Title:

Special Areas of Conservation for Harbour Porpoise

IA No:

Lead department or agency:
Joint Nature Conservation Committee (JNCC)

Other departments or agencies:
Natural England (NE)
Natural Resources Wales (NRW)
Department of Environment Northern Ireland (DoE NI)

Impact Assessment (IA)

Date: 10/11/2015

Stage: Consultation

Source of intervention: EU

Type of measure: Secondary legislation

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Summary: Intervention and Options

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2014 prices)	**In scope of One-In, Two-Out?**	**Measure qualifies as**
-£5.83m	-£4.91m	0.31m	No	NA

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

There are a number of pressures on species in the marine environment. Although management is in place for some activities, it is not necessarily designed to achieve nature conservation objectives. Intervention is needed to be able to manage activities in areas important to harbour porpoise, promote a healthy and resilient marine environment and contribute towards the creation of a network of protected sites. JNCC have assessed these sites against the Habitats Directive Annex III selection criteria and advised the Secretary of State that they meet these criteria.

What are the policy objectives and the intended effects?

The EC Habitats Directive 92/43/EC on the conservation of natural habitats and wild flora and fauna aims to promote biodiversity maintenance. This 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 Species of Conservation Importance (SCI) and designation as Special Areas of Conservation (SAC). The UK is required to establish conservation measures for sites designated as SACs which is achieved by managing potentially damaging activities. Harbour porpoise are species of European importance and the sole qualifying feature of a proposed suite of 8 new sites. For the purpose of this IA we considered only 5 English, Welsh and Northern Ireland sites.

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

Baseline: Do nothing; do not designate the suite of sites. This is not considered justifiable given the importance of reducing the number of pressures on species in the marine environment required by both national and international legislation. Option 1 (preferred option): Propose the sites to the EC for designation that enable activities to continue at minimum costs and with site management options only where necessary. It will contribute towards conserving a species of European importance in UK waters and contribute to wider UK and EU legislation including the network of Marine Protected Areas (MPAs) and MSFD. If these 5 sites are not designated, there are no alternative sites of similar quality and extent known to exist in English, Welsh and Northern Ireland waters.

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

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** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:**	**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options. I can confirm that on behalf of the Chief Economist, this consultation stage Impact Assessment of the "Special areas of conservation for harbour porpoises" has been approved and that the IA represents a reasonable view of the expected costs and benefits of the preferred option.

Signed by the responsible SELECT SIGNATORY: _____ Date: _____

Summary: Analysis & Evidence Policy Option 1(preferred option)

Description: Propose the sites for designation to the EC by enabling certain activities to continue whilst including mitigation measures only where necessary. This is the preferred option.

FULL ECONOMIC ASSESSMENT

Price Base Year 2015	PV Base Year 2015	Time Period Years 20	Net Benefit (Present Value (PV)) (£m)		
			Low: 3.68m	**High:** 5.83m	**Best Estimate:** 5.83m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	£3.91m	20	£0.19-	**£3.06m**
High	£7.44m		£0.37-	**£5.83m**
Best Estimate	£7.44m		£0.37-	**£5.83m**

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

The best estimate total present value costs incurred by industry and the public sector are £4.91m and £0.92m, respectively. Costs to industry include increased costs of licence applications and/or the costs of mitigation measures. Costs to the public sector relate to ongoing monitoring requirements, preparing Statutory Instruments to implement fisheries management measures and compliance and enforcement activities. The best and the high estimates are the same since the latter take into account the management scenario that is most likely to occur. Most of the costs are presented as transitional costs – these include both familiarisation costs, costs of licence applications and/or mitigation measures (e.g. operating costs).

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

No significant social impacts are expected to occur under the low or high/best estimate scenarios of the preferred option.

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	Non-monetised		Non-monetised	**Non-monetised**

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

The reduction of pressures within designated sites will provide a greater certainty of long-term protection for harbour porpoise and also in the provision of wider ecosystem services with, for example, some positive impacts on wildlife tourism and commercial fisheries. However, it has not been possible to fully quantify and monetise these benefits as the change in quantity and quality of porpoises and wider ecosystem service provision is dependent on specific management measures.

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

There are expected beneficial impacts on non-use values of the natural environment in the areas that are designated. There might also be improvements in regulating ecosystem services such as hazard protection and waste assimilation/regulation, but the quantum of these services is possibly very low.

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

A 20 year period of assessment (2015-2034) is considered. Some cost estimates are recognised as being highly uncertain because specific management requirements for certain activities are not known. Locations of where activities take place are also uncertain. This influences the scale of costs and benefits which might vary by several orders of magnitude across the scenarios used. The assessment of benefits has largely been limited to a qualitative manner and order of magnitude due to the limited evidence on expected changes in number of species to be protected and changes in ecosystem services following the designation.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m: 0.30			In scope of OITO?	Measure qualifies as
Costs: £0.31m	**Benefits:** N/A	**Net:** - £0.31m	No	NA

Evidence Base

Impact Assessment Evidence base for the harbour porpoise possible Special Areas of Conservation (pSACs)

Problem under consideration and rationale for intervention

Harbour porpoises are impacted by a number of anthropogenic pressures, including, but not limited to: bycatch in static net fisheries; activities that generate impulsive noise (e.g. pile driving and seismic surveys); chemical pollution, notably persistent organic pollutants, and; variability in food resources. The species is recognised as one of conservation importance under several directives and conventions. It is a species listed in Annexes II and IV of the EU Habitats Directive (92/43/EC).

The EU Habitats Directive requires Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes of the Directive to favourable conservation status (FCS). To that end Member States are required to contribute to a coherent European ecological network of protected sites by designating Special Areas of Conservation (SACs) for habitats listed on Annex I and for species listed on Annex II of the Directive. The Joint Nature Conservation Committee (JNCC), Natural England, Scottish Natural Heritage, Natural Resources Wales and the Department of the Environment for Northern Ireland have provided advice to the UK Governments with respect to the designation of eight new Special Areas of Conservation to protect harbour porpoise in UK waters. The identification of these sites is based on the evidence presented in a recent analysis of harbour porpoises sightings data collected throughout UK waters 1994-2011. The sites have persistently higher densities of harbour porpoises than other areas. Designation and management of these sites would contribute to the UK's wider measures in place to ensure the conservation of this species.

These proposed SACs[1] are:

- **Southern North Sea [English and UK Offshore waters]**
- Outer Moray Firth
- North Minch
- Southern Sea of Hebrides
- **North Channel** and Outer Solway **[Northern Ireland and UK Offshore waters]**[2]
- **North Anglesey Marine / Gogledd Môn Forol [Welsh and UK Offshore waters]**
- **West Wales Marine / Gorllewin Cymru Forol [Welsh and UK Offshore waters]**
- **Bristol Channel Approaches / Dynesfeydd Môr Hafren [English, Welsh and UK Offshore waters]**

The Governments of Wales and Northern Ireland, and Defra on behalf of England and for offshore waters, have decided to proceed to consultation with five of the sites, subject to an adjustment to the North Channel and Outer Solway boundary. This adjustment was to account for the fact that the Scottish Government is not proceeding with proposals for SACs at this time and the SAC boundaries needed to reflect this. Therefore, five sites are currently being proposed to be taken forward to consultation (highlighted above in bold and summarized in Annex 1 – from Table S4 to Table S8)

Policy objective

New SACs, along with existing protected sites in the UK marine environment, will contribute to achieving Good Environmental Status (GES) under the Marine Strategy Framework Directive (MSFD) and the UK's contribution to

[1] A map of these areas is provided in the ABPmer and eftec evidence base report prepared for this Impact Assessment. See ABPmer/Eftec report (2015) Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015 .

[2] Only the North Channel will be considered for the purpose of this IA since this is the area which falls under Northern Ireland and UK offshore.

the ecologically coherent network of Marine Protected Areas (MPAs) under the OSPAR convention on the protection of the marine environment in the North East Atlantic.

A formal public consultation on proposals for designation of five pSACs will be undertaken in early 2016. Following this public consultation, Ministers will decide on whether to take forward specific sites for designation. The UK Government and the devolved Administrations of Wales and Northern Ireland are aiming to submit the sites to be taken forward to the European Commission (EC) in 2016.

Decisions on designation of SACs and determining their boundaries must be made using relevant scientific evidence only[3]. However, the government policy is to provide information on the potential impacts of possible marine designations to Ministers. Evidence of the environmental and socio-economic impacts of designation of conservation sites in the marine environment has therefore been reviewed in order to understand the impacts of any designation of SACs under the EU Habitats Directive. The evidence is based on a report recently produced by ABPmer/Eftec(2015)[4] which considered an Impact Assessment for the whole suite of SPAs and SACs to be designated in the UK.

Description of Options Considered

Option current baseline (do nothing option)
This option means that the suite of sites is not designated as Special Areas of Conservation for harbour porpoises. Taking this option is not considered justifiable given the available evidence that indicates these are areas with persistent high densities of harbour porpoise in UK waters and our commitments to the Habitats Directive. Non-designation could also result in losses of certain economic values (e.g. related to wildlife tourism) and non-use values (e.g. value associated with the existence of certain marine features).

Option 1 (preferred option)
Propose five sites to the EC for designation with site management options enabling certain activities to continue whilst considering mitigation measures only where necessary. This option will contribute towards conserving a species of European importance in UK waters whist ensuring that adverse economic impacts are minimised. Alternative sites of similar quality and extent are not known to exist in English, Welsh, Northern Ireland and UK offshore waters[5].

In terms of costs to private sectors this option only considered operating costs. More information about costs and benefits associated with both this option and how they were derived is provided in the next sections as well as in Annexes 1 and 2.

Methodology to assess the social and economic impacts of designating the suite of sites for the preferred option

In 2015, JNCC commissioned ABPmer and Eftec[6] to develop an evidence base for the Impact Assessment of the potential environmental, economic and social benefits and costs specific to the designation of the suite of eight Special Areas of Conservation (pSACs) in UK offshore and territorial waters that were initially proposed. The study (hereafter referred to as the ABPMer/Eftec report) sought to estimate the effects of designation both at site level and as a network in terms of:

- Potential costs to activities;
- Potential costs to the public sector;

[3] Case law (C-44/95 Lappel Bank) clarifies that decisions to classify SPAs (and by implication to designate SACs) must be made using scientific evidence only. Nevertheless, it is government policy is to provide socio-economic information to Ministers on the potential socio-economic impact of classification of SPAs or designation of SACs.

[4] ABPmer/Eftec report (2015) Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015

[5] Scottish Government has decided not to proceed to consultation at this time.

[6] ABPmer and eftec, 2015. Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015.

- Potential social impacts; and
- Potential benefits.

The study compares the costs and benefits of designating the full suite of eight UK pSACs (given possible policy/intervention options) against a counterfactual of what would happen in the absence of the designations (the baseline or 'do nothing' option).

For Option 2, three management scenarios were developed; these are 'lower', 'intermediate' and 'upper'. These scenarios were developed by the Statutory Nature Conservation Bodies (SNCBs) which take account of different assumptions about the level of management measures that might be required to support achievement of site conservation objectives. The scenarios have been developed only to help inform the Impact Assessment and should not be seen as prejudging the outcome of any project level Appropriate Assessments at the time these may be required. These scenarios are further described in Table S1 below. It should be noted, however, that the upper scenario is considered extremely unlikely and, as such, has been omitted from further consideration in this document[7].

Table S1. Broad description of the management scenarios considered for the Impact Assessment associated with the preferred option

Management Scenario	Description/Assumption
Lower	Designation will introduce a requirement for Habitat Regulations Assessment for plans and projects and a Review of existing consents. However, existing and planned activity is assumed to be consistent with the achievement of site conservation objectives and therefore no additional mitigation measures are required.
Intermediate	In addition to the measures under the lower scenario, it is assumed that some mitigation measures may be required to support achievement of conservation objectives. This is considered by the SNCBs as the most likely scenario.
Upper	It is assumed that highly restrictive management measures are required to support achievement of site conservation objectives. This scenario is considered by the SNCBs to be very unlikely

The potential costs have been assessed for the following activities:

- Aggregates;
- Aquaculture - finfish;
- UK Commercial fisheries (set nets and mobile gears);
- Offshore renewables (offshore wind, tidal stream, tidal lagoon);
- Military activities;
- Oil and gas; and
- Ports & harbours.

It was considered sufficiently unlikely that other marine activities would experience significant cost impacts based on the management scenarios proposed by the SNCBs and so were excluded from further consideration. Further detail on the specific management measures considered for each activity under the different scenarios can be found in Section 3 of the ABPMer/Eftec report[8].

For each activity, potential cost impacts in terms of additional operating costs have been quantified and where possible presented as Present Values (2015 prices) over 20 years (2015 to 2034) for the five sites being taken forward. A 20 year time period is in line with other IAs carried out for other Marine Protected Areas and marine planning policies.The assessment has been undertaken in a manner consistent with the Better Regulation Executive guidance on Impact Assessment and the Green Book methodology (HM Treasury, 2003) for economic appraisal.

[7] Details of the upper estimate scenario can be found in ABPmer and eftec, 2015. Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015.

[8] ABPmer and eftec, 2015. Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015.

Costs may be incurred by the public sector in the following broad areas, although not all measures listed will be needed at all pSAC sites, i.e. the requirements will be site specific:

- Preparation of Marine Management Schemes;
- Preparation of Statutory Instruments (e.g. fisheries management measures);
- Development of voluntary measures;
- Site monitoring;
- Additional measures for geophysical surveys;
- Compliance and enforcement;
- Promotion of public understanding;
- Regulatory and advisory costs associated with licensing decisions; and
- Costs to the Crown Estate.

Standard assumptions have been developed for the estimation of public sector cost impacts associated with nature conservation designation proposals within previous impact assessments, for example, as part of the Defra Marine Conservation Zones designation process. An outline of the approaches used is provided in Appendix E of ABPMer/Eftec report.

Where it was not possible to quantify particular impacts both in monetary and non-monetary terms, this has been highlighted in the analysis. A number of the cost estimates are recognised as being highly uncertain because of the unknown specific management requirements for individual sites and the consequential impacts on marine activities. Such uncertainties have been highlighted throughout the analysis (see ABPMer/Eftec report).

A distributional analysis has been undertaken for the quantified costs to the commercial fishing and offshore renewables sectors. This has included impacts on specific locations (including regions, districts and ports) and on specific groups within the UK's population (including, for example, different age groups, genders, minority groups, and parts of UK's income distribution). It is recognised that there are many uncertainties surrounding these impacts.

A social impact analysis has been prepared to identify the key areas of social impact that could be affected by the potential economic costs (quantified and non-quantified) generated by designation and assesses the potential significance of these impacts. However, since these impacts are not seen as significant, they are not discussed in this IA. More information is available in the ABPMer/Eftec report.

The total cost of designating the pSACs has taken into account spatial overlaps between the proposed designations and existing designated sites, and care has been taken to seek to avoid double counting of costs and benefits.

Costs of Policy Options

As described previously, cost to businesses are assessed by considering additional operating costs that will be incurred by key sectors (described in Table S2). In Tables S4-S9 these are defined as transitional costs, consisting mainly of additional licensing costs and operating costs. Public sector costs included ongoing monitoring requirements, preparing Statutory Instruments to implement fisheries management measures and compliance and enforcement activities.

Policy Option 1 (preferred option)

The costs of the preferred option take into account the estimates for two management scenarios. Table S2 summarises the estimated total operating costs by activity, while Table S3 shows estimated total public sector costs. These estimates will be further validated during consultation with key stakeholders. The sum of Table S2 and S3 represent the total present value costs presented in the summary pages.

Table S2. Present value (PV) in £ '000 for quantified operating costs to private sector[9] (costs discounted over assessment period (2015-2034) at 2015 prices)

Activity	Scenarios	
	Lower Estimate	Intermediate Estimate
Aggregates	106	142
Aquaculture – finfish	0	0
Commercial fisheries	0	855
Military activities	0	182
Offshore renewables – offshore wind	1,103	1,173
Offshore renewables- tidal stream	231	441
Oil & Gas	467	1,843
Ports and harbours	271	271
Total for the five pSACs	**2,178**	**4,907**

Table S3. Present value (PV) in £ '000 for public sector costs[10] (costs discounted over assessment period (2015 – 2034), 2015 prices)

Activity	Quantified Impact (Present Value of Total Costs, £'000)	
	Lower Estimate	Intermediate Estimate
Preparation of Marine Management Schemes	0	0
Preparation of Statutory Instruments	0	41
Development of voluntary measures	0	0
Site monitoring	572	572
Additional costs for geophysical surveys	85	85
Compliance and enforcement	0	0
Promotion of public understanding	0	0
Regulatory and advisory costs associated with licensing decisions and Review of Consents	222	222
Costs to The Crown Estate associated with potential leasing revenues foregone	0	0
Total for the five pSACs	**879**	**920**

The combined present value costs to businesses and the public sector for the preferred option under the lower and intermediate management scenarios over the 20 year period of assessment are £3.06m and £5.83m respectively. The total net present value cost to business under the lower and intermediate management scenarios are £2.18m and £4.91m respectively. Since the intermediate scenario is considered to be the most likely to occur, the estimates for this scenario is also taken as the best estimate in this Impact Assessment.

Social Impacts

Social impacts analysis has considered the scale and geographical location of the predicted economic impacts to commercial fisheries and marine renewable energy generation. The potential for these impacts to have further effects on specific social groups in the communities and sectors affected has been analysed using a structured qualitative approach. For the purpose of this IA these impacts are not considered relevant but nevertheless are included in Annex II.

Benefits

The reduction of pressures within designated sites will provide a greater certainty of long-term protection for harbour porpoise. Scientific evidence able to demonstrate strong links between abundance and pressures is at a developing stage and, if necessary, attempts to gather more information about economic benefits might also be considered during consultation.

[9] Defined in this study as costs that do not impact the output from marine activities, so do not affect GVA and employment.

[10] It was not possible to assess how the public costs are distributed across England, Wales and Northern Ireland but this might be investigated during consultation.

The assessment of benefits has focussed on the changes to ecosystem services that are expected to result from site designation and management. While the proposed sites undoubtedly support a considerable range and value of ecosystem services[11], the potential impacts of the site management measures on these services is uncertain due to limited economic evidence. As a result, the assessment of changes in ecosystem services at individual sites is highly uncertain and likely to differ in relation to management in places. The main ecosystem service benefits that are expected to occur relate to recreational benefits and non-use benefits[12].

The review of evidence on the value of ecosystem services from the proposed sites reflects the factors that result in different assessments (see ABPMer/Eftec report). These include differences in designated features and other environmental characteristics, management measures, and current activities present at sites (e.g. tourism). The ambiguity and uncertainty associated with the quantification of ecosystem services, as reflected in the evidence reviewed, reinforces the necessity for a largely qualitative approach to the assessments of benefits at a site level.

A key part of the values of the ecosystem services are the recreational and non-use values of the sites. These are informed by only a few studies, of which Kenter *et al* (2013)[13] provides the most relevant economic values.

The site ecosystem services assessments is mainly provided in qualitative terms and identify low - moderate non-use values, with a low-moderate level of confidence. The benefits are assessed as a small noticeable impact on this ecosystem service, based on the benefits of protecting harbour porpoise (and the marine ecosystem) from decline, and/or allowing for some recovery of the marine site, and causing a noticeable incremental increase in a site's value. Overall, the monetary valuation of the benefits of designating proposed sites is considered to be significant, but is highly uncertain and therefore considered in indicative terms. Any other existing economic evidence of the benefits associated with the five SACs might still be considered during consultation.

Conclusion

Harbour porpoise are species of European importance and the sole qualifying feature of the proposed 5 new sites identified for English, Welsh, Northern Ireland and offshore UK waters through a UK wide analysis. The preferred option, based on the evidence presented, is to designate these sites.

The best estimate of quantified total cost of these designations is £5.83m (present value over 20 years (2015 to 2034) at 2015 prices). The industries most affected by the proposed designations are commercial fisheries (£855,000 present value over 20 years (2015 to 2034) at 2015 prices); offshore renewable (£1.2m present value over 20 years (2015 to 2034) at 2015 prices); as well as oil and gas (£1.8m present value over 20 years (2015 to 2034) at 2015 prices).

The ports and harbours industry will also likely experience increased operating costs (£271,000, present value over 20 years (2015 to 2034) at 2015 prices). Based on the assessments undertaken, the quantified impacts on operating costs for marine aggregates, military activities and oil and gas in relation to pSAC designations are assessed as being minor relative to annual turnover.

In addition, to protection of harbour porpoises, the ABPMer/Eftec report concludes that the proposed SACs will have a significant and positive recreational and non-use benefit to people in the UK. However, the available evidence does not allow a monetary value for this benefit to be estimated[14].

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[11] eftec, ABPmer and University of Stirling. 2015. Valuing the UK Marine Environment – an Exploratory Study of Benthic Ecosystem Services. Project ME5106 nad Bournemouth University and ABPmer, 2010. Description of the ecosystem services provided by broad-scale habitats and features of conservation importance that are likely to be protected by Marine Protected Areas in the Marine Conservation Zone Project area. Final Report, October, 2010.

[12] Certainly, managing sites as 'highly protected areas' would lead to higher environmental benefits in the shorter term, but unfortunately the quantum is uncertain. However, in the longer term, failure to meet our climate change obligations may actually be detrimental to ecosystems services, again though this quantum is uncertain. It was therefore difficult at this stage to present the benefits in economic terms.

[13] Kenter, J.O., Bruce, R., Davies, A., Jobstvogt, N., Watson, V., Ranger, S., Solandt, J.W., Duncan, C., Christie, M., Crump, H., Irvine, K.N., Pinard, M. and Reed, M.S. 2013. The value of potential marine protected areas in the UK to divers and sea anglers. UNEP-WCMC, Cambridge, UK

[14] See ABPmer/Eftec report (2015) Developing the Evidence Base for Impact Assessments for Recommended dSACs and dSPAs. Report prepared for the Joint Nature Conservation Committee. Report 2462. August 2015, Section 3.5.5

Annex I. Estimates of quantified costs according to each pSAC for preferred option

Table to Table S8 summarise the quantified costs (costs to activities and costs to public sector) by site. Note that these site costs do not include costs estimated at a national level for pSACs that are not assigned to individual sites. Table S9 summarising the total cost does however includes these national costs that cannot be assigned to a particular site. For impacts to GVA, it should be noted that this includes impacts to direct and indirect GVA for commercial fisheries and direct, indirect and induced GVA for offshore renewables. For further details of the individual site assessment, please refer to Appendix G of the ABPMer/Eftec report.

Table S4. Southern North Sea pSAC

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	1.60	-	-	-	1.31	-
	Intermediate/	3.84	-	-	-	3.05	-

Table S5. North Channel pSAC[1]

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	0.23	-	-	-	0.17	-
	Intermediate Estimate	0.48	-	-	-	0.39	-

Table S6 North Anglesey Marine / Gogledd Môn Forol pSAC

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	0.18	-	-	-	0.15	-
	Intermediate Estimate	0.23	-	-	-	0.19	-

[1] The costs for the North Channel pSAC have been assumed to be equivalent to those outlined in ABPmer/Eftec report (2015) for the original North Channell and Outer Solway dSAC as the industries likely to be effected by designation were taking place almost exclusively in non-Scottish waters.

Table S7. West Wales Marine / Gorllewin Cymru Forol pSAC

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	0.18	-	-	-	0.15	-
	Intermediate Estimate	0.23	-	-	-	0.19	-

Table S8. Bristol Channel Approaches / Dynesfeydd Môr Hafren pSAC

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	0.08	-	-	-	0.06	-
	Intermediate Estimate	0.78	-	-	-	0.61	-

Table S9. Total for the five pSACs. Note: this include cost in addition to those outlined in S5-S8 due to national costs associated with offshore renewable, oil and gas, and military activities that are not linked to a particular SAC.

Policy Option	Costs (£m)	Total Transition (Constant Price) 2015		Average Annual (excl. Transition) (Constant Price) 2015		Total Cost (Present Value)	
		Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA	Quantified (Operating Costs)	Impacts to GVA
1 (preferred option)	Lower Estimate	3.91	-	-	-	3.06	-
	Intermediate Estimate	7.44	-	-	-	5.83	-

Annex II. Summaries of the potential impacts associated with activities that may experience more significant impacts

Costs to private sectors:

Aggregates

For marine aggregates, the potential cost impacts associated with the designation of the five pSACs are relatively minor when compared to annual turnover and thus are unlikely to be significant in their own right or in combination with other initiatives. The impacts are associated with additional HRA costs required to take account of the harbour porpoise pSAC feature and the costs of mitigation measures to reduce or limit the impacts of geophysical surveys within site boundaries.

Aquaculture

For the five pSACs being progressed there were no significant impacts identified for this industry.

Fisheries

Impacts to operating costs (present value discounted over assessment period, 2015 prices) are estimated to range from £0 (lower scenario) and £855k (intermediate scenario), attributable to the potential management measure of requiring under-12m vessels fishing with nets to use acoustic deterrent devices (pingers) on their nets. These costs are mainly attributed to the Bristol Channel Approaches and Southern North Sea pSAC. There are large uncertainties in the estimate of these costs, relating to both the number of vessels that may be affected, and the length of nets used by them, and may significantly over- or under-estimate costs to the sector. Implementation of pingers on such a large scale should also be considered in relation to potentially negative impact of excluding harbour porpoise from important habitat areas, and the feasibility of implementation and enforcement. Non-quantified impacts on the sector relate to implementation of seasonal or annual mitigation measures on fixed engines[1] (intermediate scenario).

The estimate of impacts on commercial fisheries relates only to UK-registered vessels. Other European Member States' vessels also fish in some of the areas affected, in particular the Southern North Sea pSAC. Information on which countries' vessels may be affected for each site is provided in the site-specific reports in the ABPmer evidence base report.

Offshore Renewables

Impacts to operating costs (present value discounted over assessment period, 2015 prices) for the offshore wind sub-sector are estimated to range from £1,103k (lower scenario) and £1,173k (intermediate scenario). No significant impacts have been identified for the wave energy or tidal range sub-sectors. Impacts to operating costs (present value discounted over assessment period, 2015 prices) for the tidal stream sub-sector are estimated to range from £231k (lower scenario) and £441k (intermediate scenario).

Ports and Harbours

The quantified direct impacts on the ports and harbours sector are small and are not considered significant relative to annual turnover.

Social impacts

Commercial Fishing Sector and Fish Processing Sector

For the commercial fisheries sector, the pSAC designations are unlikely to affect economic activity under the lower and intermediate scenarios.

There is a risk of the commercial fisheries impacts at all the pSACs having social impacts in fishing communities. The impacts on those employed in the sector could be significant locally, but are not considered large enough to have significant subsequent impacts on particular social groups in fishing communities or the fish processing sector.

[1] Nets used since the early 1800s to catch salmon on the coast outside estuary limits. Include bag nets and stake nets (fly and jumper nets).

Offshore Renewables

For the offshore renewables sector, no significant social impacts are expected to arise under the lower or intermediate scenarios.