855.4	1432	0.24	0.17
Ijmuiden	NED	0.0	0	0.0	0	1678.5	3860	0.0	0	419.6	965	0.12	0.11
Southampton	GBE	2124.0	3696	0.0	0	0.0	0	0.0	0	531.0	924	0.15	0.11
Christchurch	GBE	795.6	3352	0	0	0	0	0.0	0	198.9	838	0.06	0.10
Montrose	GBS	0.0	0	0.0	0	1531.5	2900	0.0	0	382.9	725	0.11	0.08

Table 2.5 Species landed in the ICES rectangles containing Wight Barfleur Reef SAC (2006-9)

	2006		2007		2008		2009		Average		Average as a percentage	
Caught species	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight (kg)	Value (£)	Weight	Value
Lobsters	25975.7	274111	26172.5	316697	23868.4	271719	15754.6	175825	22942.8	259588	6.5	30.3
Sole	13532.7	110649	45603.9	434220	40328.4	344555	4955.7	45964	26105.2	233847	7.4	27.3
Crabs (C.P.Mixed Sexes)	223237.2	261732	146191.2	246920	152050.2	227859	112813.8	177767	158573.1	228570	45.0	26.7
Whelks	177727.7	95298	31748.5	18058	4766.0	2624	3856.0	2089	54524.6	29517	15.5	3.4
Cuttlefish	12069.5	14766	17760.3	18886	17060.7	22297	9353.4	11455	14061.0	16851	4.0	2.0
Plaice	4989.2	6361	14390.3	23002	10655.1	17569	1627.6	2485	7915.5	12354	2.2	1.4
Scallops	2808.1	3663	19968.4	32594	2227.1	3742	2451.6	3123	6863.8	10780	1.9	1.3
Turbot	110.9	1096	1051.6	21523	715.9	7590	52.7	513	482.8	7680	0.1	0.9
Red Mullet	107.2	364	310.0	745	244.8	648	3828.3	25692	1122.6	6862	0.3	0.8
Horse Mackerel	200.0	72	0.0	0	0.8	0	95746.3	26281	23986.8	6588	6.8	0.8
Brill	488.0	2479	1688.0	10025	1420.2	8723	417.9	2659	1003.5	5971	0.3	0.7
Bass	1088.2	6422	380.0	2343	418.9	2710	1656.9	7885	886.0	4840	0.3	0.6
Spider Crabs	9710.7	7952	7545.6	7507	0	0	1854.0	1714	4777.6	4293	1.4	0.5
Conger Eels	2132.3	1474	5400.4	3170	8675.5	5353	10928.4	6919	6784.1	4229	1.9	0.5
Monks or Anglers	242.2	795	1825.7	4163	2177.7	5947	165.1	419	1102.7	2831	0.3	0.3
Skates and Rays	2750.8	2804	3598.8	4293	1819.2	2091	171.4	218	2085.1	2352	0.6	0.3
Gurnard and Latchet	3173.8	1527	6538.1	2923	4037.4	1853	1785.6	1141	3883.7	1861	1.1	0.2
Squid	167.1	605	479.4	1604	473.5	1615	773.8	3227	473.5	1763	0.1	0.2
Pollack	563.8	695	281.5	337	1709.1	3081	2060.8	2844	1153.8	1739	0.3	0.2
Lemon Sole	159.9	795	917.0	4432	372.4	1516	97.5	197	386.7	1735	0.1	0.2
Native Oysters	3598.0	5307	725.0	1088	0.0	0	0.0	0	1080.8	1599	0.3	0.2
Gurnards - Grey	0.0	0	0.0	0	0.0	0	1978.3	5992	494.6	1498	0.1	0.2
Cockles	1682.1	3429	832.6	2149	0.0	0	0.0	0	628.7	1395	0.2	0.2
Pouting (Bib)	1889.8	281	6261.1	1934	3950.1	1712	4004.8	1172	4026.5	1275	1.1	0.1
Clams (M.Mercenaria)	2124.0	3696	0.0	0	0.0	0	0.0	0	531.0	924	0.2	0.1
Spotted Ray	0	0	0	0	4195.2	3466	95.8	83	1072.8	887	0.3	0.1
Cod	359.5	637	330.2	670	600.8	1368	304.2	736	398.7	853	0.1	0.1
Mullet - Other	2106.8	2181	554.9	390	0.0	0	0.5	1	665.5	643	0.2	0.1
Crabs - Velvet (Swim)	235.4	353	326.0	489	293.8	451	736.6	994	398.0	572	0.1	0.1
Sand Sole	316.4	656	287.3	959	80.9	246	137.1	184	205.4	511	0.1	0.1

From analysis of fishing effort distribution within the ICES rectangle, the proportion of landings coming from within the SAC boundary was estimated (Annex I). Of the most important fishing gears, across 2006-9, the average catch from within the pSAC was £400k for potting and £139k for beam trawling.

Regulation of activity (baseline)

The European Common Fisheries Policy (CFP) sets the framework for almost all regulation of fisheries in UK waters. European competence and specific regulations vary in their application depending on exact geography. In the UK, all waters beyond 12nm fall under the jurisdiction of the European Commission through the CFP. It is transposed through the Control Regulation (which sets quotas each year in December under separate EC legislation) and Technical Conservation Regulation (covering issues like sizes of nets, closed fishing areas, etc.).

Fishing for pressured stocks beyond 12nm is managed at the European level with each Member State receiving an annual allocation (quota) of each stock at each December Fisheries Council (with a small amount of the total quota allocated to 0–12nm)[23]. Non-pressured stocks such as bass, scallops and cuttlefish still have no applicable quotas. This means that when quota levels for the controlled fish are reached vessels tend to move into the inshore zone to catch those species for which there is a market but in effect no restrictions on what can be landed.

Fisheries Regulations apply to anyone fishing from a powered boat and selling their catch, including trawling, netting or potting. Vessels used to catch fish for sale must be licensed as a fishing vessel (subject to exceptions[24]). As well as setting limits on pressured stock (total allowable catches) the CFP puts in place a series of regulations including minimum landing sizes for certain fish as well as seasonal measures needed for stock management. These may take the form of spatial closures that prevent the use of particular fishing techniques in certain areas either permanently or on a time-limited basis. The CFP can also place limits on the amount of fishing that can take place either by limiting the amount of static fishing gear or by limiting the power of the fishing vessels that can take part in the fishery. Further, the more recent 'Registered Sellers and Buyers Regulation' has greatly helped manage the issue of 'black' fish by preventing those fish caught by illegal means entering the market. By denying a market for such fish it is hoped that fishermen will more generally comply with the regulations. There are currently two closed areas in UK European waters under the CFP: Darwin Mounds SAC and NW Rockall SAC. There are no closed areas in this region at present.

Fisheries regulations and policy are enforced, in English Waters, through the MMO sea fisheries enforcement programme, which includes the inspection of fishing vessels and fishing industry premises in the major fishing ports, fish markets and other locations around the coast by MMO officers. Fishing vessels are also inspected at sea by the Royal Navy's Fishery Protection Squadron operating under a Defra/Ministry of Defence agreement. There is also a program of aerial surveillance[25].

Likely future regulation of activity following designation

If management measures for a Marine Protected Area in offshore waters are required, the UK must seek them through the proposal of fisheries management measures under the CFP by the European Commission.

[23] Quotas are informed by annual scientific stock assessment advice formulated by ICES (the International Council for the Exploration of the Seas) although adherence to this advice is not mandatory.
[24] A licence is not required if a vessel is not powered by an engine or if it is fishing for common eels. If a vessel is only fishing for salmon and migratory trout it does not require a licence but must be registered with the Environment Agency.
[25] www.marinemanagement.org.uk/fisheries/monitoring/regulations.htm

3 APPROACH TO ANALYSIS OF COSTS AND BENEFITS

3.1 Approach

This final IA presents a quantitative assessment of the potential costs and benefits to the UK of the policy option to designate the site. Impacts have been assessed in the IA over a timescale of approximately 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 not be static (it may be subject to natural ongoing change), and the assessments try to take account of this (for example, where a benefit is identified as preventing continuing decline).

The same method has been adopted to develop impact assessments for a suite of marine Natura 2000 sites consulted on in 2009-2010 and Dogger Bank pSAC in 2011. However, different sites have different baselines, activities and circumstances. Therefore even with a consistent methodology, different assumptions may be made, different impacts may be identified and even the same type of impact may have different monetary cost or benefit estimates associated with it for different sites.

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

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

Therefore the approach to the assessment has:

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

The analysis in this document is based on the methods that are judged to be the best practicable option to address 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 taking place within or in the vicinity of the site in order to comply with the policy objectives. The costs considered include the direct and indirect economic costs of those changes to

operators, enforcement authorities and wider society. The costs are expected to result from the potential range of management measures that may be required to meet the site's objectives. The costs are considered relative to the baseline of not designating the site.

The costs borne by each of the key sectors will depend on the extent to which their activity impacts on the site and the management measures deemed necessary to restore the reefs and their typical species to favourable condition, if that is deemed necessary. These are not yet known. It has therefore been necessary to make assumptions about what measures might be required for this site. It is assumed that the site proposal will be transmitted to the European Commission in 2012, and that some costs (for example, of more detailed EIA requirements) would arise immediately. The timing of some one-off costs is unpredictable within the ten year assessment period, so are assumed to fall in 2017. It is assumed fisheries management measures may take at least a year to be developed and implemented.

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 the plan/project can be implemented which result in costs to businesses. Restrictions are determined by the competent authority in its assessment under the Habitats Regulations, and
- 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.

b) Administration costs to the private sector

Administration costs include time and expenditure necessary for the private sector to provide information and documentation required 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 the management measures that may be needed;
- For ongoing or new plans and projects, the cost to businesses of providing more detailed information than that which would be required if the site was not designated. This is required to inform the Competent Authority's[26] assessment of the plan or project under the Habitat Regulations, and
- Undertaking more detailed analysis (such as EIA) and reporting in some cases.

c) Costs to the public sector

Potential administration costs to the public sector are:

i. costs of monitoring the site and maintaining information on its conservation status; and
ii. costs of regulating and enforcing human activities that might impact on the conservation status of the site.

3.3 Benefits

The potential benefits of site designation primarily arise from the increase in the area protected for nature conservation purposes[27]. The benefits are assessed in terms of the impact on ecosystem

[26] 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. If a Competent Authority undertakes a plan or project itself, it may need to do its own Appropriate Assessment

[27] 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.

services provided by the natural environment that benefit humans[28]. The following overarching categories of ecosystem services are used[29]:

- 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).

Here, and following Defra's guidance on the valuation of ecosystem services, the relevant benefits gained from supporting services[30] (such as cycling of nutrients and photosynthesis) are viewed as essentially being captured by the other benefits listed and so are not examined separately[31]. The analysis in Section 4 is based on a list of ecosystem service categories that are relevant to the site. *Relevant* means that the designation of the SAC would have a noticeable impact on the benefits derived from the service.

The impacts of designation on these ecosystem services are analysed further in Section 4.3 below. In addition to these categories it is recognised by many that biodiversity has an intrinsic value. This value is viewed as an inherent characteristic of biodiversity that gives rise to other benefits. Therefore, intrinsic value cannot be assessed using economic valuation techniques[32] and is not analysed further here. However, this does not mean that intrinsic value is regarded as unimportant.

[28] As described in Parliamentary Office of Science and Technology (2007).
[29] These are the categories used in the Millennium Ecosystem Assessment (MEA 2005), http://www.millenniumassessment.org)
[30] Supporting services described as "those that are necessary for the production of all other ecosystem services" in the MEA
[31] 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.
[32] For example, in MEA (page 7, Section 2) : <http://www.millenniumassessment.org/documents/document.354.aspx.pdf>.

4 COSTS AND BENEFITS OF OPTION 1: DESIGNATE THE SITE

4.1 Implications of designation

Once site proposals have been submitted to the EC, Competent Authorities have obligations to consider the likely significant effect of plans or projects they undertake or consent on the integrity of the site. Consequently, effects of the site on offshore industries operating near the site are not yet known.

In order to be able to assess the range within which the true costs and benefits are likely to fall, scenarios have been developed to identify the minimum and maximum potential management measures that might be required at the site for Favourable Conservation Status (FCS) to be maintained or attained. Development of these was informed by Table 2.1 and the potential environmental impacts of activities if the site was not designated.

The minimum scenario necessitates the smallest change in activities in order to maintain favourable condition compared with the baseline.

The maximum scenario is at the other end of the scale: it involves the maximum change in activities that may be needed. This is in-line with maximum costs. Table 4.1 outlines these scenarios for the site. This is an estimate of the measures that may be required for the site to achieve the conservation objective of 'restore' the reef feature to favourable condition.

Table 4.1 Summary of the "minimum" and "maximum" management scenarios that may be required for Wight-Barfleur Reef SAC

"Minimum" scenario:	*"Maximum" scenario*
Existing activities Ban on all forms of towed, demersal gear within the site. Potting and other forms of static gear could still be used. Proposed activities Plans or projects which are likely to have a significant effect on the offshore SAC will be subject to Appropriate Assessment (AA). In response to a perception of more rigorous consideration of proposals – and on the advice of authorities and statutory advisers - businesses may make adjustments to projects proposed relative to baseline to ensure no significant effects. Businesses are also likely to invest more in assessment (+10%). It is possible that there may be some wind farm and/or aggregates applications that will not be consented if it cannot be ascertained that there will be no adverse effect on the integrity of the site, but there are none planned.	Existing activities Ban on all forms of fishing activity, including demersal trawling, mechanized dredging and potting. Proposed activities Offshore industry plans or projects which are likely to have a significant effect on the offshore SAC will be subject to AA. More adjustments to project proposals are made to minimise interference with features e.g. prohibition of rock dumping on features, detours in pipelines/cables to avoid feature. Businesses are also likely to invest more in assessment (+50%). It is possible that some applications will not be consented if it cannot be ascertained that there will be no adverse effect on site integrity. Under the maximum scenario, it is likely that more projects would not pass the test of 'no adverse effect'.

4.2 Costs

In line with the purposes of this IA, this section deals only with costs to the UK economy. Fishing activities from other Member States are considered within the fisheries section, but are not included in the costs calculated below and presented in the summary sheets.

a) Cables

There are no plans to install new cables apart from those associated with wind farms (see above) or for any upgrade activity in the near or medium term. Therefore, cable activity is unlikely to be affected by the designation and impacts under both the minimum and maximum scenarios are assumed to be zero.

b) Fisheries

Potential UK economic impact of foregoing landings

Under the minimum, low-cost scenario, towed demersal gears are excluded from the site in order to prevent possible damage to the reef feature. It is assumed that the vessels using towed gear would be largely displaced to other grounds in the region with a 10% loss in operational profit associated with increased costs.

Under the maximum, high-cost scenario all fishing activities are excluded from the pSAC are banned, including beam trawling, potting and hydraulic dredging. It is assumed that all revenue would be lost (all of which occur within the site from VMS data).

Without further information, it is uncertain whether fishing activity within areas closed to fishing would be partly or wholly displaced to other fishing grounds or whether there would simply be less fishing in global terms. To provide an indication of the maximum direct effect of designation, the impact on the UK economy of foregoing the landings from towed demersal gear from within the entire pSAC is considered.

Input-output multipliers give an idea of the impact on the UK economy. For example Seafish Industry Authority figures for 2007 (Seafish 2007) showed that a loss of £1m of landings could lead to a reduction in[33]:

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

Although they do not take account of some of the potential indirect effects, these multipliers indicate the scale of the economic impact of changes in fishing activity.

The necessary data to fully understand the employment and profit impacts from landings in foreign ports on the UK economy is complex and has not been scrutinised for this IA. An estimate of the value of other Member State's fishing effort on the site is provided, but is not incorporated into cost calculations.

The economic impacts of the potential closure of Wight-Barfleur Reef are estimated as the loss of profitability of fishing effort at the site. This is informed by data from the Marine Management Organisation on potential activity within the area and from the 2009 survey34 on the profitability of fishing. SEAFISH (2011) found that operating profits did not exceed 30% for any sector of the industry with >15m vessels, with most sectors having much lower operating profits. Operating profit was calculated as total income less operating costs of vessel costs and fishing costs, including crew share. As such, cost estimates were not inclusive of crew share, but a conservative approach was taken in

[33] 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

[34] SEAFISH 2011. 2009 Economic Survey of the UK Fishing Fleet. Seafish Industry Authority.

relation to all other assumptions. Fishing income figures was provided by the MMO from declared landings of every vessel in the UK fleet. GVA is often considered a better indicator than profitability in terms of the impact of reduced activity, but as the 30% figure provided an upper estimate for sector profitability, it was considered appropriate to leave the methodology unchanged from the Consultation IA.

Table 4.2 Summary of "minimum" and "maximum" management scenarios and assumptions made in estimating costs for the fisheries sector of designating the pSAC compared with not designating

"Minimum" scenario	*Assumptions*	*Change in costs*
Ban on all towed, demersal gear within the pSAC	Loss of 10% of total net profit from the site (profit estimated at 30% of UK landings (£54k))	£1.62k
"Maximum" scenario	*Assumptions*	*Change in costs*
Ban on all forms of fishing within the pSAC	Loss of total net profit from the site (profit estimated at 30% of UK landings (£54k))	£16.2k

Whether fishermen are able to fish at alternative sites will depend on a number of considerations, a key factor being the availability of suitable grounds. There may also be weather and other seasonal constraints to moving to alternative areas.

Where fishermen do find alternative grounds there may be implications on costs and profitability such as increased fuel and labour costs and potentially a higher proportion of time spent steaming rather than fishing and therefore reduced profitability. Alternative grounds may also be less productive and mean that fishing days are less productive and therefore less profitable. Displacement of fishing activity away from the site could also impact fishing vessels in other areas by direct competition and by altering the delicate balance of static and towed fishing methods.

In some cases, particularly where moving to an alternative ground would become unprofitable, individual fishermen may stop fishing. This may not necessarily mean that total income to the sector will reduce, given fixed quotas for many stocks and if other vessels are able to draw on quota foregone, for example through co-operative arrangements. However, in many cases this will not happen. Where individual fishermen stop fishing then there may also be implications to the fishermen 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 cost implications. At this stage the best that can be done for potential 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.

A further important issue is that any closures, even if undertaken unilaterally by the UK, would have to be agreed with other Member States of the European Union through the CFP. It is assumed that this process may take a minimum of a year to carry out and therefore that closures would not be in place until 2013. Although it may take longer than this to actually put measures in place, by using the minimum timeframe it ensures that the costs are not underestimated.

c) Administration costs to Government

Competent Authorities will incur costs in enforcing the regime as a result of:

i. *Requirements to review existing activities that may have impacts on the habitats for which sites have been designated.* It is assumed that no further work is necessary to assess the impacts of activities, but further work is necessary to develop, implement and communicate site specific

management measures. MMO estimates that this may require 2 person-years of officer time plus related expenses[35]. Based on the costs of staff time in Defra this is estimated to cost £90.5k per FTE year, giving a total estimated cost as a one-off £181k[36].

ii. *Monitoring and enforcement.* The MMO assessed that an additional 3 days boat time and 6 hours air surveillance might be necessary per site to enforce measures effectively. This would cost £39.6k per annum[37]. It is assumed that administration of records and other activities is carried out as part of existing duties.

There are currently no estimates of how much monitoring and surveillance will be required to fulfil the assessment of the site for the Habitats Directive and no estimate of the costs.

This impact assessment assumes that the costs of Government enforcement are constant for both the minimum and maximum scenarios. Under the two scenarios the effectiveness of enforcement is varied to estimate impacts that represent the likely range of impacts from designating the site. The Government administration costs (other than enforcement, such as completing AAs) do not vary under the scenarios as they are dependent on the level of development (the numbers of applications by different sectors) brought forward at the site. The impacts are the same under both scenarios: one-off costs of £181k and annual costs of £39.6k from 2012.

4.3 Benefits of designating the site

Discussion is provided below of the impact of designating the site based on specific ecosystem services. The site feature "reef" has been graded as I (excellent prospects) for "degree of conservation of structure" based on survey data though information on human pressures occurring within the site indicate that the feature may not in pristine condition. As outlined, further information will be required to assess and monitor the condition of the interest feature on the pSAC.

a) Provisioning services

Fish, shellfish and other crustaceans for human consumption

The process through which fish recruit to fisheries is complex and, with many other variables to be taken into consideration, it is impossible to predict whether reduction in demersal fish catches on Wight-Barfleur Reef would result in increased recruitment to stocks as a whole. Thus, while the possibility of increased catches must be considered, it is not possible to predict the scale of any economic benefits.

Extraction of fish that are both targeted by fisheries and caught as bycatch may be affected by designation, with the potential for both positive and negative effects. On the one hand, if fisheries are controlled within the site to conserve the reef and their typical species then this could reduce the amount of fish caught from the site. These controls could contribute to sustainable management of some fish stocks at the site and as a result the abundance of fish may increase. On the other hand, controls could cause fishing effort to be displaced to other areas outside of the site, increasing pressure on the stocks in these areas, but not overall.

The control of commercial fishing on the site may extend the longevity of shellfish, and there may be greater numbers of larger individuals that can produce more offspring. This may contribute to a potentially larger population of fish in the future. For example, spillover of oysters (*Pecten maximus*) and lobster (*Palinurus elephas*) has been demonstrated in other MPAs (Beukers-Stewart et al, 2005 and Goñi et al, 2006 respectively).

[35] Juliette Hatchman, MFA, pers comm., 19/12/09.
[36] This is based on the full costs (includes e.g. overheads and pensions contributions) of a Senior Executive Officer for 6 months from Defra's 2007-08 Ready Reckoner of staff costs and £10k for communication and other costs (inflated to 2010 prices).
[37] This is based on costings provided by the MFA (now MMO) (pers comm., Dec 2008) of £8k per boat day and £2k for an hour of air surveillance, updated to £8.34k and £2.09k respectively at 2010 prices.

b) Regulating services

Regulating services are not mentioned further here as their value is considered to be minimal at a site level. Benefits arising from regulating services are likely to occur on a network level as discussed in Annex II.

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 habitat, 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 habitat still available to conserve in future. Also, some will gain from knowing that it is conserved in case future information reveals that the reef habitat provides important benefits that we are not currently aware of (quasi-option value).

Non-use Values

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

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

The effects of designation of the Wight-Barfleur Reef for the provision of each of the ecosystem services described above is summarised in Table 4.3 below as the difference due to site designation in comparison to the baseline (no designation). There are four additional columns of information in the table to clarify our understanding of the qualitative changes in ecosystem services arising from (non-) designation:

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

Based on the above categories, an overall level of each ecosystem service is defined with its own confidence level. Following, an overall level of total benefits is also defined. 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 Wight-Barfleur Reef pSAC

Services	Relevance to site	Baseline Decline	Designate Min improvement	Designate Max improvement	Value weighting	Scale of benefits	Confidence
Fish for human consumption	**Low**. Not known to be more important for fish stocks than other rocky areas in the English Channel.	**Low**. May experience a decline in stocks.	**Low.** Improvement on site likely to support species of human interest. Limited by fewer management measures and risk enforcement does not succeed.	**Low.** Improvement on site likely to support species of human interest.	**Mod.** The English Channel is an important area for fishing, but relative importance of Wight Barfleur Reef is hard to judge.	**Low - Mod** Increase in stocks likely to be offset by declines elsewhere.	**Low.** Possible that taking same catch level outside site is not neutral on stocks overall
Fish for non-human consumption							
Carbon sequestration	**Minimal.** Features are likely to have low effect and small area	**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**	**Moderate.** Biological pump not well understood
Waste assimilation	**Minimal.** The features are likely to have a low effect and small area.	**Minimal.** Unlikely to affect assimilation functions.	**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 but uncertain if will regenerate.	**Low.** Continuing degradation, but may not have further adverse effect on reef value.	**Low.** Some recovery of biodiversity and community composition possible but enforcement may not succeed.	**Moderate.** Some recovery of biodiversity and community composition possible.	**Moderate.** 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.** Some recovery but enforcement may not succeed.	**Moderate.** Some recovery of biodiversity and community composition.	**Moderate.** For sediment management & biological resources	**Low - Moderate**	**Moderate.**
Total value of changes in ecosystem services			**Low**				**Low - moderate**

d) Benefits to economic activity

Designation of sites may assist the different sectors that make use of the marine environment in the context of marine spatial planning and a more strategic consideration of available resources. This would mean that sectors can undertake future plans and applications for their operations (for example applications for licenses) with the better knowledge of a) the nature conservation significance of different parts of the marine environment, and b) the added costs of these applications within or adjacent to a site boundary, as opposed to outside it. This may result in a focus of activity away from a site. This will be dependent upon appropriate marine resources being available within the region but outside of any site(s).

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 10 years from designation in 2012, and are discounted at 3.5%. There are uncertainties in the assessment of costs, and some costs have not been quantified.

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

	Minimum management scenario		Maximum management scenario	
	Costs	**Benefits**	**Costs**	**Benefits**
Assessed	**Sectors** Fisheries: £1.62k pa due to loss of operating profit. Government: Enforcement £181k one-off and up to £39.6k pa	Low: fish for human/non/human consumption; scientific and non-use values	**Sectors** Fisheries: £16.2k pa due to loss of operating profit. Government: Enforcement £181k one-off and up to £39.6k pa	Low: fish for human/non/human consumption; scientific and non-use values
Total average annual	£39.1k	Low	£52.2k	Low
Total one-off	£181k	0	£181k	0
Total (PV)	£785.7k	Low	£985.6k	Low
Not assessed	- Costs if any projects are refused - Costs from cumulative MPA impacts and beyond next 10 years - Loss of asset to The Crown Estate	- Role of feature in wider ecosystem - Intrinsic value of biodiversity improvements - Ecosystem recovery beyond next 10 years	- Costs if any projects are refused - Costs from cumulative MPA impacts and beyond next 10 years - Loss of asset to The Crown Estate	- Role of feature in wider ecosystem - Possible benefits to fish stocks from protection of breeding grounds - Intrinsic value of biodiversity improvements - Ecosystem recovery beyond next 10 years

a) Risk of unintended consequences

The main risks of unintended consequences are assessed to be the following:

- In the long term, the designation could prevent the implementation of gas storage, or Carbon Capture and Storage, at the site. However, both these technologies would be cheaper, and therefore more likely, to be implemented at available sites closer to the shore.
- 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, and by early and thorough consideration of the cumulative effects of designations on the scale appropriate to the industry concerned.

Under the Offshore Habitats Regulations (which transpose the Habitats Directive), and following an Appropriate Assessment, a Competent Authority can agree to a plan or project for imperative reasons of overriding public interest (IROPI), notwithstanding its adverse effect on site integrity, if there are no alternative solutions. It would be for the Competent Authority to decide whether to agree to a plan or project on IROPI grounds using guidance from the EU. The more strategically important the risks above are, the greater the likelihood of plans or projects being consented on IROPI grounds. 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 Wight-Barfleur Reef as an SAC.

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 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 Wight-Barfleur Reef pSAC

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 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 this should not be the case although if some fishing gear types are considered more damaging than others management measures may impose restrictions on them 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. A significant number of SMEs in the fishing industry could be affected by the designation.

Any additional management measures may have an impact on the fishing vessels owned by SMEs. In most cases the company would not own more than one vessel[38]. 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 in part 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 affected by designation. These include, the retail trade (fish mongers, markets) fish processing plants, ship builders and diesel suppliers.

c) Legal aid

Legal aid is available to individuals with an annual income of less than £12k or with income of between £12k and £21k and disposable income of less than £3.3k where the case is an interest of justice case. It is considered very unlikely that the designation of the site will lead to increased use of legal aid.

d) Carbon (Greenhouse Gas) 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.

[38] Based on expert opinion.

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. Owing 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

The purpose of this impact assessment is to provide information about the impacts of the designation of Wight-Barfleur Reef as an SAC and is carried out in order to inform stakeholders and government about the options for the site. This is done by considering the impacts of Option 1 (designating the site) relative to the baseline (to not designate the site). The requirement for the UK to designate sufficient reef habitat to comply with the Habitats Directive makes pursuit of the baseline unlikely.

As the potential management measures for the site will only be known in detail after the site has been designated, it is necessary to make assumptions about what measures might be required for this site. This assessment analysed a range of impacts, relative to the baseline, defined through minimum and maximum management scenarios. Not designating the site would risk infraction proceedings, and potentially large fines.

The minimum scenario involves the smallest change in activities that may be needed compared with the baseline and therefore presents the minimum potential effect on activities. The maximum scenario is at the other end of the scale: it entails the largest change in activities that may be needed compared with the baseline and thereby presents the maximum potential effect on activities.

As Table 4.4 above shows, under Option 1 (for the 10 years of impact assessment framework):

- For the minimum management scenario costs are relatively low (one-off costs of £181k and average annual costs of £39.1k), but expected benefits are also low; and
- There are similar costs under the maximum management scenario (one-off costs of £181k and average annual costs of up to £52.2k) and this scenario also brings comparable benefits.

In addition, a range of costs and benefits are possible through wider network and strategic effects. In terms of network benefits, designation of the proposed site will prevent degradation of areas of the marine environment, and enable restoration where damage has occurred over the next ten years and beyond, which could potentially be of benefit to the wider ecosystem and enable increases in fish stocks. It has not been possible to assess these benefits. It should be noted that establishment of a network of protected sites is a key purpose of the policy (the Habitats Directive) stimulating the possible designation. This makes it important to consider the benefits of this site in the context of the value of the network of sites.

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ANNEXES

ANNEX I: CALCULATIONS OF COSTS TO FISHING INDUSTRY BY GEAR TYPE

Description of known current and future activity relevant to the site

Note that fishing is carried out on a European level, by UK vessels, European and non-European vessels by agreement. Data on location and type of fishing is difficult to obtain comprehensively due to various issues. Also, fishing data from recent years is a reflection of fisheries already managed to an extent by total allowable catch (TAC) and species quotas. As there are no indications that these measures are likely to change within the timeframe of the IA, the current situation is taken as the baseline.

It is possible to obtain information on the distribution of fishing effort within the region for UK vessels (≥15m) that have vessel monitoring systems (VMS). These provide a vessels position, speed and heading either hourly or every two hours. Such information can be analysed spatially in relation to the site boundary. As vessels fish at characteristic speeds, VMS data can be processed to provide proxy patterns of 'active fishing'. The European Commission has passed a regulation requiring all member states to assure that VMS terminals in use on fishing vessels (≥15m) of its national fleet are secure[1]. VMS data currently only cover vessels of over 15m in length. Using a simple speed rule to partition active fishing from VMS is a coarse but effective means of estimating fishing effort (Mills *et al*. 2007).

Effort data were derived from work on a Defra marine biodiversity research programme (MB106)[2]. Estimations of fishing activity were derived from Vessel Monitoring System (VMS) data and are available for 2006-9. The derived surfaces represent activity from all vessels (both UK and non-UK registered vessels) of at least 15-m length. VMS data for UK vessels were linked to skipper logbook information in order to determine the fishing gear being employed. For non-UK registered vessels where logbook information is not available information on fishing gear employed has been obtained from 'primary gear' listed on the EU vessel register. Unprocessed VMS data have been filtered using a simple speed rule of between 1 and 6 knots to indicate fishing activity for all gear types. Date and time information attached to unprocessed VMS data were used to determine elapsed time between consecutive VMS locations for each vessel (usually 2 hours) and summarised at a cell resolution of 0.05 decimal degrees.

There are no landings data available specifically for the area which is proposed for designation. The Marine Management Organisation's Fisheries Activity Database (hereafter, FAD) compiles various data at the level of ICES rectangle. 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 impact assessment is concerned with the impacts of the UK's potential designation of Wight-Barfleur Reef on UK businesses. However for fisheries, designations of other areas of the marine environment by other Member States are also relevant as there will also be effects on businesses in other countries.

[1] http://ec.europa.eu/fisheries/index_en.htm

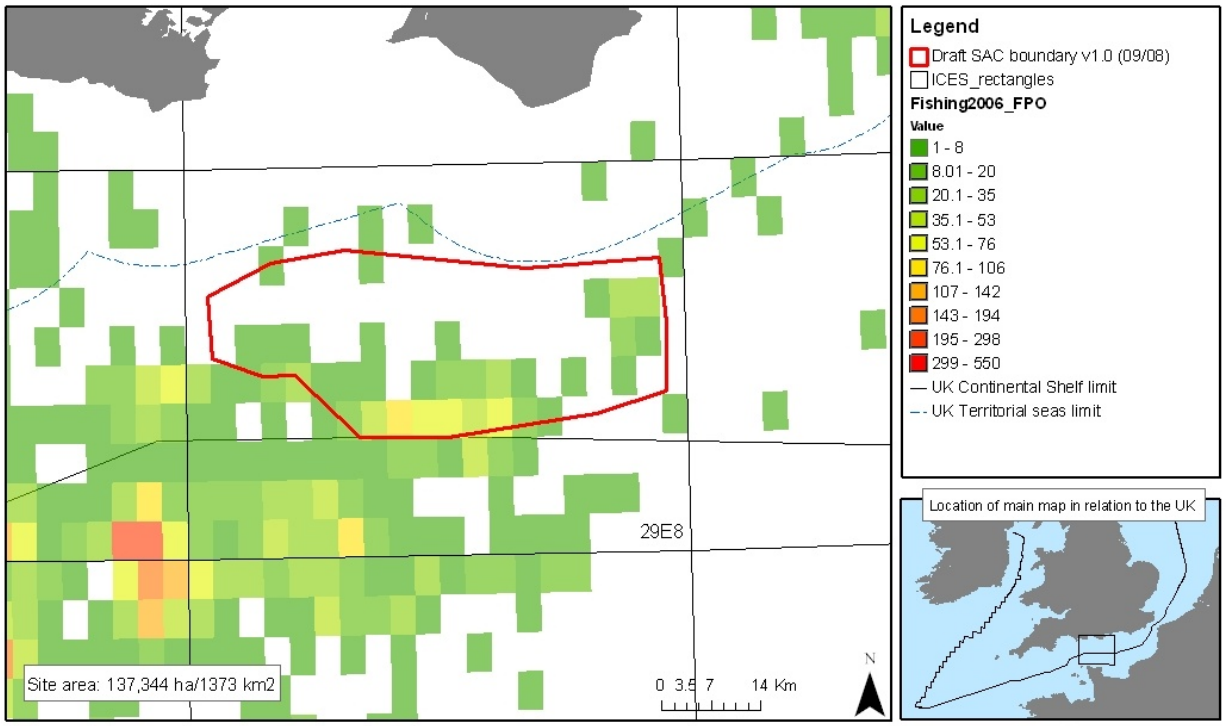
[2] Cefas (2010) Report no. 1: Objective 1 – Provision of geo-database containing standardised layers showing the distribution of specified activities, sites and resources with associated metadata and comments. Project MB106: Further development of marine pressure data layers and ensuring the socio-economic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

Potting activity

Estimated value of landings from potting coming from within the Wight-Barfleur pSAC boundary[3].

Year	Effort from ICES rectangle within pSAC	Value of landings from potting from ICES rectangle (£k)	Estimated value of potting landings from within pSAC site (£k)
2006	0.828	629	520.8
2007	0.693	591	409.6
2008	0.759	513	389.4
2009	0.759	367	278.6
Average		**525**	**£400k**

Potting activity around the Wight-Barfleur Reef SAC in 2006 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05° raster grid.



Boundary coordinates:
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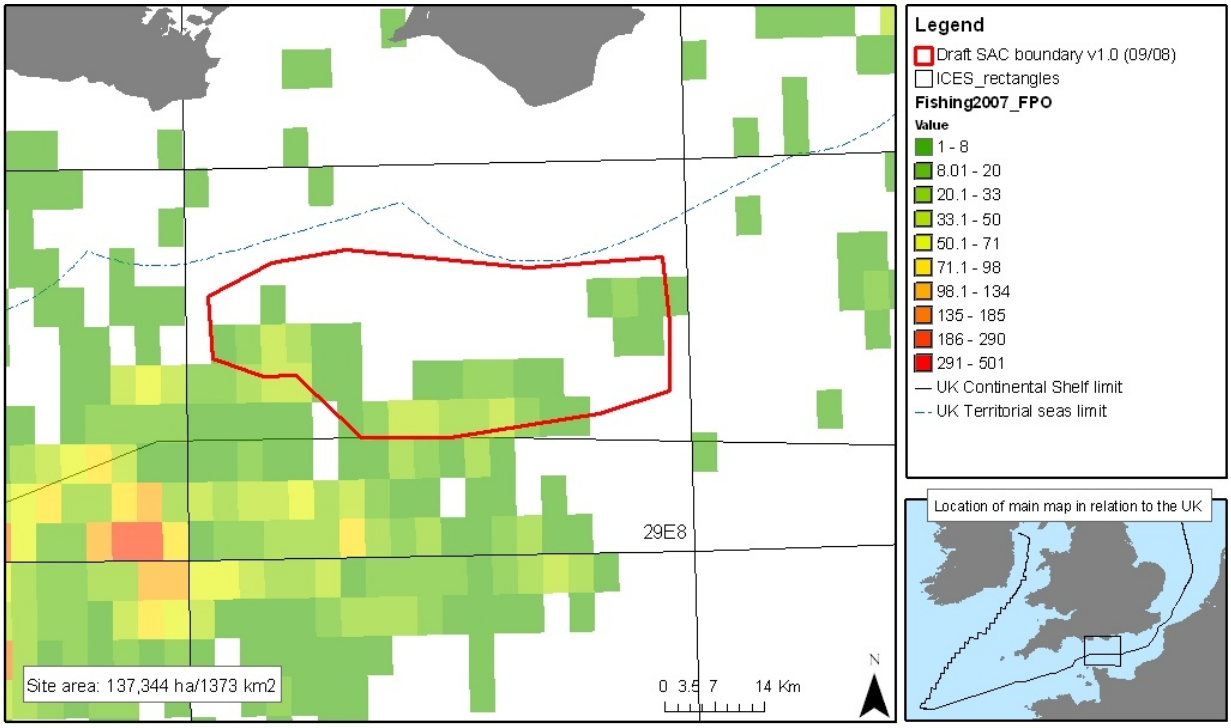
Map version number 1.1 (26/07/10)

[3] Landings are estimated as a percentage of effort from within the ICES rectangle which is the scale at which we have catch data.

Potting activity around the Wight-Barfleur Reef SAC in 2007 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05^{o} raster grid.



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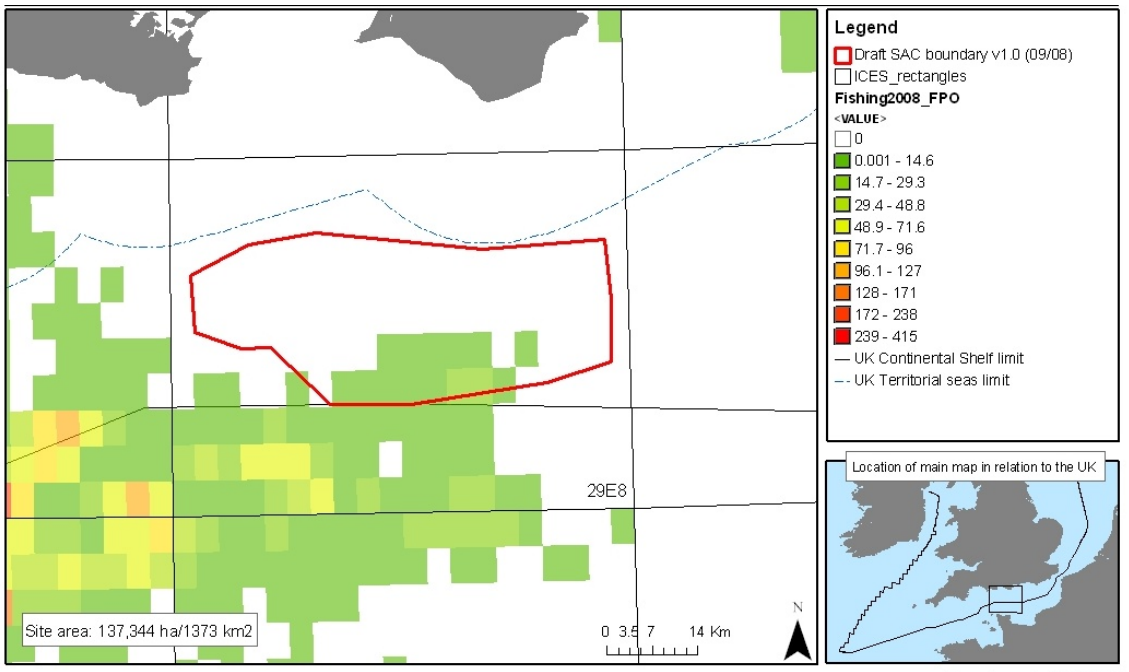
Potting activity around the Wight-Barfleur Reef SAC in 2008 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05^{o} raster grid.



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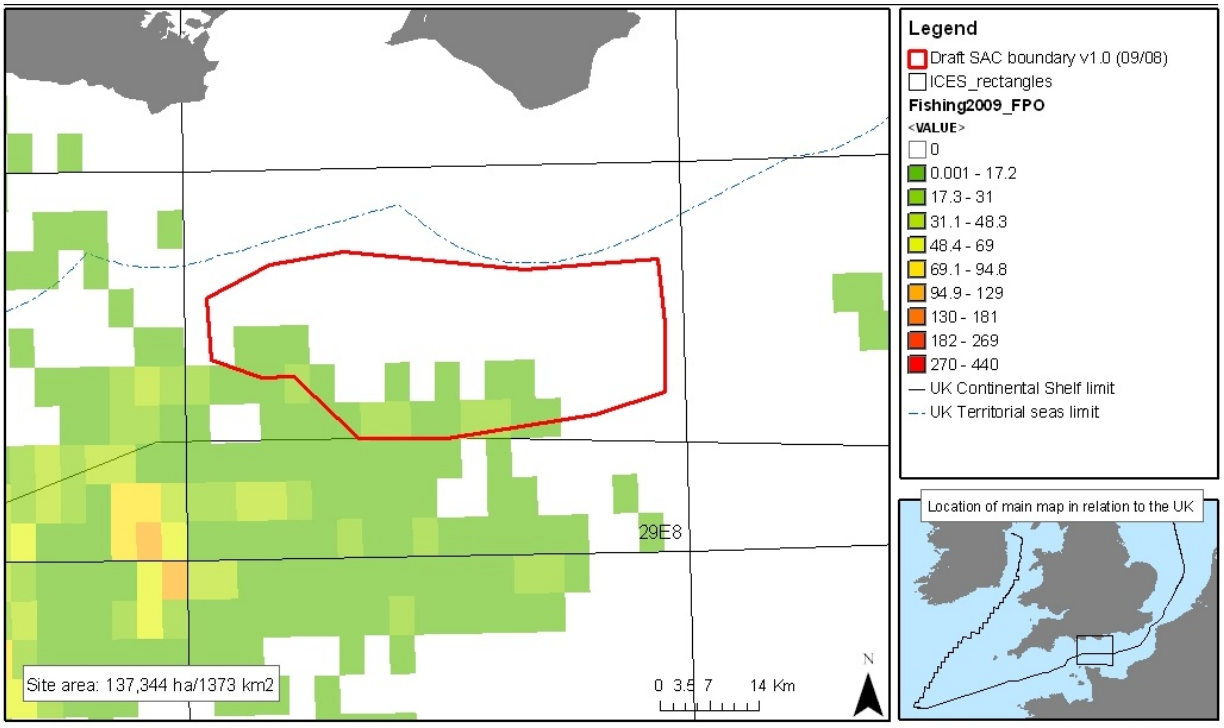
Map version number 1.1 (26/07/10)

Potting activity around the Wight-Barfleur Reef SAC in 2009 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05^{o} raster grid.



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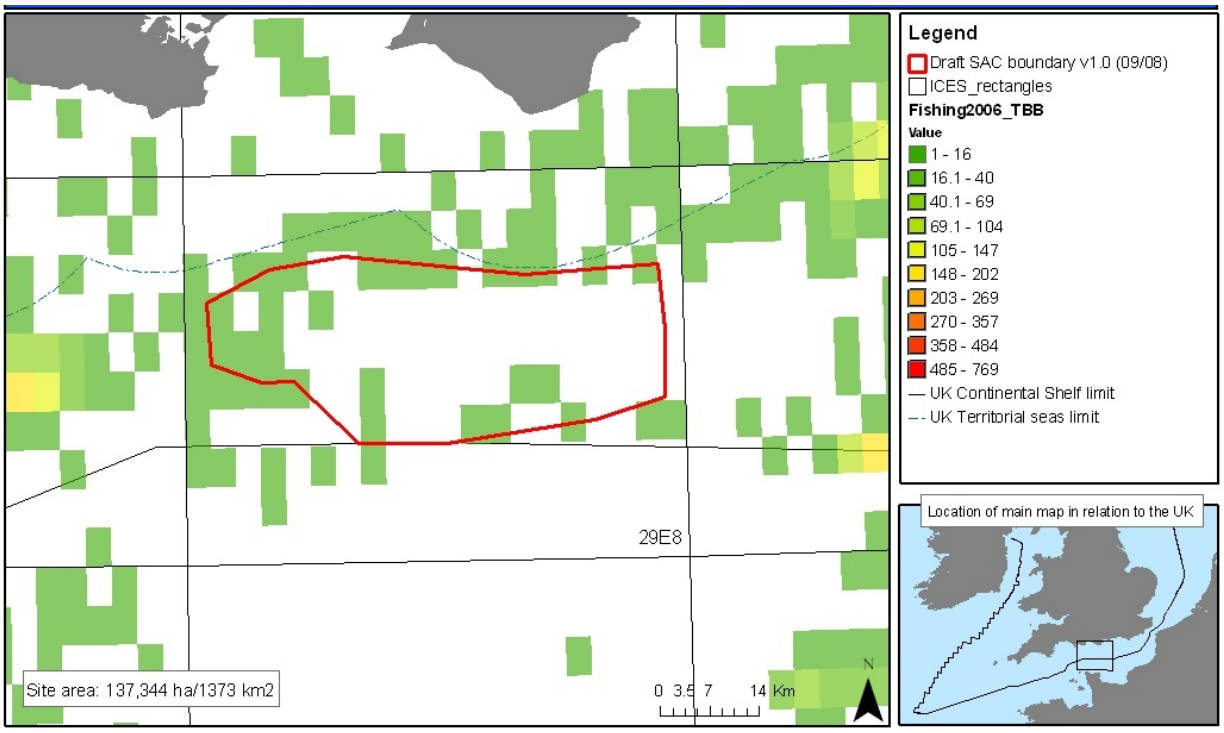
Site map projected in UTM (Zone 30N, WGS84 datum). Seabed habitat derived from BGS 1:250,000 seabed sediment maps © NERC and SeaZone bathymetry. Bathymetry © British Crown and SeaZone Solutions Limited. All rights reserved. Products Licence No. PGA042006.003. This product has been derived in part from material obtained from the UK Hydrographic Office with the permission of the Controller of Her Majesty's Stationery Office and UK Hydrographic Office (www.ukho.gov.uk). 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). Map copyright JNCC 2008.

Beam trawl activity

Estimated value of landings from beam trawling coming from within the Wight-Barfleur pSAC boundary[4].

Year	Effort from ICES rectangle within pSAC	Value of landings from potting from ICES rectangle (£k)	Estimated value of potting landings from within pSAC site (£k)
2006	0.334	127	42.4
2007	0.395	487	192.4
2008	0.365	513	187.2
2009	0.365	367	134.0
Average		**373.5**	**£139k**

Beam trawl activity around the Wight-Barfleur Reef SAC in 2006 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05° raster grid.



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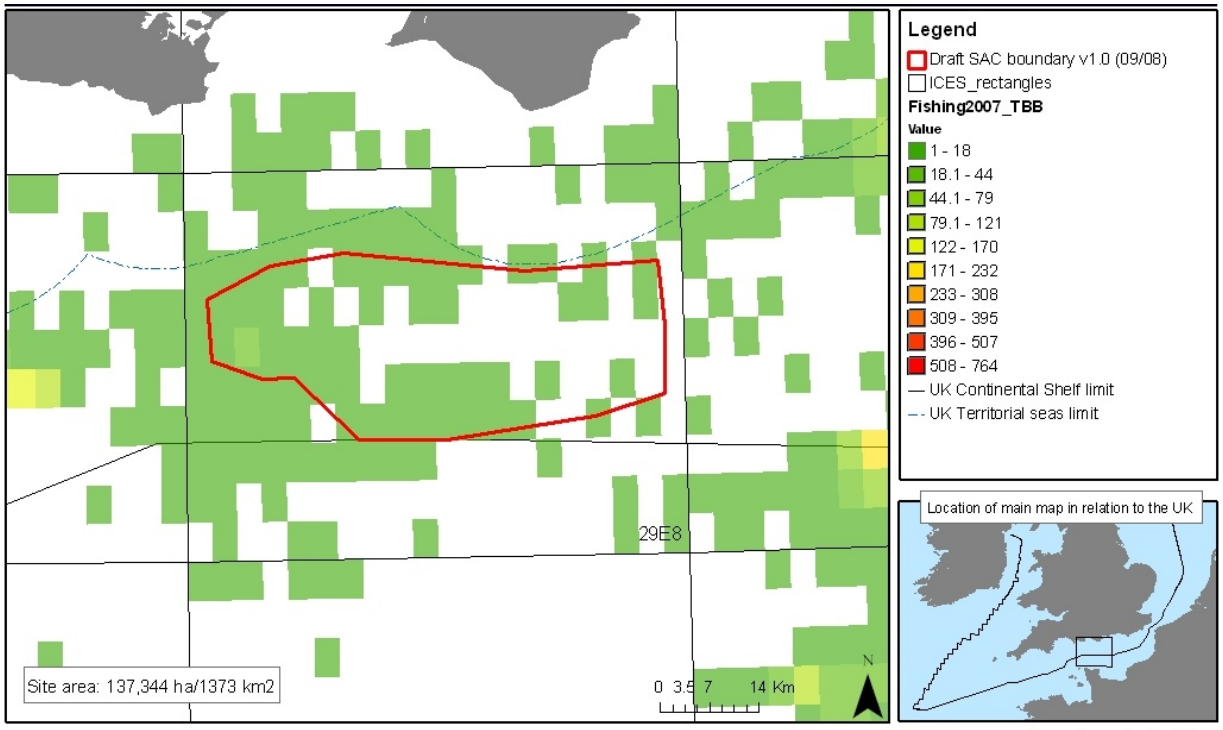
[4] The landings are estimated as a percentage of effort from within the ICES rectangle which is the scale at which we have catch data.

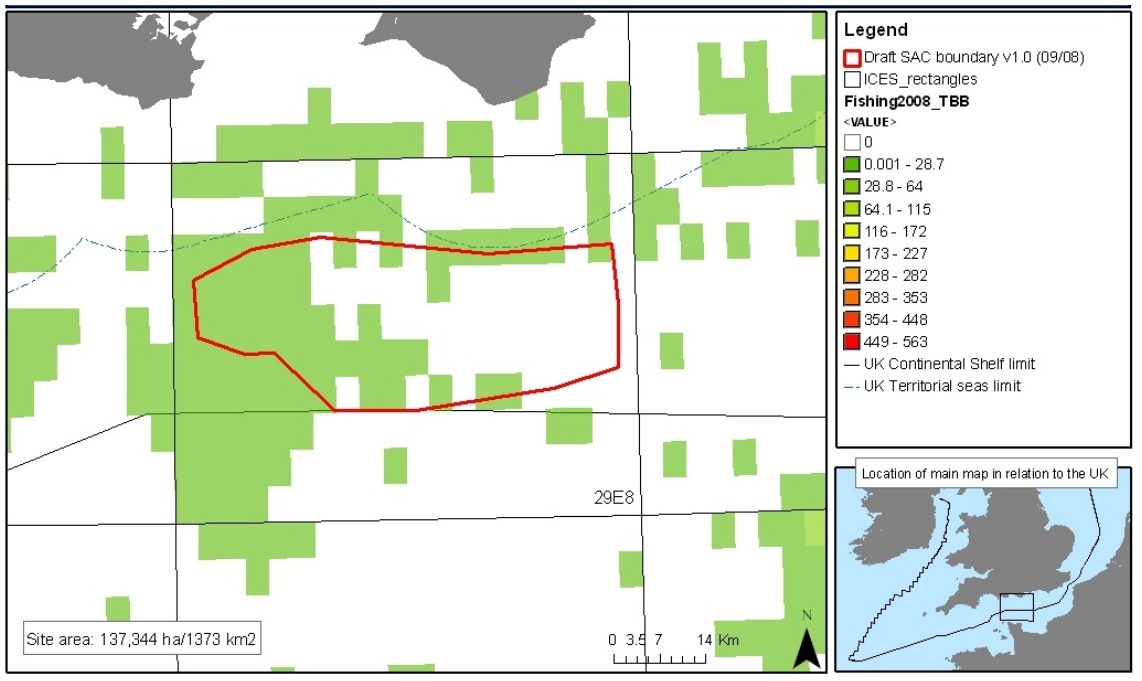
Beam trawl activity around the Wight-Barfleur Reef SAC in 2007 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05° raster grid.



Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12";
7) -01° 46' 56", 50° 14' 05"; 8) -01° 50' 50", 50° 14' 05"; 9) -01° 56' 48", 50° 15' 27"; 10) -01° 57' 17", 50° 20' 14"; 11) -01° 49' 35", 50° 22' 46"; 12) -01° 40' 47", 50° 23' 37";
13) -01° 18' 56", 50° 22' 01"

Map version number 1.1 (26/07/10)

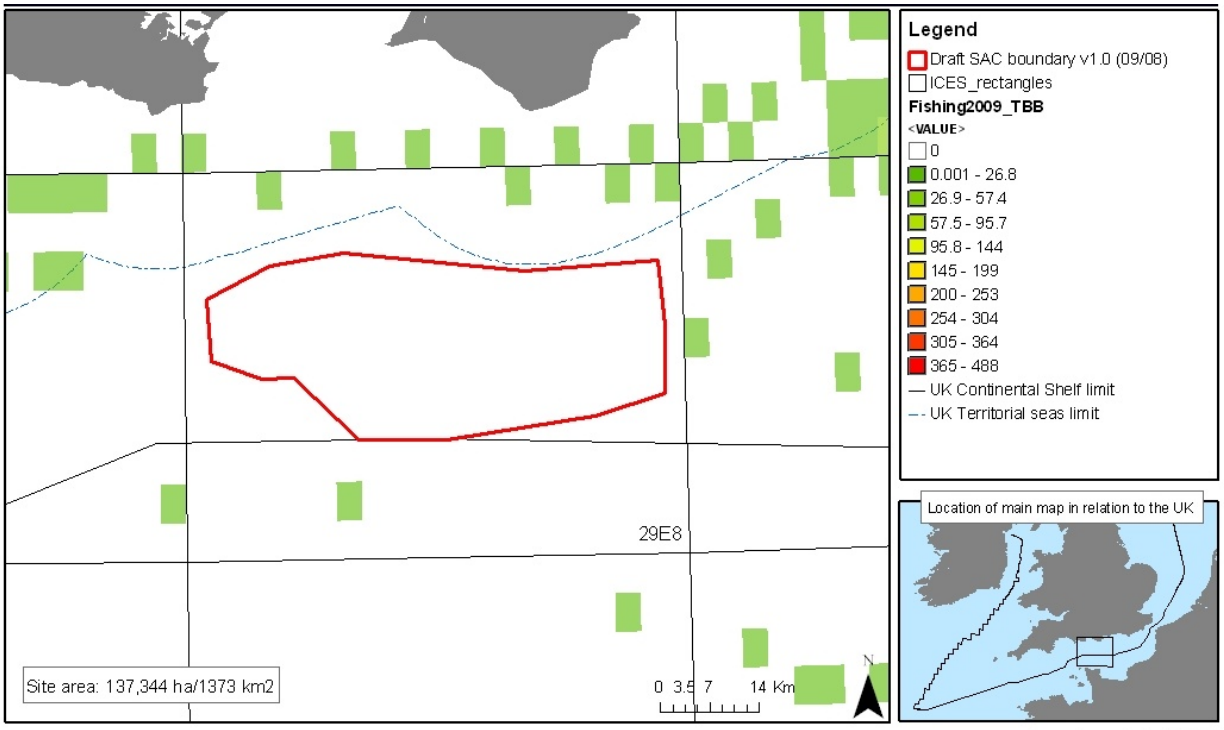
Beam trawl activity around the Wight-Barfleur Reef SAC in 2008 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05° raster grid.



Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12";
7) -01° 46' 56", 50° 14' 05"; 8) -01° 50' 50", 50° 14' 05"; 9) -01° 56' 48", 50° 15' 27"; 10) -01° 57' 17", 50° 20' 14"; 11) -01° 49' 35", 50° 22' 46"; 12) -01° 40' 47", 50° 23' 37";
13) -01° 18' 56", 50° 22' 01"

Map version number 1.1 (26/07/10)

Beam trawl activity around the Wight-Barfleur Reef SAC in 2008 from the Cefas data contract (MB106). Generated by Cefas from VMS, log-book and EU vessel register data. Activity is given as active hrs fishing pa on a 0.05° raster grid.



Boundary coordinates:
1) -01° 02' 59", 50° 22' 34"; 2) -01° 02' 18", 50° 17' 33"; 3) -01° 02' 28", 50° 12' 16"; 4) -01° 11' 00", 50° 10' 39"; 5) -01° 28' 45", 50° 09' 10"; 6) -01° 39' 17", 50° 09' 12"; 7) -01° 46' 56", 50° 14' 05"; 8) -01° 50' 50", 50° 14' 05"; 9) -01° 56' 48", 50° 15' 27"; 10) -01° 57' 17", 50° 20' 14"; 11) -01° 49' 35", 50° 22' 46"; 12) -01° 40' 47", 50° 23' 37"; 13) -01° 18' 56", 50° 22' 01"

Map version number 1.1 (26/07/10)

Site map projected in UTM (Zone 30N, WGS84 datum). Seabed habitat derived from BGS 1:250,000 seabed sediment maps © NERC and SeaZone bathymetry.
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ANNEX II: METHODS OF ASSESSING ECOSYSTEM SERVICES

Benefits

The approach adopted for identifying marine ecosystem services is described in Section 3.3 of the impact assessments, and is repeated below. Examples of ecosystem services provided by the marine environment are set out in Figure 3.1.

Identification of Marine Ecosystem Services

The potential benefits of the recommended sites primarily arise from an increase in nature conservation and the ecosystem processes associated[5]. These benefits are analysed using an ecosystem services framework[6] based on various studies of the ecosystem services[7] of the UK marine environment[8].

For these Impact Assessments, the framework used includes all the main categories in the Millennium Ecosystem Assessment (2005a) which are also used in Defra (2007). The categorisation was further informed by the categorisation of ecosystem services provided by the UK marine environment in Beaumont *et al*. (2006). The MEA's ecosystem service classification falls into four overarching categories:

- Provisioning services (such as generation of resources used as food and fuel);
- Regulating services (such as regulation of air quality, control of pests and diseases);
- Cultural services (such as spiritual/artistic inspiration, institutions surrounding resources); and
- Supporting services (such as photosynthesis, nutrient cycling).

The MEA notes that "*supporting services are those that are necessary for the production of all other ecosystem services*". Here, and following Defra's guidance on the valuation of ecosystem services, the relevant benefits gained from supporting services are viewed as essentially being captured by the other benefits listed and so are not further examined. For example, phytoplankton fix carbon dioxide through photosynthesis and 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.

A list of the ecosystem service categories that are relevant to marine sites was developed in Eftec's Methodology Report to JNCC (Eftec, 2008). Here that list is revised to also appropriately describe ecosystem services relevant to inshore SACs. *Relevant* means that the designation of the SAC would have a noticeable impact on the benefits derived from the service. The categories currently included are those known to be relevant at this stage, but may be subject to change should new information arise during public consultation. From the list of relevant ecosystem service categories, the specific products and services arising from the site that the UK population potentially benefit from were identified (Figure A3:1).

[5] Heritage benefits, such as conservation of archaeological site, are the only benefits identified that arguably sit outside the scope of nature conservation. Such benefits are still included.
[6] As described in Parliamentary Office for Science and Technology (20007) and Defra (2007) and applied by eftec in the Offshore SAC work for JNCC found at <http://www.jncc.gov.uk/page-3995> and in Defra's IA of the proposed fisheries closure at Lyme Bay found at <http://defraweb/marine/pdf/biodiversity/lymebay-ia-final.pdf>.
[7] Ecosystem services are the goods (such as flows of freshwater) and services (such as removing pollution from the air) provided by the natural environment that benefit humans.
[8] This draws on the following references: Beaumont *et al.*, 2006; Eftec, 2006; and Frid, 2008.

MEA Categories		Relevant Categories		Example of Product or Service
Provisioning services	→	Food	→	Fish for human consumption
				Fish used in animal feeds
		Fibre		Aggregates
		Biochemicals, pharmaceuticals & natural medicines		Fish oil
Regulating services	→	Gas & climate	→	Carbon sequestration
		Bioremediation of waste		Waste remediation, water purification
		Natural hazard		Protection from natural hazard
Cultural services	→	Knowledge & education	→	Scientific knowledge of ecosystem functions, genetic information, and potential for chemical/therapeutics discovery
		Recreation		Recreational sea angling Nature-based recreation Scuba Diving
		Spiritual & religious		Artistic work based on the marine environment
		Cultural & social		Protection of iconic sites or archaeological features
		Aesthetic & inspiration		
		Non-use and option values		Altruistic/Bequest/Existence/Option/Quasi-option values
Supporting services	→	Primary production	→	(Not directly analysed to avoid double counting)
		Photosynthesis		
		Nutrient cycling		
		Biologically-mediated habitat		
		Resilience & resistance		

Figure A3:1: Categorisation of ecosystem services relevant to the UK marine environment and the specific products and services potentially found within dSACs.

In addition to these categories it is recognised by many that biodiversity has an intrinsic value. This value is viewed as an inherent characteristic of biodiversity, rather than a something that benefits humans. Therefore, intrinsic value cannot be assessed using economic valuation techniques[9], and as this IA is concerned with the costs and benefits to people in the UK, is not analysed further here. However, this does not mean that intrinsic value is regarded as unimportant.

The goods and services in the right hand column above were considered for analysis for each site. The actual analysis in each IA was limited to the ecosystem services that would be affected by the designation of the site, based on the available information.

[9] This is referred to for example on page 7 of Section 2 of Millennium Ecosystem Assessment (2005b).

Valuing Marine Ecosystem Services

Marine sites feature a complexity of environmental attributes from which a range of market and non-market goods and services may be derived. An ecosystem services approach, as described above, provides an appropriate framework for describing these attributes.

However, the use of this ecosystem services approach to value individual sites is hampered by several factors. Firstly, it is often difficult to specify and quantify the service being provided due to uncertainty in ecosystem functioning which arises from its complexity and lack of defining barriers (for example, species are not restricted to the site boundary).

Secondly, assuming that the ecosystem service can be defined, it is difficult to accurately define and quantify the change in the provision of the services as a result of designation. The expected change in a site from designation is, according to its conservation objective, either restoration to or maintenance at favourable condition, that is the state in which the site is considered to making its appropriate contribution to the conservation status[10] of the Natura 2000 network.

The benefits of designating the site are determined by comparing this outcome against what would be anticipated to happen if the site was not designated (the baseline). If it was not designated, the Habitats Regulations would not apply as a matter of law to new plans and projects (for example, for construction of wind farms or gas pipelines) in the site. Such projects could potentially have adverse impacts on features of European importance in the sites. Without recourse to the Habitats Regulations it would be less straight forward for the statutory nature conservation advisers to influence the consenting of these activities to ensure that significant damage to the features is avoided. Consequently, there is greater risk that the condition of habitats and species in the site will deteriorate. Therefore the baseline that is used for comparison is business as usual (BAU), which entails continued potential damage from economic activities. Overall, the benefit of designating the site is equal to environmental benefits provided over and above the BAU scenario.

Thirdly, at the monetisation stage it is difficult to identify the human population that will benefit from any changes to ecosystem services provided by the site.

Given the lack of quantitative data a monetary assessment has not been possible at this stage. The assessment of the environmental change in provision of the ecosystem services following designation is therefore limited to a **qualitative determination**. The analysis is based on the following:

- Baseline – based on our understanding of the detrimental impact of economic activities on vulnerable habitats and species.
- Favourable conservation status - although categorical, the definition of favourable conservation status specifically requires maintenance or augmentation of healthy habitat.
- The resultant environmental benefit – application of the Habitats Regulations should control potentially damaging impacts of human activities on features of the site, allowing habitats and species to be maintained at or recover to favourable conservation condition. This has been shown in many similar contexts to have ecological benefits and to be of benefit to humans.

The difficulty in quantifying the expected benefits of designating a dSAC or pSPA restricts the monetary estimation of the benefits, either via benefits transfer[11] or through an original study. However, review of existing valuation evidence has identified a selection of relevant studies.

Existing Valuation Studies

A number of studies have valued specific marine sites. A useful categorisation in the context of the Impact Assessments is:

[10] 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” .

[11] For further details see: https://statistics.defra.gov.uk/esg/evri/evri/Benefits%20transfer.htm

i). Valuation of a single ecosystem service - Studies focused on a single service of the marine environment, such as water quality;
ii). Valuation of a specific use - Studies that cover multiple services, but are focused on the use and willingness to pay (WTP) of a very well-defined affected population (for example, scuba divers' WTP for a specific dive site); or
iii). Valuation of a large area of marine habitat – Studies focused on the benefits of a large area of marine habitat, some looking at an overall network of conservations sites, rather than a specific site.

Although studies under i) and ii) exist, there are problems in applying them to sites in UK waters. They refer to non-UK locations (for example, the Mediterranean or California), and their findings are highly dependent on substitute sites and network effects. It is also very difficult to aggregate these studies, as they can relate to overlapping benefits. For example, provision of a certain water quality may be a regulating service in itself, but can also be a supporting service in allowing recreational enjoyment of the environment by divers. This makes avoiding double-counting extremely difficult.

Studies within (iii) are relevant to the Marine Natura 2000 (SPA and SAC) network that the sites covered by the Impact Assessments will contribute to. Specifically a series of recent studies have been commissioned by Defra to value the benefits of the UK marine habitat, focused on a network of UK Marine Conservation Zones (MCZs) that will be provided under the Marine Bill. These studies include:

- Marine biodiversity: An economic valuation (Beaumont et al., 2006);
- Developing Scenarios for a Network of Marine Protected Areas: Building the evidence base for the Marine Bill (Richardson et al., 2006);
- The Marine Bill – Marine Nature Conservation Proposals – Valuing the Benefits (Moran et al., 2007); and
- Determining monetary values for use and non-use goods and services – Marine Biodiversity – primary valuation (McVittie and Moran, 2008).

The studies deal with a network of marine sites or a large area of marine habitat that implicitly encompasses many 'sites' important to marine biodiversity. The positive value of a single site within such an area or network is only fully realised when it is part of a functioning network of sites. In other words, the value of a single site is dependent on positive network effects (Box 1). Equally, network effects may reduce a single site's value, because the availability of close substitutes may mean the site has lower value to people than would be the case if it was an isolated example. In this context 'close' and 'isolated' are used in the geographical and/or in an environmental (e.g. ecological) sense.

Box 1: Positive network effects

- A network effect is a positive externality arising from the presence of one additional good in the economy. The classic example is the telephone. When one user buys a telephone it is valuable to them, but it also makes everyone else's telephone more valuable because they can now contact more people than they could before.
- Network effects are important for all ecosystems, and this is the case for the marine environment which lacks many physical barriers, meaning that species are often highly mobile and dependent on numerous sites through their lifecycle.
- Additionally, some ecosystem services do not originate from a particular source, but originate throughout the marine environment in a nearly continuous manner (such as the carbon sequestration capacity of the open ocean).

Beaumont *et al*. (2006) draws on various studies that used different methods to estimate the value of a number of ecosystem services arising from biodiversity in the UK marine environment. Although the authors are cautious about aggregating the separate ecosystem services values, the research indicates that the UK marine environment is worth many billions (£).

Following that initial research, Richardson *et al*. (2006) developed hypothetical scenarios for a network of MCZs in UK waters that were used as the basis for two separate valuation studies to value the benefits

of the Marine Bill. The second study suggests that the benefit of the MCZ network to the entire UK population is £0.5bn to £1.2bn per year.

Importantly, Beaumont *et al*. (2006) used the ecosystem approach across the entirety of UK waters, while Richardson *et al.* looked specifically at a network of sites within UK waters. The latter is a much smaller area that will be selected to make an effective contribution to protecting UK marine biodiversity.

It is tempting to disaggregate the benefits of the entire UK marine environment or MCZ network to a single site. However, there are two main reasons, one methodological and one conceptual, why this would be a difficult, and inappropriate use of benefits transfer:

- Methodological - The relevant literature only provides aggregate values of ecosystem services, meaning that assumptions have to be made on apportioning a given level of ecosystem service to a particular marine habitat type (for example, reefs compared to sandbanks) or sites, for which no relevant quantitative data was identified, and
- Conceptual - The value of a single site standing alone is potentially very different to the value of that site within a network due to network effects. These may be positive or negative (as discussed above).

In the case of the UK marine environment, the importance of accounting for network effects has already been clearly illustrated in the studies related to the Marine Bill. The value of a single site carried out through benefits transfer could be a huge underestimate, which looked at in isolation would seem negligible. Perhaps an even bigger concern is that the value would be very uncertain. A network of sites covers all areas deemed scientifically necessary to conserve, but this raises the question as to whether some are more important than others. For example, if a site provides important spawning grounds for a few species of fish, would those species find another suitable site or would the stocks collapse if the site was lost?

The tranche of pSACs are being proposed as contributions to the network of Natura 2000 sites. However, the network effect of these sites is not known.

There is a high likelihood of arriving at a significantly underestimated value for a single site, especially where there is scientific uncertainty of the importance of an individual site and its network effects. For the above reasons benefit transfer is not considered possible in this case.

Qualitative Evaluation of Impacts

In place of benefits transfer and monetary valuation a qualitative approach is used to categorise the change in ecosystem service provision if the site were designated, compared to BAU of not designating the site. Based on expert judgement, the change in ecosystem service under each scenario was assigned a level: ‘nil’, ‘minimal’, ‘low’, ‘moderate’, or ‘high’ in the impact assessments. The analysis included consideration of:

- The relevance of each ecosystem service to the site;
- A value weighting (a valuation of the ecosystem service);
- The scale of benefits geographically; and
- The level of confidence in our knowledge of each ecosystem service.

Ecosystem services considered to be only marginally relevant to a site were removed from the analysis. The change in each ecosystem service was evaluated separately. An overall impact was then decided upon through expert guidance and will be subject to public consultation.

The review of the existing valuation literature highlights the need to explain the value of a single marine site within the context of a network of sites (as discussed above). As such, the IAs of proposed sites include discussions on the designation of any given site in the context of the cumulative impacts of site designation, which may be negative as well as positive.

Summary

Designating marine protected areas such as pSPAs and dSACs can provide a complex range of potential benefits which have been described in the impact assessments in terms of ecosystem services. This has been used to define which goods and services will be impacted by the designation of a site.

Information on various ecosystem services arising from the UK marine environment is available, but it is not feasible to apply it individually or collectively to the proposed tranche of pSACs. The physical and monetary information available does not support accurate benefits transfer. Therefore, the literature on valuation of the marine environment is used in the impact assessments as a guide to the types of values that may arise from designation.

In the absence of monetary values, a framework for qualitative analysis of ecosystem services has been applied in the impact assessments to analyse the benefits of designating the pSACs. Investigation is warranted into the possibility of undertaking further valuation studies to derive values of protecting sites in the marine environment, both individually and collectively, especially at sub-national scales.

ANNEX III: COSTS OF DESIGNATION OF WIGHT BARFLEUR REEF SAC BY SECTOR

Enforcement

Enforcement							
Description			One-off Cost		Annual Cost		
Scenario	*Cost Item*	*Type*	*Cost £k*	*Year Experienced*	*Cost £k*	*Year Commencing*	*Average*
MINIMUM	Develop management measures	Policy	181	2011			-
	Surveillance and monitoring	Policy			39.6	2011	39.60
							-
							-
							-
							-
Total		*Admin*	0		0		-
		Policy	181		39.6		39.60
		Both	181		39.6		39.60

MAXIMUM	Develop management measures	Policy	181	2011			-
	Surveillance and monitoring	Policy			39.6	2011	39.60
							-
							-
							-
							-
Total		*Admin*	0		0		-
		Policy	181		39.6		39.60
		Both	181		39.6		39.60

	Inflation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Discount	100.0%	96.6%	93.4%	90.2%	87.1%	84.2%	81.4%	78.6%	75.9%	73.4%	70.9%	68.5%	66.2%	63.9%	61.8%	59.7%	57.7%	55.7%	53.8%	52.0%
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cost £k	***Present Value***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***2023***	***2024***	***2025***	***2026***	***2027***	***2028***	***2029***	***2030***
	181.00	181.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	582.51	39.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policy	763.51	220.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60
Both	763.51	220.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60

Cost £k	***Present Value***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***2023***	***2024***	***2025***	***2026***	***2027***	***2028***	***2029***	***2030***
	181.00	181.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	582.51	39.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policy	763.51	220.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60
Both	763.51	220.60	38.26	36.97	35.72	34.51	33.34	32.21	31.13	30.07	29.06	28.07	27.12	26.21	25.32	24.46	23.64	22.84	22.07	21.32	20.60

Fishing

Fisheries							
Description			One-off Cost		Annual Cost		
Scenario	*Cost Item*	*Type*	*Cost £k*	*Year Experienced*	*Cost £k*	*Year Commencing*	*Average*
MINIMUM	Loss of revenue	Policy			1.62	2012	1.54
							-
							-
							-
							-
							-
Total		***Admin***	0		0		-
		Policy	0		1.62		1.54
		Both	0		1.62		1.54

MAXIMUM	Loss of revenue	Policy			16.2	2012	15.39
							-
							-
							-
							-
							-
Total		***Admin***	0		0		-
		Policy	0		16.2		15.39
		Both	0		16.2		15.39

	Inflation	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Discount	100.0%	96.6%	93.4%	90.2%	87.1%	84.2%	81.4%	78.6%	75.9%	73.4%	70.9%	68.5%	66.2%	63.9%	61.8%	59.7%	57.7%	55.7%	53.8%	52.0%
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Cost £k	***Present Value***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***2023***	***2024***	***2025***	***2026***	***2027***	***2028***	***2029***	***2030***
	22.21	0.00	1.57	1.51	1.46	1.41	1.36	1.32	1.27	1.23	1.19	1.15	1.11	1.07	1.04	1.00	0.97	0.93	0.90	0.87	0.84
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policy	22.21	0.00	1.57	1.51	1.46	1.41	1.36	1.32	1.27	1.23	1.19	1.15	1.11	1.07	1.04	1.00	0.97	0.93	0.90	0.87	0.84
Both	22.21	0.00	1.57	1.51	1.46	1.41	1.36	1.32	1.27	1.23	1.19	1.15	1.11	1.07	1.04	1.00	0.97	0.93	0.90	0.87	0.84

Cost £k	***Present Value***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***	***2023***	***2024***	***2025***	***2026***	***2027***	***2028***	***2029***	***2030***
	222.10	0.00	15.65	15.12	14.61	14.12	13.64	13.18	12.73	12.30	11.89	11.48	11.10	10.72	10.36	10.01	9.67	9.34	9.03	8.72	8.43
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policy	222.10	0.00	15.65	15.12	14.61	14.12	13.64	13.18	12.73	12.30	11.89	11.48	11.10	10.72	10.36	10.01	9.67	9.34	9.03	8.72	8.43
Both	222.10	0.00	15.65	15.12	14.61	14.12	13.64	13.18	12.73	12.30	11.89	11.48	11.10	10.72	10.36	10.01	9.67	9.34	9.03	8.72	8.43

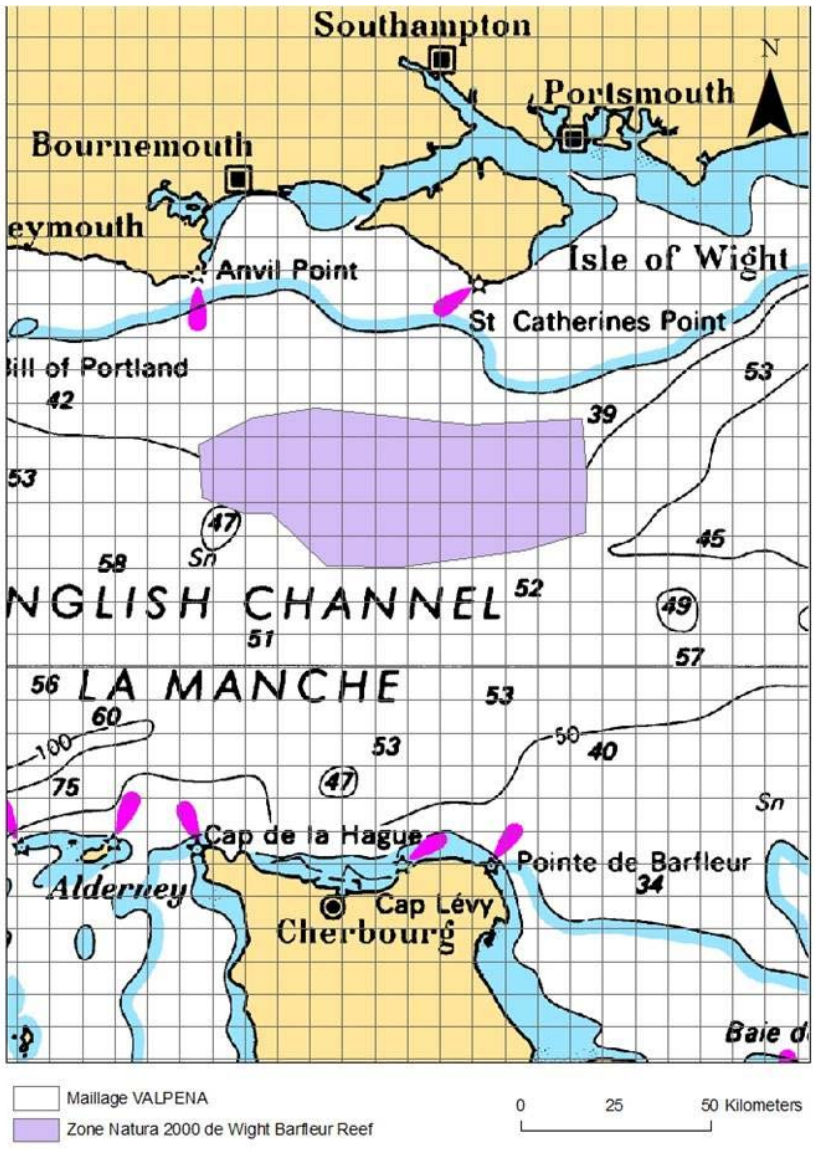
ANNEX IV: CONSULTATION RESPONSE FROM COREPEM – PAYS-DE-LA-LOIRE REGION'S FLEET FISHING IN THE WIGHT-BARFLEUR REEF NATURA 2000 SITE (TRANSLATION)

This note draws on the results from the VALPENA tool (Assessment of fishing activity with regard to new activities) created in 2010. These GIS data were obtained by the COREPEM, through surveys carried out among professionals of the Pays-de-la-Loire region.

These data show the professionals' activity in 2010, spatializing the corresponding fishing areas and providing a lot of information such as the type of gear used, the species caught and the catching periods.

The geographical scale selected for the project is made up of grids of approximately 3 miles by 3 miles (Map 1); fishermen report the grids corresponding to their fishing activity (gears and species) on a monthly basis.

Map 1: Wight-Barfleur Reef and VALPENA grids



Sources: SHOM, VALPENA, Natura 2000, 2011

For this diagnosis, we will focus on the grids related to the Wight-Barfleur Reef Natura 2000 site, i.e. 60 grids. Grids intersected by the Natura 2000 site are considered fully included, since a higher level of accuracy cannot be obtained.

This note is divided into three main parts: first, the presentation of the vessels fishing in the Wight-Barfleur Reef area and their characteristics (size, engine power…), then the types of gears used and finally the species caught in this area.

List and characteristics of the Pays-de-la-Loire region's vessels fishing in the Wight-Barfleur Reef site in 2010

22 vessels fishing in the Natura 2000 site were listed; they are related to three different ports: La Turballe (19), Saint-Gilles (2) and Le Croisic (1). At least 4 further pairs of midwater trawlers of the region are likely to fish in the area (depending on the years).

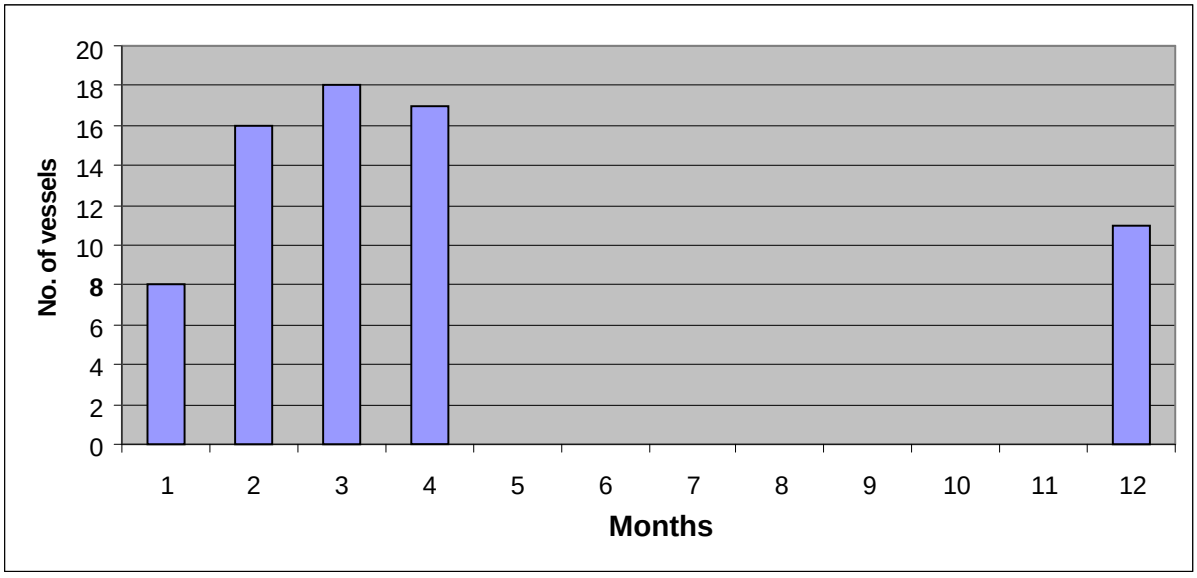
Table 1: Home port of the vessels fishing in the Wight-Barfleur Reef Natura 2000 site in 2010

Home port	La Turballe	Saint-Gilles	Le Croisic
Number of vessels	19	2	1

Source: VALPENA, 2011

The average length of the vessels is approximately 19.5 meters, and no Pays-de-la-Loire's vessels less than 15 meters in length fish in this Natura 2000 site. The average engine power of the vessels is 370 KW and the approximate tonnage is 100 GT.

Figure 1: Seasonality of the fishing activity in the Wight-Barfleur site in 2010



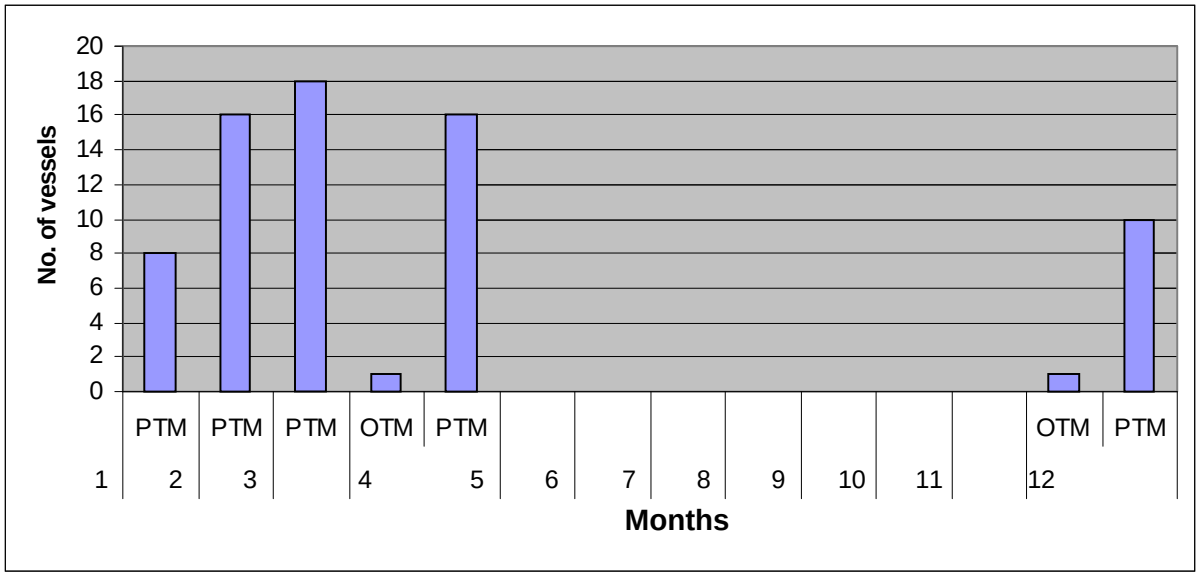
Source: VALPENA, 2011

The professional fishing activity of the Pays-de-la-Loire's vessels in this area is concentrated in 5 months of the year (from December to the end of April) (figure 1). The maximum number of vessels in this area occurs in March, with 18 vessels listed. Given the temporal scale selected (monthly), the number of vessels fishing in the area cannot be specified in hours and the information presented in this note needs to be complemented by the SIH data (Fisheries Information System). It is to be noted that this monthly scale does not indicate whether a vessel has spent one day or two weeks in the site, but that the vessel has been fishing in the site at least once during the month.

II. Types of gears used in the Natura 2000 area

In this area, two types of gears are used, with a majority of midwater pair-trawls (PTM): 20 vessels, and two vessels using midwater otter trawls (OTM). Midwater otter trawls (OTM) are only used in April and December (figure 2), by 2 vessels, when their partner vessels are not available (breakdown or other target species).

Figure 2: Seasonality of gears in the Wight-Barfleur site in 2010

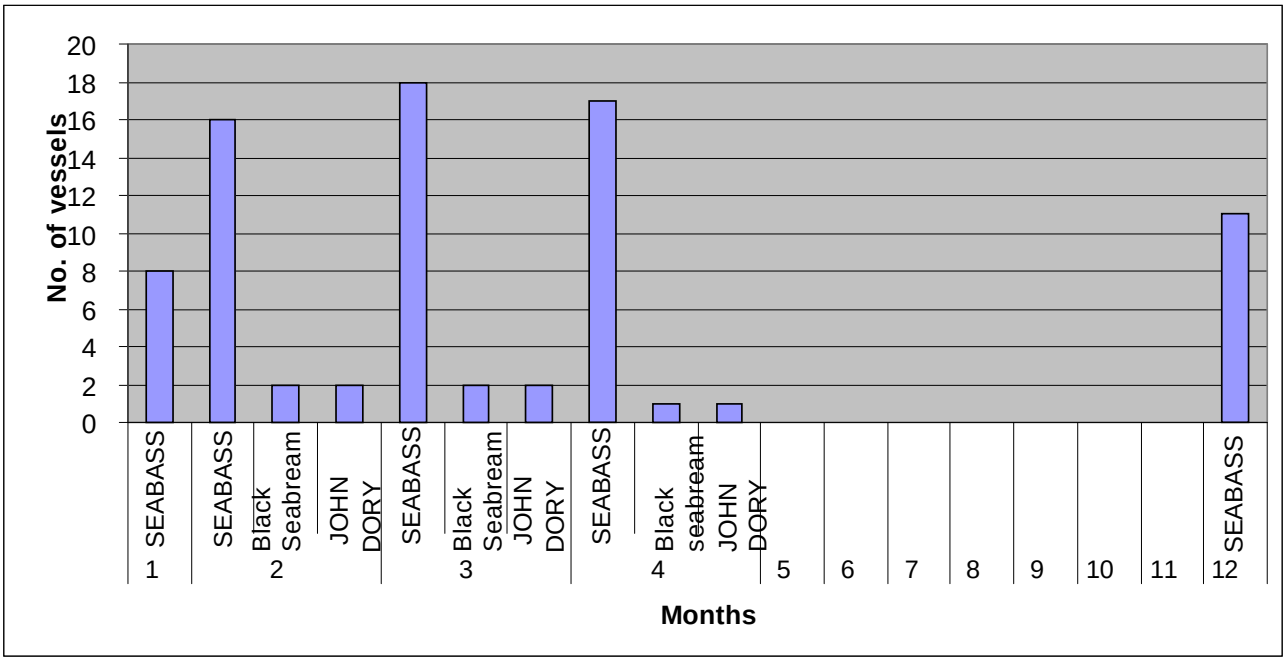


Source: VALPENA, 2011

III. Target species in the Wight-Barfleur Reef area

The main target species in the area is the European Seabass (figure 3). A pair of vessels targets - in addition to the European Seabass - two more species in February, March and April which are the Black Seabream and the John Dory fish. The most targeted species is generally the European Seabass but species like the Black Seabream, the Horse Mackerel, the Smoothhound, the Gurnard, the Pollack, the Hake, the Mullet (Common Grey Mullet and Thick-Lipped Grey Mullet) and the John Dory fish can be caught as bycatch.

Figure 3: Catching periods per species



Source: VALPENA, 2011

The volumes of fish caught are hard to evaluate for the moment. Since all the data collected for the VALPENA project have not been processed yet, we are not able to provide firm figures. However, the method used consists in distributing the volumes of fish caught (collected from Producers Organisations) among the grids where fishing activity was declared.

Thus, the productions available to date are those of 4 pairs of midwater trawlers, only 2 of which fished during the whole campaign (from January to April). The average Seabass production per vessel over the whole period amounts to 46.8 tons.

Assuming that catches are evenly distributed among the grids (which is far from reality) and since the Natura 2000 site covers approximately 5% of the midwater trawlers' fishing territory in the Channel, the average Seabass production for one vessel can therefore be estimated at 2.34 tons in the Natura 2000 site. However, this figure must be handled with great caution considering the above-identified inaccuracies.

Conclusion:

22 Pays-de-la-Loire's vessels fish in the Wight-Barfleur Reef Natura 2000 site (according to the 2010 data from the VALPENA tool). Fishing activity in this area is concentrated in 5 months of the year (from December to the end of April). No Pays-de-la-Loire's vessels less than 15 meters in length fish in this Natura 2000 area. The main gear used in the area is the midwater pair-trawl and the European Seabass is the main target species.

ANNEX V: CNPMEM CONSULTATION RESPONSE – ANALYSIS OF THE FRENCH FISHING ACTIVITY

Vessels more than 15 meters in length

Vessels from five different regions fish in the site proposed for designation: Nord-Pas-de-Calais, Upper Normandy, Lower Normandy, Brittany, Pays-de-la-Loire.

Table 1 – Estimate of fishing hours and value of landings in the Wight-Barfleur Reef area (using the following site data: dpma-11-0339-mcz-zonesbritanniques (website under development))

	2008		2009	
	Fishing time (in hours)	Value of landings (€)	Fishing time (in hours)	Value of landings (€)
Nord-Pas-de-Calais	95	77,200	151	107,300
Upper Normandy	60	22,400	55	77,000
Lower Normandy	186	33,000	340	47,200
Brittany	439	97,000	125	13,200
Pays-de-la-Loire	1002	273,000	759	168,000
Whole France	1782	502,600	1430	412,700

Fishing fleets concerned

At least 45 vessels of more than 15 meters, fish in the area, but there may be more. These 45 vessels include 20 exclusive mixed trawlers, 15 exclusive mid-water trawlers and 10 exclusive bottom trawlers.
The great majority of these vessels are between 15 and 24 meters in length.

Seasonality

The activity in the site is highly seasonal, during winter months. In 2008, it was concentrated between January and April and from November to December. In 2009, the activity mainly occurred between January and April; but fishing activity was also observed – less important but still noted – between May and August in the East/Northeast section of the area.

Activity of Lower Normandy's (Bas-Normandie) vessels (resulting from the surveys carried out for the designation of MCZ in 2010 – the proposed area corresponded to the BAI 21 of the Balanced Seas Project)

Gears	Target species	No. of vessels < 15 m	Vessels between 15 and 16 m	No. of vessels > 15 m	Season	No. of fishing days / vessel	Dependence for vessels <15 m*	Dependence for vessels between 15 and 16 m	Dependence for vessels >15 m**	No. of vessels involved in the survey	Sales dependence - Average 2006/2007/ 2008***	Estimated average sales 2006/2007/ 2009
Longline	tope, conger eel, large spotted dogfish, small spotted dogfish, cod, pollock, thornback ray, smoothhound, rockling	7		0	from March to October	Between 75 and 200 days	estimated at 90%			6/7	90%	200,000 €
Midwater pair trawl	black seabream, seabass	0		6	from January to August	30			estimated at 10%	2/6	No info	No info
Bottom trawl	seabass, ray, smoothhound,	11	26	12	April May June	50		highly variable	estimated at 15%	1/6	No info	No info
Bottom trawl	rockling, dogfish, ray…	11	26	12	June July August	70		highly variable	estimated at 25%	1/7	No info	No info
Bottom trawl	rays, squid, plaice, goatfish, cod, smoothhound, pout, cuttlefish, tope…	11	26	12	from September to December	30		highly variable	estimated at 10%	1/2	No info	No info
Beam trawl	sole	0		3	February March	50			estimated at 15%		No info	No info

* based on 280 fishing days/year - caution: the estimation of dependence percentage takes into account the fishing activity in days per year but not the value of the species caught
** based on 300 fishing days/year
*** the estimation of sales is based on the value of fish potentially caught in these areas
NB: The activity of Lower Normandy's vessels less than 15 meters and between 15 and 16 meters is unpredictable as it depends on the state of the shellfish beds in Lower Normandy (mussels and scallops). The beds' resources vary a lot and they determine the presence of Lower Normandy's vessels in the British areas.
However, the activity of the 6 midwater trawlers, the 12 deep-sea trawlers, the longliners and the beam trawlers is highly linked to this site.

Activity of Upper Normandy's vessels in 2009 (also resulting from the data collected for the BAI 21 of the Balanced Seas Project)
10 vessels > 15 meters (including 2 vessels with a length of 80 meters): bottom and midwater trawlers and mussel boats fishing species with a high added value (squid, scallop, seabass, thornback ray) + whiting, horse mackerel, mackerel…